

A photograph of an offshore oil rig structure, showing yellow support columns and complex piping, viewed from below and partially obscured by a large blue circular graphic element. The ocean is visible in the background.

2024 ANNUAL PERFORMANCE REPORT

SEPTEMBER 2025



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September 2025

Center for Offshore Safety

Dear Colleagues,

I am pleased to share the COS Annual Performance Report for the 2024 reporting year, which reflects both the dedication of our members and the momentum we continue to build across the industry. Safety remains our top priority, and I am proud to highlight the progress we have made together in advancing safety performance on the U.S. Outer Continental Shelf.

This year, operator work hours submitted by members represented 78% of all oil and gas activity on the U.S. OCS—the highest percentage since COS began collecting this data in 2013. For the third consecutive year, work hours exceeded 50 million, underscoring both the scale of our operations and the strength of our collective commitment to post-pandemic recovery and performance. These numbers represent more than activity—they reflect the trust our members place in COS to provide the structure, collaboration, and resources needed to raise the bar on safety.

In 2025, COS expanded opportunities for in-person collaboration through a series of focused workshops. We have hosted day-long events on Hand Injury Prevention and Lifting Incident Sharing, and a third workshop on Grating Incident Sharing is planned for later in the year. These gatherings not only allow members and non-members to share lessons learned but also provide a forum for dialogue and practical problem-solving. As exemplified by our monthly Coffee & Corrosion Chats, we have also introduced new and innovative ways for industry to come together, collaborate, and learn from each other.

I am also proud to note that COS welcomed three new members in 2024, further expanding our reach and our ability to influence meaningful safety improvements across the industry. Each new member brings a valuable perspective and strengthens the collective voice that drives progress.

As we look ahead, our focus remains clear: advancing safety performance through collaboration, accountability, and innovation. Thank you to our members and partners for your active participation and unwavering commitment. Together, we are making progress toward our shared vision of a safer offshore industry.

Sincerely,



Russell Holmes, COS Senior Director



RUSSELL HOLMES

Senior Director

Center for Offshore Safety

78%

**of all U.S. Outer
Continental Shelf
(OCS) work hours
represented by
COS Members**

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OPERATORS







DRILLING CONTRACTORS



SERVICE COMPANIES





BOARD AFFILIATES



For this APR, 100% of eligible COS Member Operators and Contractors shared Safety Performance Indicator (SPI) and/or Learning from Incidents and Events (LFI) data for the 2024 Reporting Year.

COS members listed above as Board Affiliates do not provide data.

2.0 INTRODUCTION

COS' objective is to promote the highest level of safety for offshore drilling, completions, and operations through leadership and effective management systems addressing communication, teamwork, and independent third-party auditing and certification. COS enables operational excellence, in part, by enhancing and continuously improving the industry's safety and environmental performance and stimulating cooperation within the industry to share learnings. In the context of this report, the term 'safety' is inclusive of personal safety, process safety, health, security, and environmental safety.

This COS Annual Performance Report (APR) provides information shared by its members under the following COS programs:

- Safety Performance Indicators (SPI), and
- Learning from Incidents and Events (LFI)

The COS member data provided through the LFI and SPI programs enable continual improvement of performance-based management systems.

The SPI originated from high-level bow-tie risk models of major hazards, developed within COS, that cover both process and personal safety. The information can be used for driving improvement and, when effectively acted upon, contribute to reducing the risk of major incidents by identifying weaknesses in barriers intended to prevent the occurrence or recurrence of incidents and mitigate consequences. The scope of the SPI data covers COS member wells, projects, and production facilities and operations in the U.S. Outer Continental Shelf (OCS).

The data collected via the SPI program ranges from SPI 1 (fatality, Tier 1 Process Safety Event (PSE), loss of well control, etc.) and SPI 2 (Tier 2 PSE, collision resulting in direct damage ≥ \$25,000, loss of station keeping, etc.) to SPI 10 (dropped objects potential and actual results). The full list of SPI collected by COS can be found in Section 4 of this report.

The LFI program covers the same scope but allows for the submittal of data for incidents and events that occur outside the U.S. OCS. The main objective of the LFI program is to provide COS members with a mechanism for sharing information from incidents that meet the criteria for an SPI 1 or SPI 2, as well as High-Value Learning Events (HVLE).

Publication of SPI and LFI Program data began in 2014, reflecting 2013 performance. Reporting is voluntary, and data confidentiality is maintained through a process administered by the API Statistics Department.



ABOUT THE REPORT

The COS Annual Performance Report (APR) for 2024 provides an accounting of safety-related incidents and events at facilities operating on the U.S. Outer Continental Shelf (OCS).

Members voluntarily submit data for the APR to support COS' mission to provide the highest level of safety for the U.S. offshore natural gas and oil industry. Through data analysis, COS strives to identify areas for improvement in risk management through safety management systems for the operation of offshore wells, projects, and production facilities on the U.S. OCS.

Member data in the report comes from two key COS programs: the Safety Performance Indicators program, or SPI, and the Learning from Incidents and Events program, or LFI. Both programs identify and monitor areas where the industry can improve safety on the U.S. OCS. While COS began collecting this data in 2013, the data presented in this APR reflects the most recent 5 years, 2020-2024.

This yearly performance report is an example of COS' commitment to open communication and transparency of safety information, building collaboration, and sharing regarding safety between the industry, regulators, and the public.

KEY FINDINGS FROM 2024 DATA

- COS members reported more than 54.3 million work hours for 2024, representing 78% of all U.S. OCS's natural gas and oil activity. This is a decrease of 1.2 million work hours compared to 2023, yet it is the third-highest number of work hours reported in the last nine years.
- COS members reported zero incidents involving a fatality.
- COS members reported zero Level 1 or Level 2 Well Control Incidents.
- There were 34 combined **SPI 1** and **SPI 2** incidents reported by COS Member Operators for 2024. This is an increase compared to recent years. The largest increase was in Tier 1 Process Safety Events (PSE) (**SPI 1C**). There were ten reported Tier 1 PSE for 2024 compared to one in 2023.
- The 22 combined Tier 1 and Tier 2 Process Safety Events (PSE) represent an increase compared to the 14 reported for 2023.
- The ten Mechanical Lifting or Lowering Incidents (**SPI 2C**) reported by COS Member Operators is one more than reported for 2023. This results in a very slight increase in frequency from 0.03 incidents per 200,000 work hours to 0.04 incidents per 200,000 work hours – or one incident per every 5 million work hours.
- COS members reported zero Loss of Station Keeping Resulting in a Drive Off or Drift Off Incidents (**SPI 2D**).
- COS members reported zero Lifeboat, Life Raft, or Rescue Craft Events (**SPI 2E**). This is the fifth year in a row of decreasing incidents in this category.
- Of the 34 **SPI 1** and **SPI 2** incidents reported by COS Member Operators, 19 (56%) included equipment failure as a contributing factor. This is on par with the 53% and 52% reported for 2022 and 2023.

3.1 SPI AND LFI DATA AT-A-GLANCE

For details of SPI and LFI data, see Sections 4 and 5 of this report.

FIGURE 3.1-1: SPI 1 and SPI 2 Frequency

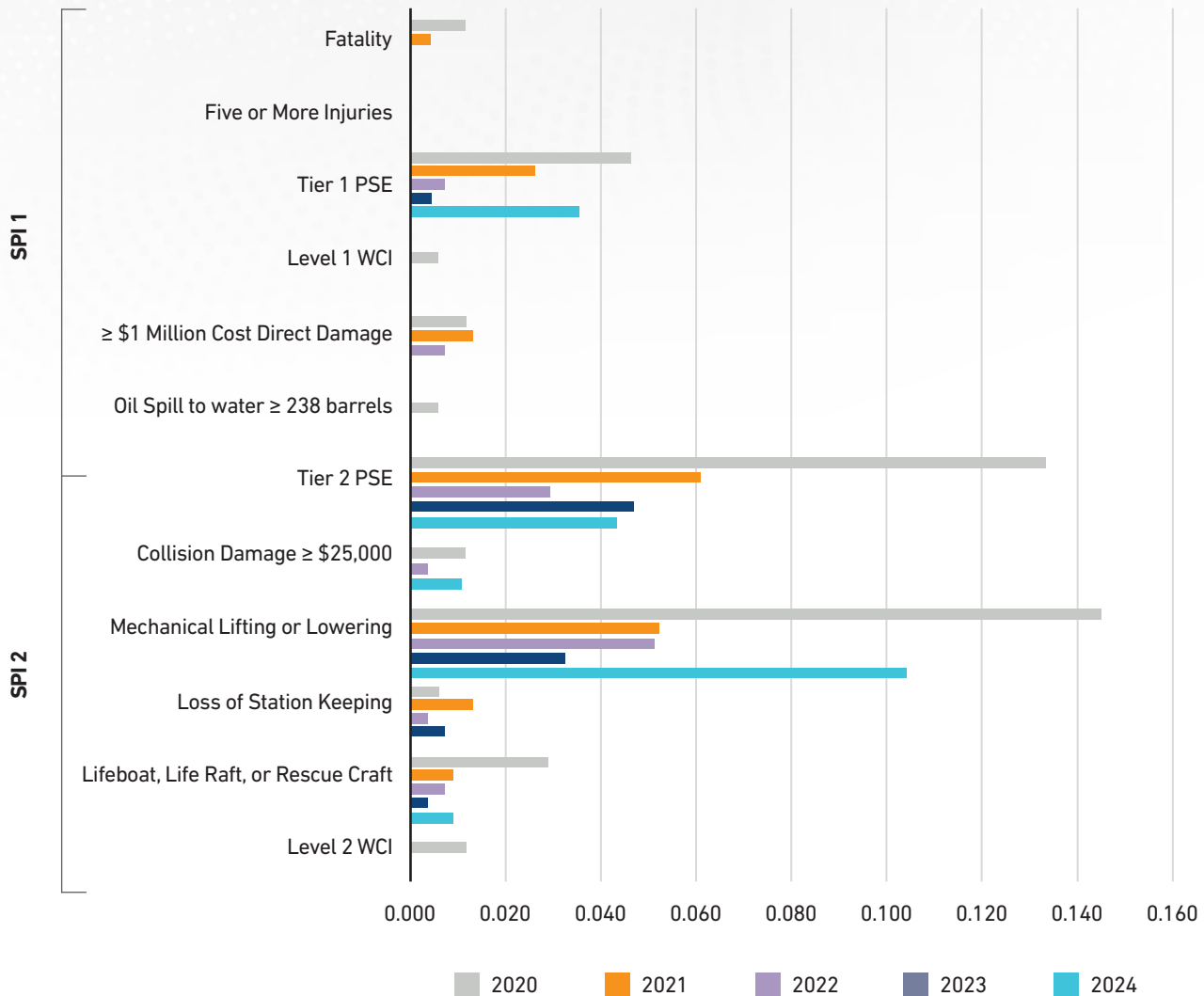


FIGURE 3.1-2: SPI 1 and SPI 2 Counts

		2020	2021	2022	2023	2024
SPI 1	Fatality	2	1	0	0	0
	Five or More Injuries	0	0	0	0	0
	Tier 1 PSE	8	6	2	1	10
	Level 1 WCI	1	0*	0	0	0
	≥ \$1 Mil Direct Damage	2	3	2	0	0*
	Oil Spill ≥ 238 bbl	1	0	0	0	0
SPI 2	Tier 2 PSE	23	14	8	13	12
	Collision Damage ≥ \$25k	2	0	1	0	3
	Mechanical Lifting or Lowering	25	12	14	9	10
	Loss of Station Keeping	0	1	3	2	0
	Lifeboat, Life Raft, or Rescue Craft	2	5	2	1	0
	Level 2 WCI	0	2	0	0	0

*There was one Level 1 Well Control Incident (WCI) (2021) and one incident resulting in more than \$1Mil Direct Damage (2024) reported by COS Contractor Members. As the charts and graphs in this APR represent data reported by COS Member Operators, these incidents are not represented in the tables and graphs.

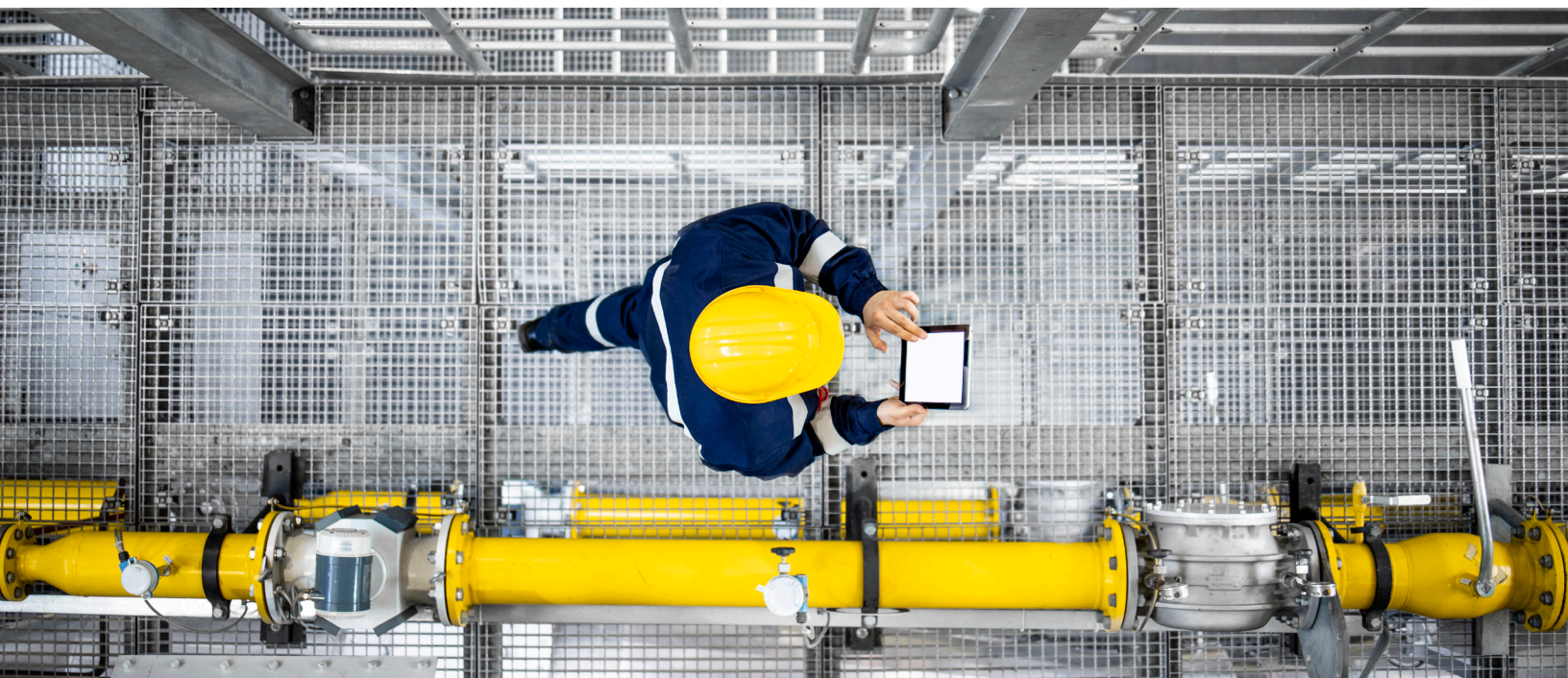
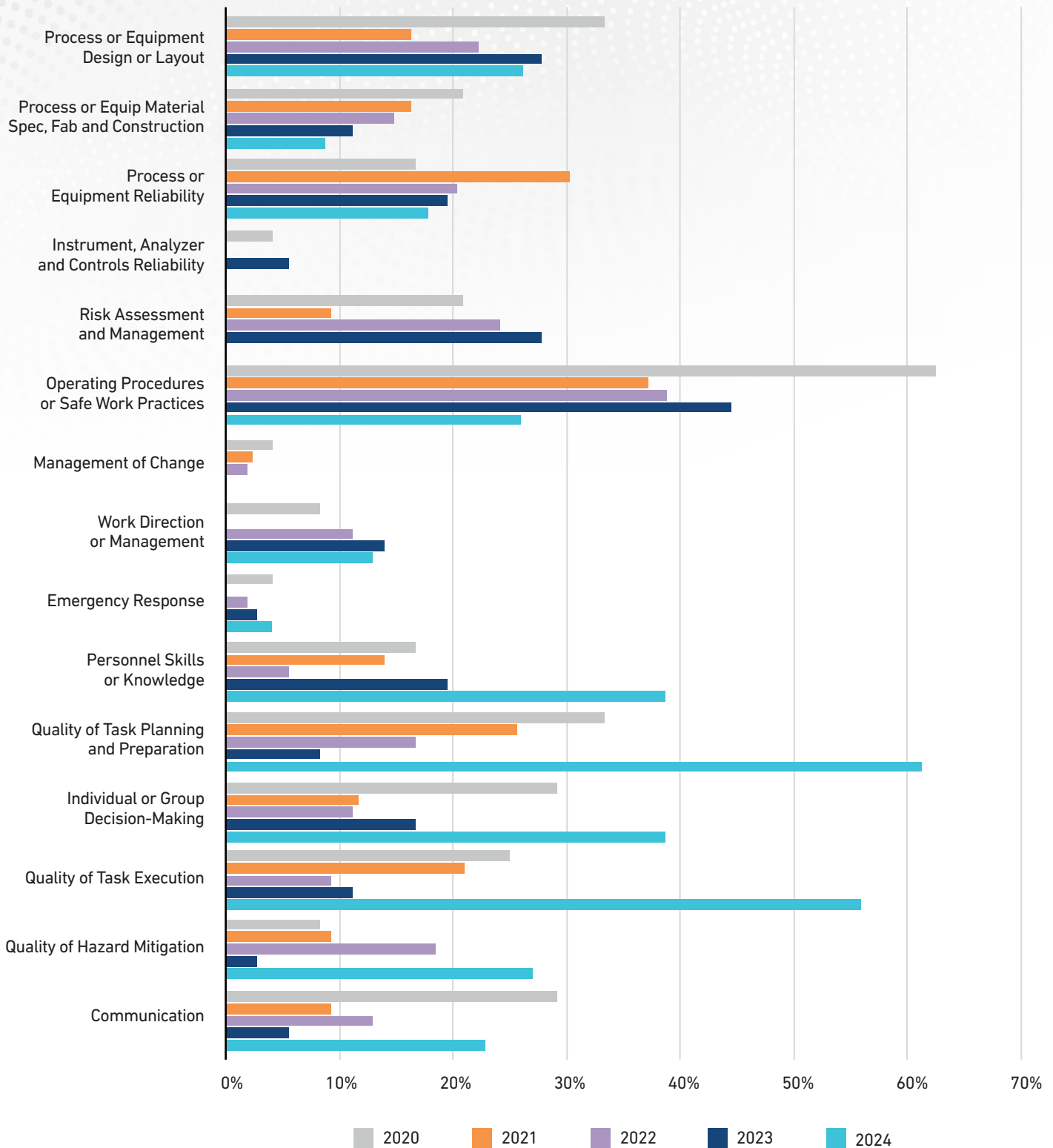


FIGURE 3.1-3: LFI Areas for Improvement (U.S. OCS Only)



NOTE: LFI submittals typically identify more than one AFI for any given incident. The graph above illustrates the percent of times an AFI was identified relative to the number of LFI forms submitted for U.S. OCS. Because the number of AFI exceeds the number of LFI forms, the sum of the percentages will be $\geq 100\%$.

3.2 COS ACCOMPLISHMENTS

Below are highlights of COS activities and accomplishments since the publication of the 2023 APR.

3.2.1 SEMS AUDIT SERVICE PROVIDER ACCREDITATION PROGRAM

Per the Memorandum of Understanding signed in 2015, COS became, and remains, the only accreditation body authorized by BSEE to accredit SEMS Audit Service Providers (ASP) pursuant to 30 CFR 250, Subpart S.

As of the publication of this APR, the five ASP listed below are accredited to perform SEMS audits and issue SEMS certificates. An up-to-date list is maintained on the [COS website](#)

- ABS Quality Evaluations
- CICS-Americas
- DNV Business Assurance
- ERM Certification and Verification Services
- Onward Auditing

DNV Business Assurance became the first ASP to have its accreditation expanded to allow SEMS auditing outside the United States and jointly issue SEMS Certificates with COS.

3.2.2 SEMS AUDIT AND CERTIFICATE PROGRAM

SEMS Certificates demonstrate that an organization has had its Safety and Environmental Management System (SEMS) audited by a COS-accredited ASP to determine conformance with the requirements of API Recommended Practice 75, 3rd Edition, and completed required corrective action(s). Since the publication of the last APR, two companies have renewed their SEMS Certificates, and two companies received SEMS certificates for the first time:

- Chevron U.S.A. Inc (Gulf of Mexico) (renewed)
- H&P Offshore (renewed)
- HWCG Holdings, LLC
- Talos Energy Inc.

A complete list of companies that have been awarded COS SEMS Certificates since 2013 is available on the [COS website](#).

3.2.3 COS SAFETY LEADERSHIP AWARD

The winners of the 2024 COS Safety Leadership Awards were:



Safety Blitz: Inspect What We Expect



Restricted Zone Analysis: Enhancing Offshore Safety, Practical Application of Visual Planning Tool

In addition to Apache and Valaris, the following were the finalists in the Operator and Contractor categories:

OPERATOR FINALISTS



Achieving Excellence in Lifting and Rigging Operations



Competency Assurance and Training

CONTRACTOR FINALISTS



Stop Work Drills



High Hazard Task Elimination

COS Safety Leadership Award finalists' presentations are available on the [COS website](#).



3.2.4 COS PUBLICATIONS & WEBINARS

In 2024, COS published the following documents. These documents are all available for free download via the [COS website](#). The new documents are:

- *COS-2-01, Qualification Requirements for Audit Service Provider Personnel Involved in Performance of SEMS Audits*
- *COS-2-04, Requirements for Accreditation of Audit Service Providers Performing SEMS Audits, 2nd Ed*
- *COS-2-06, Requirements for Accreditation of Audit Service Providers Issuing SEMS Certificates*
- *COS-3-10, Guidance for Developing a Fatigue Risk Management Program*

COS held the following events in 2024 with the purpose of educating the industry on the published good practices along with other topics relevant to offshore safety. Recordings of the COS webinars can be viewed on the [COS website](#).

- Feb 2024 – 2024 COS Outlook Webinar
- May 2024 – COS Morning Keynote at the Offshore Technology Conference (OTC)
- June 2024 – COS Decommissioning Summit
- Sept 2024 – 12th Annual COS Forum
- Oct 2024 – COS Annual Performance Report for the 2023 Reporting Year Webinar

3.2.5 COS SAFETY SHARES

As part of the COS commitment to the mission of promoting safe operations by sharing industry knowledge, COS created the COS Safety Shares Program. As of this writing, COS has added 16 new Safety Shares to its library:

- 2025001 – *DMBs Slip and Ascend in Uncontrolled Manner*
- 2025002 – *Fire in Glycol Regenerator and Heater Treater Extinguished in 10 Minutes*
- 2025003 – *Walking into Danger – Preventive Measures and PPE Pay Off (H2S HiPo)*
- 2025004 – *Incorrect Gasket + Missing Handwheel + No Verification = Methanol Leak Debacle*
- 2025005 – *Stepping Backward into Danger*
- 2025006 – *Empty Shaker House Delays Shutdown of Drilling Fluid Discharge*
- 2025007 – *Line-of-Fire Incident Results in Fatality*
- 2025008 – *Protruding Nozzle Leads to 550-Gallon Leak to Containment*
- 2025009 – *Lack of Procedure Leads to 74 lb. Chain Fall Dropping 23 ft.*
- 2025010 – *Unexpected Hydrocarbon Release Despite Following Procedures*
- 2025012 – *Closed Fire Water Valve Puts Portion of Facility at Risk (HiPo)*
- 2025013 – *Improper Chain Connections Lead to HiPo Dropped Object Incident*
- 2025014 – *Not All Handrails Can Be Trusted*
- 2025015 – *Corrosion Under Helideck Creates Dropped Object Hazard*

The complete library of COS Safety Shares is available on the [COS website](#).

3.2.6 COS OUTREACH AND COMMUNICATION ACTIVITIES - OCTOBER 2024-SEPTEMBER 2025

A foundational pillar of the Center for Offshore Safety is Sharing Industry Knowledge. In support of this pillar, COS Senior Director Russell Holmes and other staff actively pursue opportunities to introduce the Center for Offshore Safety to a broader audience. Below are highlights of these outreach activities since publication of last year's COS Annual Performance Report:

OCT 2024	Speaker	Health, Safety & Environment Conference Gulf of Mexico, Houston, TX
OCT 2024	Speaker / Exhibitor	ACP Offshore Windpower Conference, Atlantic City, NJ
NOV 2024	Exhibitor	ADIPEC, Abu Dhabi, UAE
NOV 2024	Speaker	OPITO North America Training Providers, Houston, TX
DEC 2024	Facilitator	COS/OOC (Offshore Operators Committee) Leadership Workshop, Lafayette, LA
JAN 2025	Exhibitor	Oceantic Network Operations & Maintenance / Health and Safety Summit, Providence, RI
JAN 2025	Speaker	G+ Stakeholder Meeting, Providence, RI
MAR 2025	Facilitator	COS/OOC (Offshore Operators Committee) Leadership Workshop, Lake Charles, LA
APR 2025	Facilitator	COS/OOC (Offshore Operators Committee) Leadership Workshop, Lake Charles, LA
APR 2025	Speaker	Institute of Marine Science, Engineering and Technology (IMarEST) Offshore Oil & Gas Special Interest Group (OOGSIG), Virtual
MAY 2025	Exhibitor	Offshore Technology Conference (OTC), Houston, TX
MAY 2025	Speaker	Oil & Gas Global Network Connected Worker Podcast, Virtual
JUN 2025	Speaker	Health, Safety & Environment Conference Gulf of America, Houston, TX



4.1 INTRODUCTION

COS members share Safety Performance Indicator (SPI) data with COS through the SPI program. Reporting is voluntary, and data confidentiality is maintained through a process administered by the API Statistics Department before submittal to COS. The data reported in this APR represents the five most recent years, 2020-2024. A normalization factor of work hours is utilized to enable year-to-year comparisons. A list of SPI collected is presented below.

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. \geq \$1 million direct cost from damage to or loss of facility / vessel / equipment
- F. Oil spill to water \geq 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:

- A. Tier 2 Process Safety Event
- B. Collision resulting in property or equipment damage \geq \$25,000
- C. Mechanical Lifting or Lowering Incident resulting in one or more of the following:
 - One - four recordable injuries
 - \$25,000 - \$1 million direct damage
 - Tier 2 Process Safety Event
 - Dropped load that strikes live process equipment
- D. Loss of station keeping resulting in a drive off or drift off
- E. Lifeboat, life raft, rescue craft event
- F. 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 the 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 \geq 1 barrel.

SPI 1 – SPI 5 are based on structured assessments of major hazards facing the offshore industry. **SPI 6 – SPI 9** are indicators historically reported by industry and are not directly related to the structured assessment work. **SPI 10** was introduced for the 2019 reporting year and is based on the severity-potential calculator developed by DROPSOnline¹.

Certain characteristics of the data reported for **SPI 1** and **SPI 2** incidents limit some aspects of the analysis and trending. An incident may have consequences that meet both **SPI 1** and **SPI 2** definitions but are not counted in both classifications. The higher consequence drives the classification. For example, a collision that results in ≥ \$1 Million Direct Damage Cost meets the **SPI 1E** definition, but also meets the **SPI 2B** consequence of Collision Resulting in ≥ \$25,000 in Damage. However, to prevent the duplication of data, per the SPI program structure, it is only counted as an **SPI 1E** incident and not an **SPI 2B** collision.

Although definitions used for some of the SPI are the same or similar to regulatory definitions, the numbers in this report will not necessarily match regulatory data due to this report being based on COS member company data from operations on the U.S. OCS only.

Per COS data submittal guidelines, to prevent duplication of data, COS Member Operators report all incidents that occur within 500m of their lease for both Operator and Contractor facilities and employees. A COS Member Contractor only reports an **SPI 1** or **SPI 2** incident if it occurs while they are working on the lease of a non-COS Member Operator or outside the 500m zone of a COS Member Operator.

Throughout this SPI portion of the report, work hours are used as the normalization factor to determine frequencies and rates. As a result, the charts and graphs in the following pages represent data reported by COS Member Operators. In the case where a COS Member Contractor has reported data from incidents that occurred when working for a non-COS Member Operator or which occurred outside of the 500m zone of a COS Member Operator lease, that data will be bulleted below the corresponding SPI information.

This report provides COS member data for 2020-2024. The data reported for 2024 represents more than 54.3 million Operator and Contractor work hours on the U.S. OCS. Work hours are reported only by COS Member Operators for work occurring within 500m of their facilities.

REPORTING YEAR	COS U.S. OCS WORK HOURS (MILLIONS)
2020	34.5
2021	45.9
2022	54.7
2023	55.5
2024	54.3

¹Dropped Objects Prevention Scheme Online dropsonline.org

4.2 SPI 1 RESULTS AND TRENDS

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. \geq \$1 million direct cost from damage to or loss of facility, vessel and / or equipment
- F. Oil spill to water \geq 10,000 gallons (238 barrels)

COS Member Operators reported ten **SPI 1** incidents for 2024. This is an increase from the numbers reported for 2022 and 2023. The cited outcomes for all ten of these incidents were Tier 1 Process Safety Events (PSE) (**SPI 1C**). Zero incidents involving a Fatality (**SPI 1A**), \geq Five Injuries in a Single Incident (**SPI 1B**), Level 1 Well Control Incident (WCI) (**SPI 1D**), \geq \$1MIL in Direct Damages (**SPI 1E**), or Oil Spill \geq 10,000 gallons (**SPI 1F**) were reported.

FIGURE 4.2-1: SPI 1 Count and Frequency

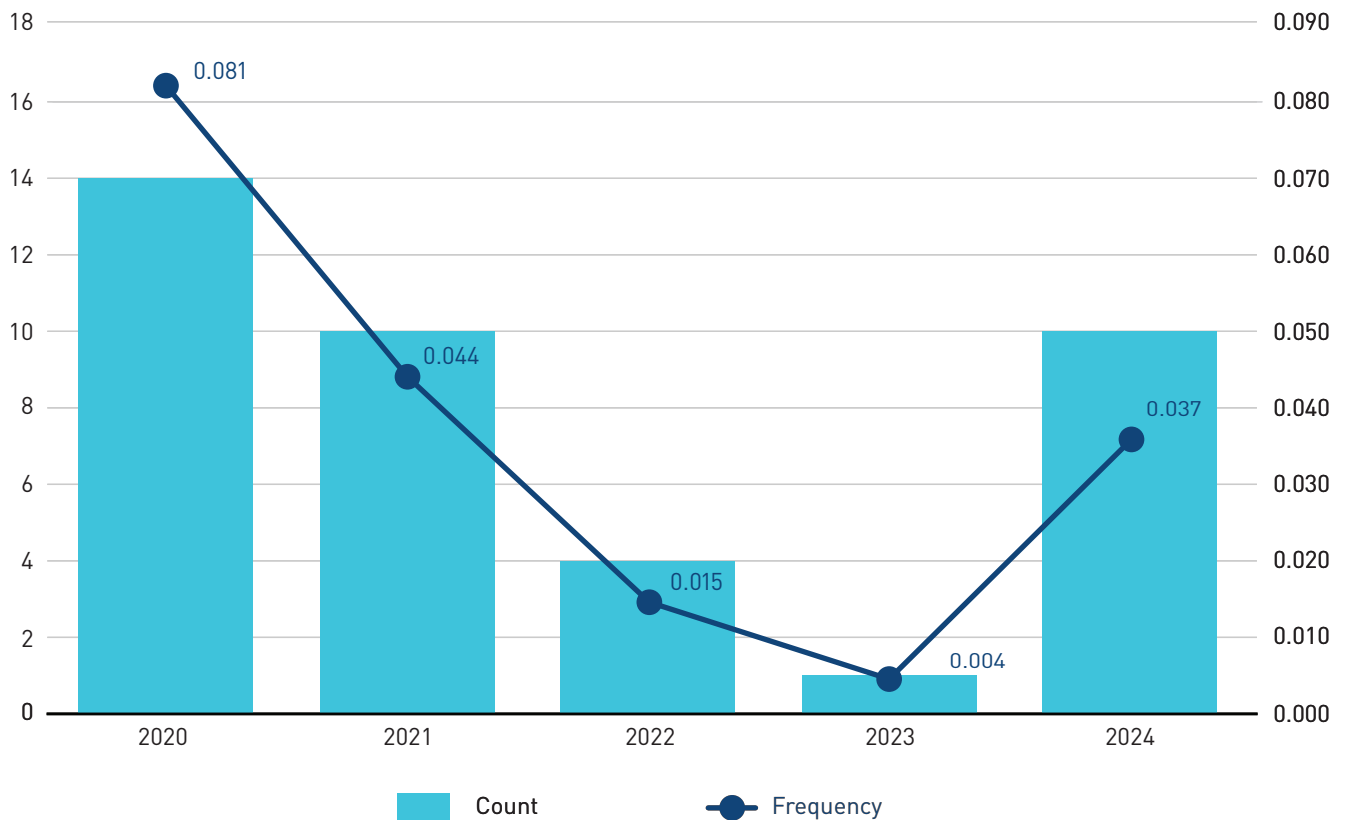


FIGURE 4.2-2: SPI 1 Count per Sub-Group

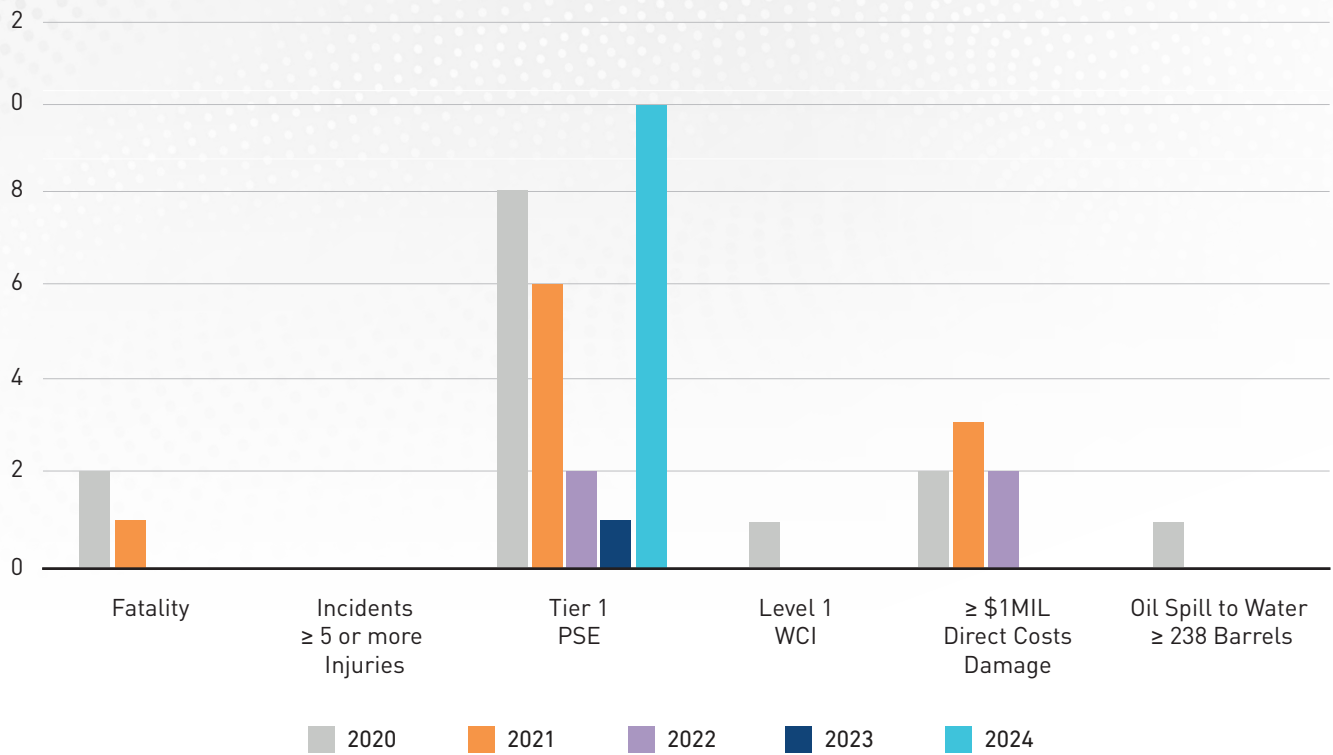
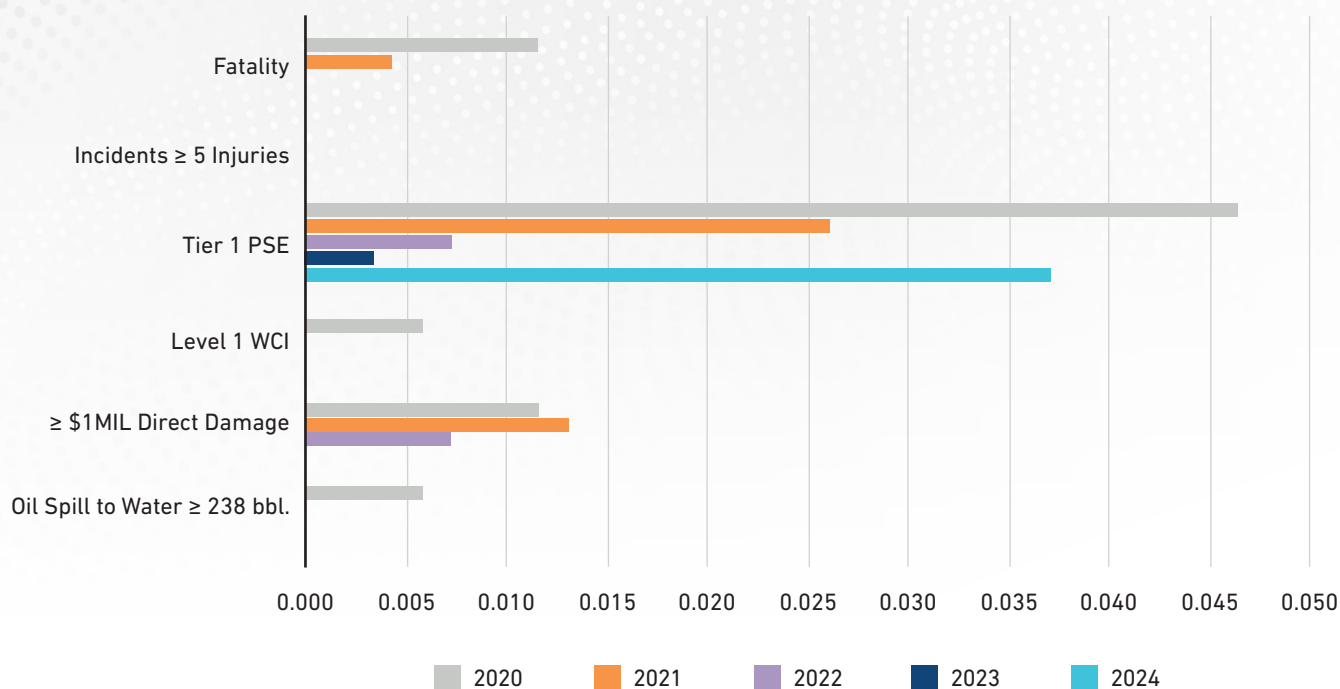


FIGURE 4.2-3: SPI 1 Incident Frequency per Sub-Group



*There was one Level 1 Well Control Incident (WCI) (2021) and one incident resulting in more than \$1Mil Direct Damage (2024) reported by COS Contractor Members. As the charts and graphs in this APR represent data reported by COS Member Operators, these incidents are not represented in the tables and graphs.

4.3 SPI 2 RESULTS AND TRENDS

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:

- A. Tier 2 Process Safety Event
- B. Collision resulting in property or equipment damage ≥ \$25,000
- C. Mechanical Lifting or Lowering Incident resulting in one or more of the following:
 - One - four recordable injuries
 - \$25,000 - \$1 million direct damage
- D. Loss of station keeping resulting in a drive off or drift off
- E. Lifeboat, life raft, rescue craft event
- F. Level 2 Well Control Incident - Multiple Barrier Systems Failures and Challenges

COS Member Operators reported 24 **SPI 2** incidents for 2024, the same as reported for 2023. For the 24 reported incidents, the cited outcomes were 12 resulting in Tier 2 PSE (**SPI 2A**), three resulting in Collision Damage ≥ \$25,000 (**SPI 2B**), and ten Mechanical Lifting or Lowering Incidents (**SPI 2C**). Zero incidents resulting in a Loss of Station Keeping (**SPI 2D**), Lifeboat, Life Raft, or Rescue Craft Event (**SPI 2E**), or Level 2 WCI (**SPI 2F**) were reported.

The 12 Tier 2 PSE (**SPI 2A**) reported in 2024 was down slightly from 13 reported in 2023.

The ten incidents involving Mechanical Lifting or Lowering (**SPI 2C**) reported by COS Member Operators for 2024 is on par with the nine reported for 2023. When examined as the number of incidents per 200k work hours, 2020 remains the year with the highest frequency of the five years presented in this report.

The last time zero incidents resulting in Loss of Station Keeping Resulting in Drive Off or Drift Off (**SPI 2D**) was reported was 2019. There were one to three incidents reported each year in this category from 2020-2023.

This year is the first since COS began collecting data that members have reported zero Lifeboat, Life Raft, or Rescue Craft Event (**SPI 2E**).

FIGURE 4.3-1: SPI 2 Count and Frequency

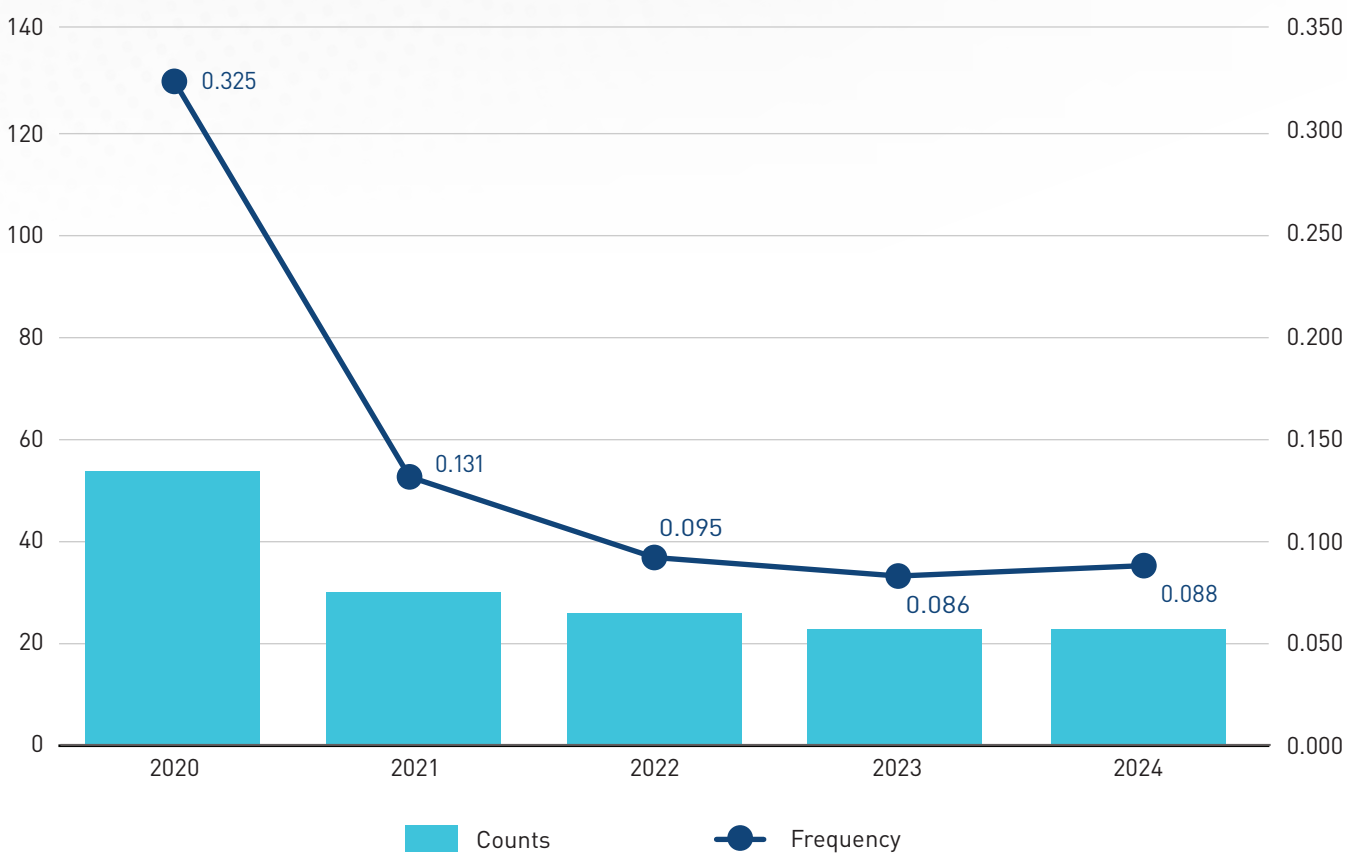


FIGURE 4.3-2: SPI 2 Count per Sub-Group

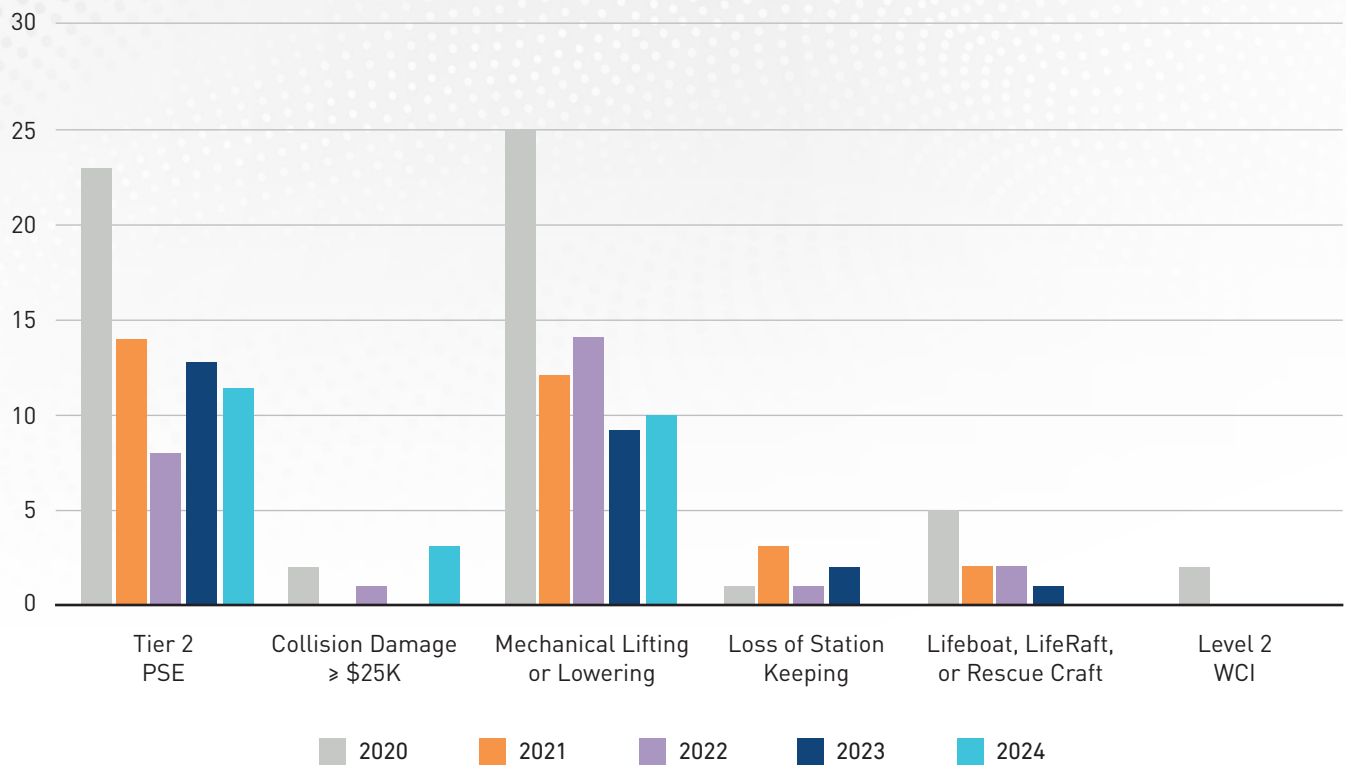
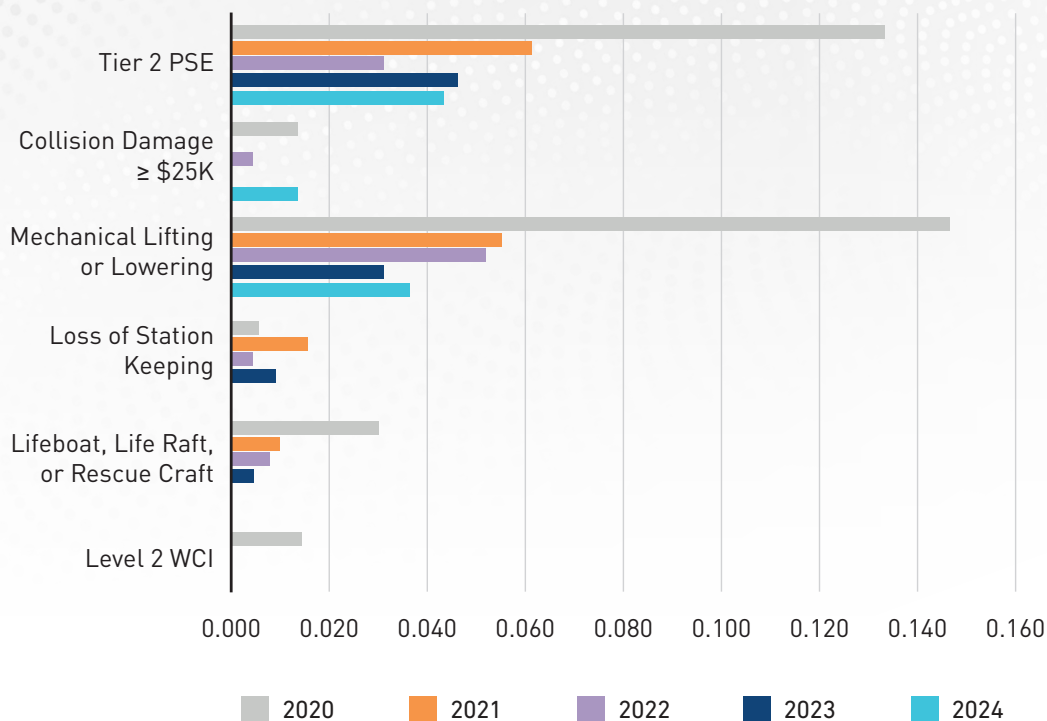


FIGURE 4.3-3: SPI 2 Frequency per Sub-Group



*In addition to the data submitted by COS Member Operators, COS Member Contractors reported one Collision with Damage ≥\$25,000 (**SPI 2B**). This incident is not reflected in the frequency calculations as work hours for non-COS Member Operators are not reported to COS.*

4.3.1 SPI 2C CRANE INCIDENT DATA

Starting in 2021, COS began collecting additional data for offshore Mechanical Lifting Incidents involving cranes that met the severity criteria to be considered an **SPI 2C** incident. This was in response to a challenge to industry from the Bureau of Safety and Environmental Enforcement (BSEE) to “reduce offshore lifting incidents by 50%”.

An **SPI 2C** is an offshore mechanical lifting incident that resulted in one or more of the following consequences:

- One to four recordable injuries in a single incident that occurs during the lift
- Between \$25,000 and \$1 million direct damage to or loss of an asset (including the load itself)
- A loss of primary containment of a material meeting a Tier 2 Process Safety Event threshold quantity
- A dropped load that strikes live process equipment

COS Member Operators reported a total of ten **SPI 2C** events for 2024, seven of which involved a crane. The members reporting these seven **SPI 2C** crane incidents submitted a supplemental form with details of each incident, the type of equipment used, the type of lift being performed at the time of the incident, and any resulting injuries.

The data from these supplemental forms are presented on the following pages. Since 2024 represents only the fourth year this data has been collected, it is too soon to seek trends or identify gaps.



FIGURE 4.3-4: SPI 2C Cranes - Facility Types

	2021	2022	2023	2024
Barge	0	0	1	0
Fixed (bottom supported structure)	4	0	3	3
Floating Platform Structure	3	4	2	2
Self-elevating Marine Vessel	0	1	0	0
Semi-Submersible	0	0	1	1
Ship-hulled Vessel	2	3	1	1
Other	0	0	1	0

FIGURE 4.3-5: SPI 2C Cranes - Crane Types

	2021	2022	2023	2024
Fixed Length Box Boom Crane	0	1	0	2
Folding Boom	1	4	0	0
King Post Mounted Lattice Boom	2	3	3	2
Pedestal Mounted Lattice Boom	1	0	2	3
Swing Bearing Mounted Lattice Boom	5	0	2	0
Telescopic Box Boom Cylinder Luffed Crane	0	0	1	0
Other	0	0	1	0



FIGURE 4.3-6: SPI 2C Cranes - Lift Types

		2021	2022	2023	2024
I	Onboard/Static	4	5	7	4
	Offboard/Dynamic	4	2	1	3
	Subsea	0	0	1	0
	Non-Lifting (Maintenance)	1	1	0	0
II	Routine	5	6	4	3
	Non-Routine	3	1	5	4
	Non-Lifting (Maintenance)	1	1	0	0
III	Material Handling	8	4	9	6
	Pipe Handling	0	2	0	0
	Personnel Handling	0	1	0	1
	Non-Lifting	1	1	0	0

FIGURE 4.3-7: SPI 2C Cranes - Failures of Equipment

	2021			2022			2023			2024		
	YES	NO	N/A	YES	NO	N/A	YES	NO	N/A	YES	NO	N/A
Mechanical (e.g., Hoist and Slewing Brake System)	1	7	1	0	8	0	1	8	0	1	6	0
Structural (e.g., Boom Heel Pins or Boom Jib Section)	0	8	1	0	8	0	2	7	0	1	6	0
Rigging (e.g., Hook Block Assembly or Bridle Assembly)	1	7	1	0	8	0	2	7	0	0	7	0
Below the Hook (e.g., Shackles, Slings, or Personnel Baskets)	1	7	1	0	8	0	0	9	0	0	7	0

FIGURE 4.3-8: SPI 2C Cranes - Injuries

		2021	2022	2023	2024
Number of Incidents with Injuries		4	3	5	3
I	Riggers	3	2	2	1
	Flagger / Signalman	0	0	2	0
	Personnel on Transfer Basket	0	1	0	1
	Rope Access Workers	1	0	0	0
	Other	0	0	1	1
II	Major Injury	3	1	3	3
	Minor Injury	1	2	2	0
	Slight Injury	1	0	0	0
III	Head	1	1	2	0
	Torso (front or back)	1	0	1	2
	Arms / Hands	3	2	1	1
	Legs / Feet	2	0	1	0

NOTE: The total count of injuries may be greater than the number of incidents reported, as one incident can have multiple injuries.



4.4 SPI 3 RESULTS AND TRENDS

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.

Of the 34 total SPI 1 and SPI 2 incidents reported by COS Member Operators for 2024, 19 involved Failure of Equipment as a Contributing Factor (SPI 3), or 56%.

FIGURE 4.4-1: SPI 3 Equipment Failure as a Contributing Factor

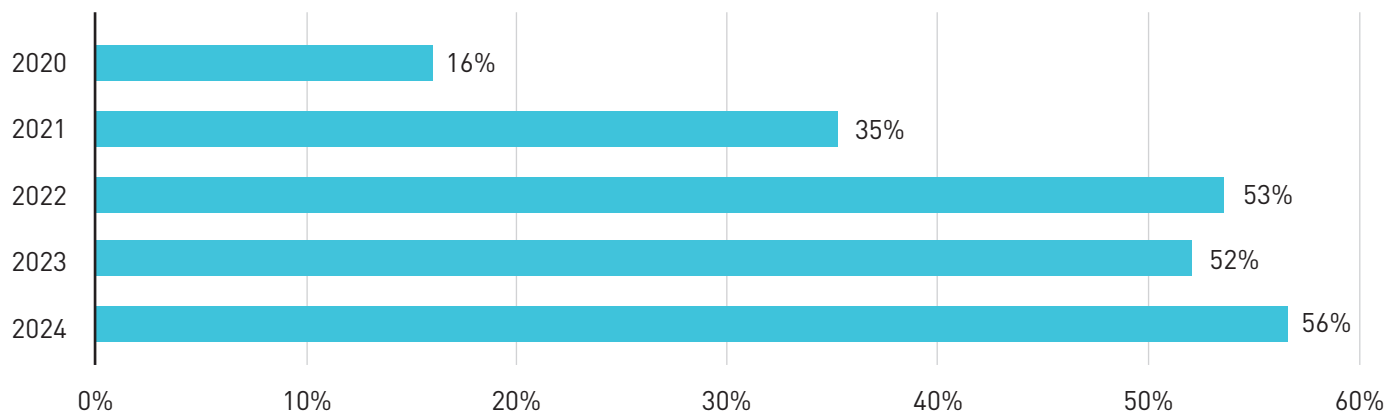




FIGURE 4.4-2: SPI 3 Failure Rates by Equipment Category

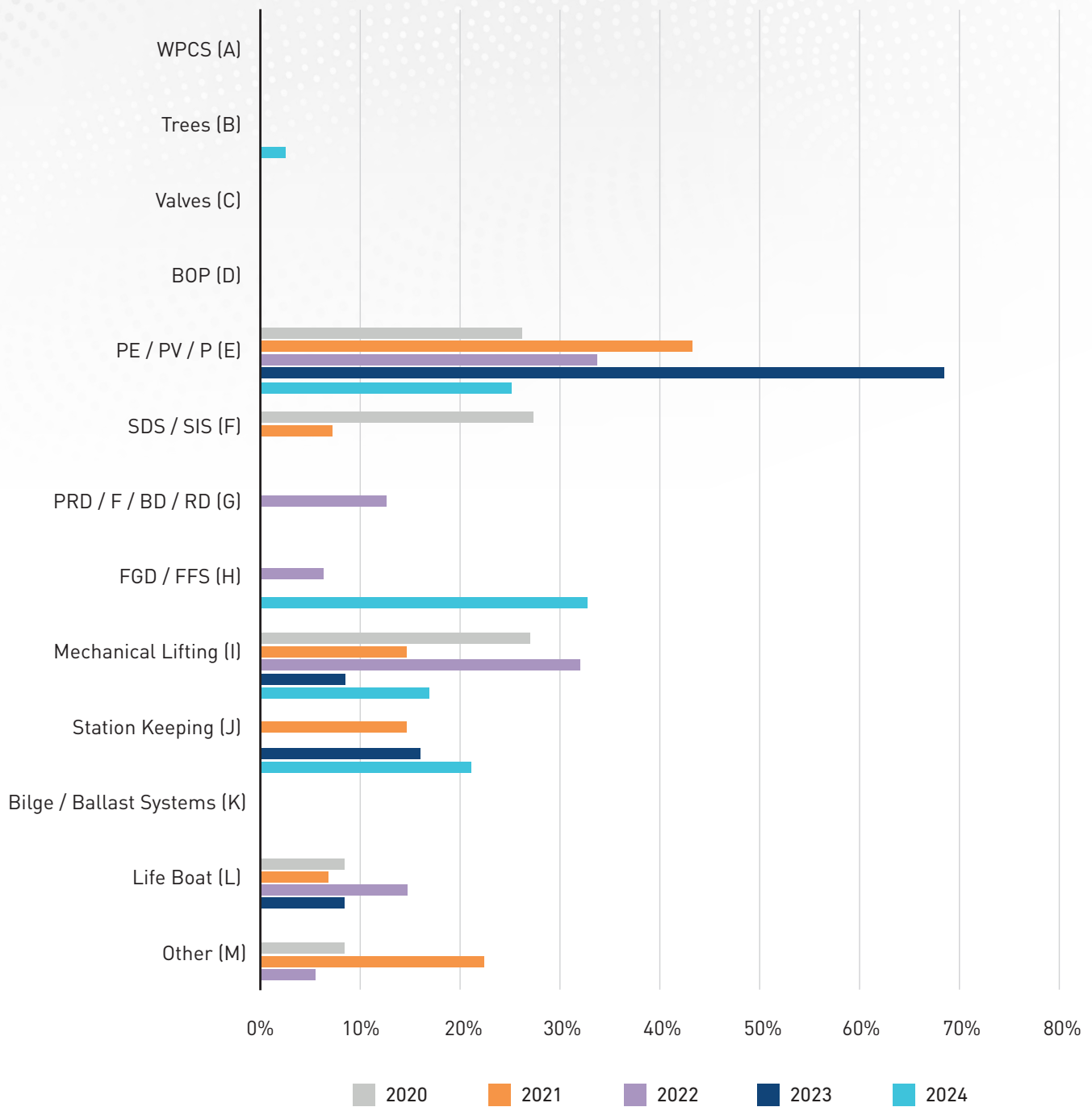


FIGURE 4.4-3: SPI 3 Incident Counts by Equipment Category

EQUIPMENT	2020 FAILURES (COUNT)	2021 FAILURES (COUNT)	2022 FAILURES (COUNT)	2023 FAILURES (COUNT)	2024 FAILURES (COUNT)
A - Well Pressure Containment System (WPCS)	0	0	0	0	0
B - Christmas Trees	0	0	0	0	1
C - Downhole Safety Valves (Valves)	0	0	0	0	0
D - Blowout Preventers and Intervention Systems (BOP)	0	0	0	0	0
E - Process Equipment / Pressure Vessels / Piping (PE / PV / P)	3	6	5	9	5
F - Shutdown Systems / Automated Safety Instrumented Systems (SDS / SIS)	3	1	0	0	0
G - Pressure Relief Devices / Flares / Blowdown / Rupture Disks (PRD / F / B / RD)	0	0	2	0	0
H - Fire / Gas Detection and Fire Fighting Systems (FGD / FFS)	0	0	1	0	6
I - Mechanical Lifting Equipment / Personnel Transport Systems	3	2	5	1	3
J - Station Keeping Systems	0	2	0	2	4
K - Bilge / Ballast Systems	0	0	0	0	0
L - Lifeboat / Life Raft / Rescue Craft / Launch and Recovery Systems	1	1	2	1	0
M - Other	1	3	1	0	0

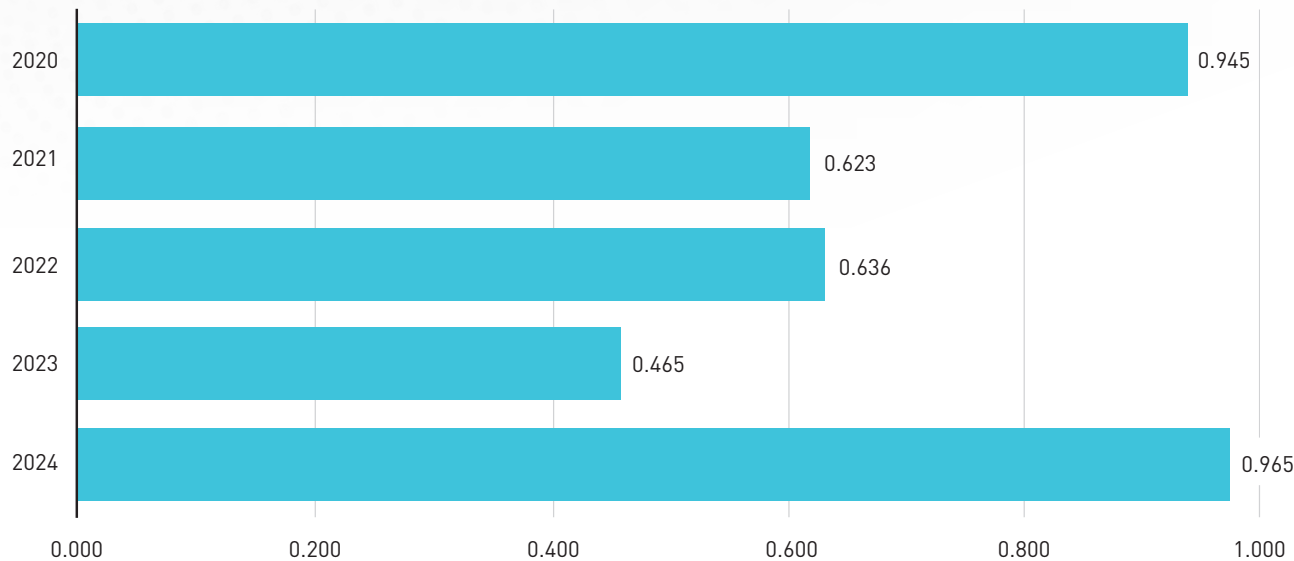
The most frequently cited systems with equipment failure contributing to an **SPI 1** or **SPI 2** incident were Process Equipment/Pressure Vessels/Piping (**SPI 3E**) and Fire/Gas Detection and Fire Fighting Systems (**SPI 3H**). These systems were cited in 11 of the 19 incidents with equipment failure, or 58%.

4.5 SPI 4 RESULTS AND TRENDS

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

The 2024 number of Incidents Involving Cranes or Personnel/Material Handling (SPI 4 – of which SPI 2C is a subset) reported by COS Member Operators was 262, just over double the 129 for the prior year. This is the highest number of lifting incidents reported by COS Member Operators for the five years represented in this report. When considered per 200k work hours, this is on par with the frequency reported in 2020.

FIGURE 4.5-1: SPI 4 Crane or Personnel / Material Handling Frequency



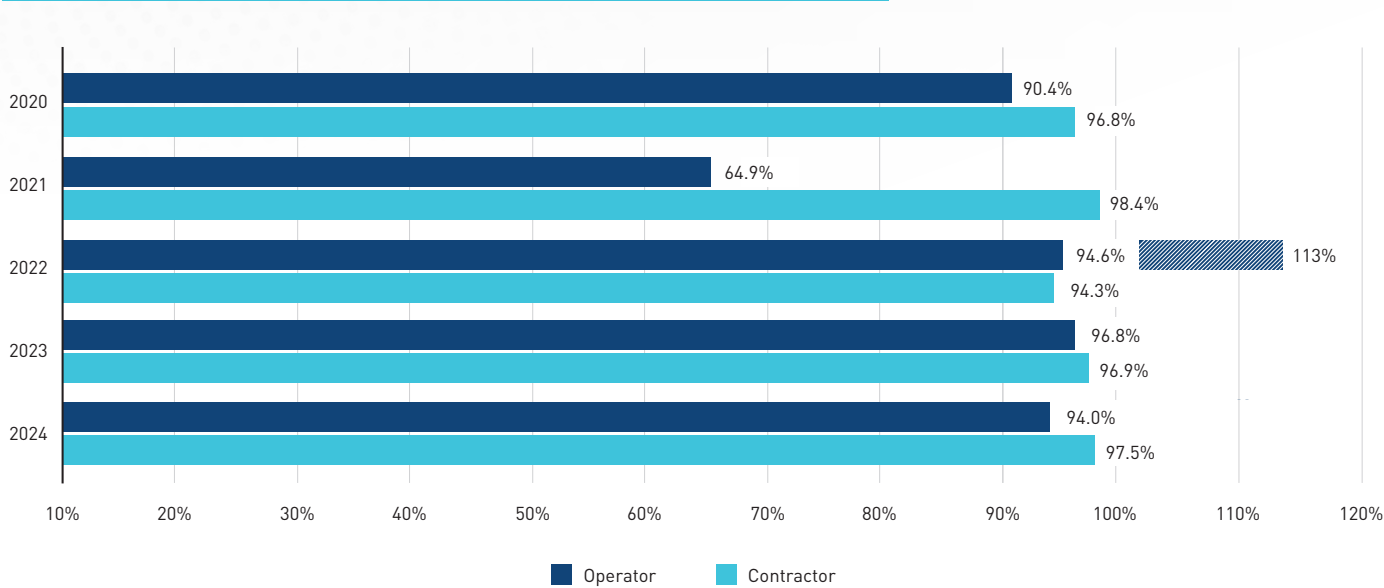
4.6 SPI 5 RESULTS AND TRENDS

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.

For the eight COS Member Operators that submitted SPI 5 data (Percentage of Planned Critical Maintenance Completed on Time), the combined average for 2024 was 94.0%.

For COS Member Contractors that shared **SPI 5** data (4 of 8), the combined average for 2024 was 97.5%.

FIGURE 4.6-1: SPI 5 Planned Critical MIT Completed on Time



NOTE: Each company defines what maintenance, inspection, and testing tasks qualify as "critical". The 2022 percentages above include data from one COS Operator that, due to internal tracking methods, reported completing 243% of their planned critical maintenance. When added to the other COS Member Operators' data, this brings the average for all COS Member Operators for 2022 up to 113%.

4.7 SPI 6-9 RESULTS AND TRENDS

SPI 6 is the number of work-related fatalities

SPI 7 is the frequency of days away from work, restricted work, and job-transfer injuries and illness (DART)

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

SPI 9 is the frequency of oil spills to water \geq 1 barrel

Zero COS Members reported incidents with fatalities (**SPI 6**) for 2024. This is the third year running with zero fatalities reported by COS Members.

The combined Days Away from Work, Restricted Work, and Transfer of Duty Rate (DART) (**SPI 7**) reported for 2024 was 0.27. This rate is similar to those reported for 2021 and 2023.

The combined Recordable Injury and Illness Frequency (RIIF) (**SPI 8**) reported for 2024 was 0.42. This is similar to the rate of 0.44 reported in 2023 and 0.41 reported in 2021.

COS Member Operators reported five Oil Spills to Water \geq One Barrel (**SPI 9**) for 2024, down significantly from a high of 26 reported in 2023, but in keeping with data reported for 2020-2022.

FIGURE 4.7-1: SPI 7 DART and SPI 8 RIIF Rates

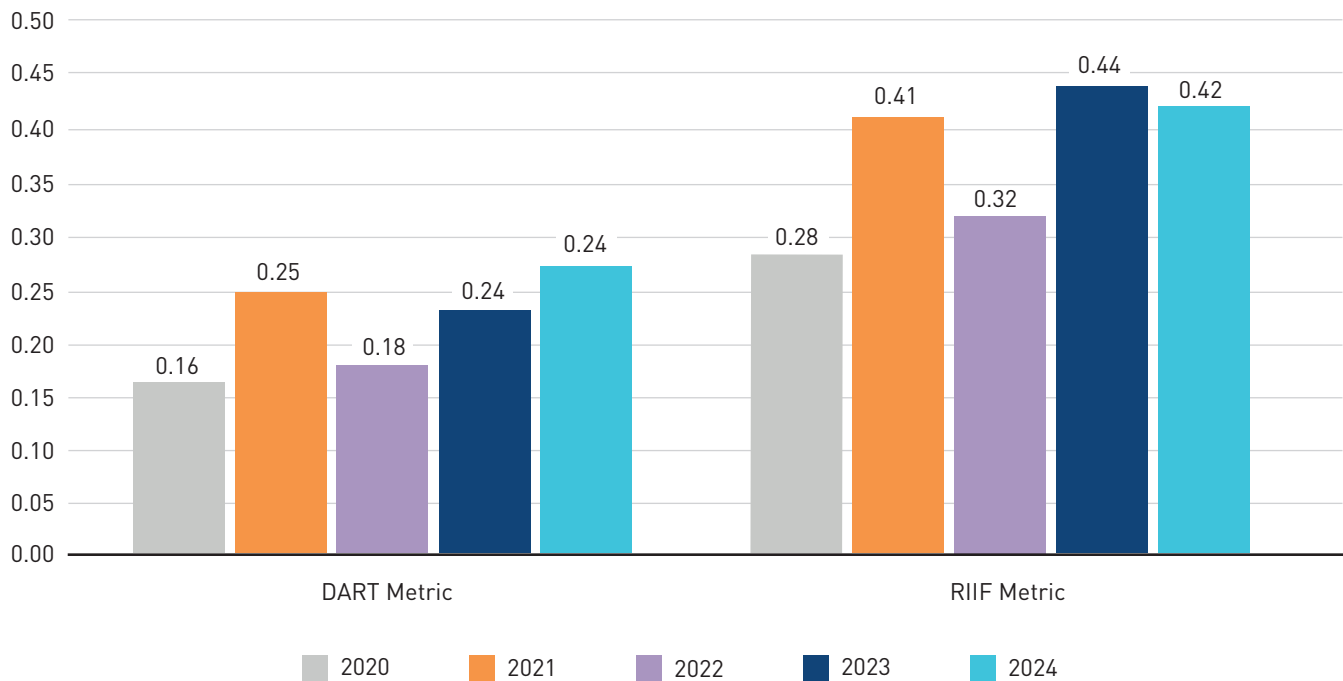
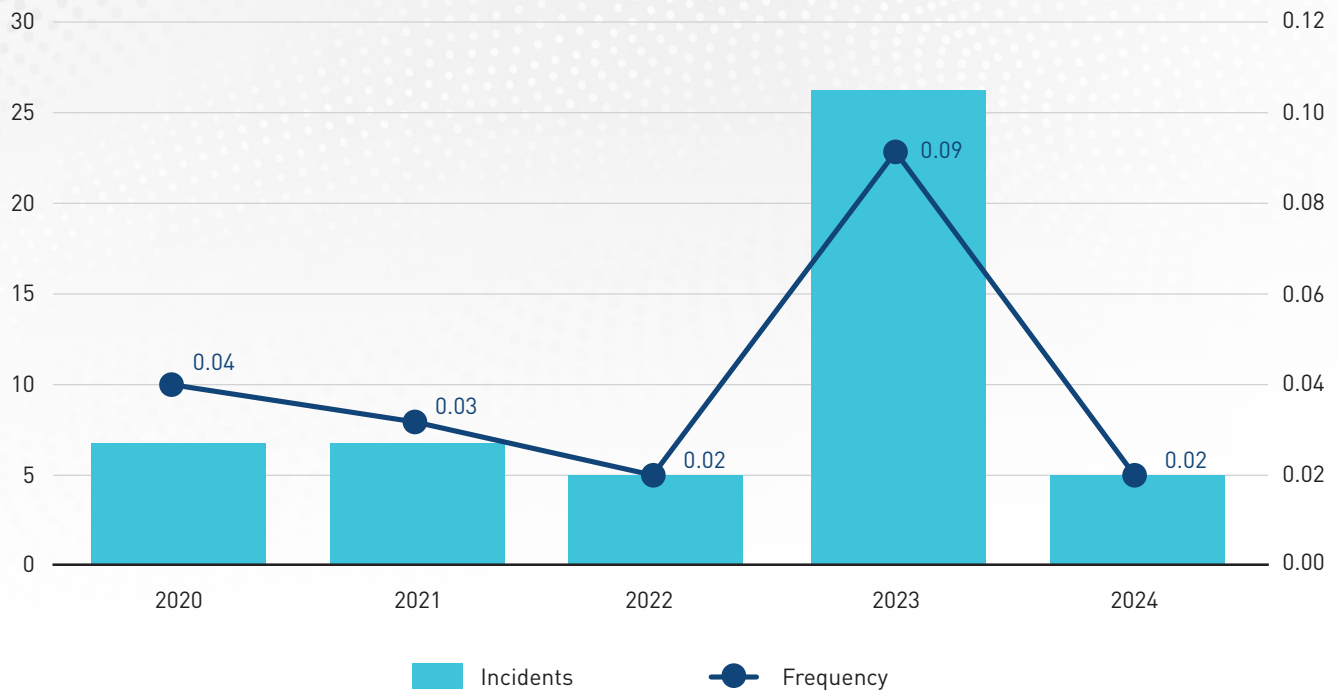


FIGURE 4.7-2: SPI 9 Count of Oil Spills to Water ≥ One Barrel



NOTE: For 2020 vs 2021, although the number of SPI 9 incidents was the same for both years, the increase in the number of work hours for 2021 resulted in a frequency decrease of 27% from 0.041 to 0.030.



4.8 SPI 10 RESULTS

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

Similar to **SPI 5**, data for **SPI 10** is reported by both COS Member Operators and Contractors. The data from COS Member Operators reflect all drops on or within 500m of their lease and may include data from COS Member Contractors. Data reported by COS Member Contractors reflect dropped object incidents that occurred while working on the leases of non-COS Member Operators or outside the 500m zone.

	2020	2021	2022	2023	2024
Number of Dropped Objects Reported	251	213	305	249	298

Beginning with the 2023 reporting year data collection, SPI 10 is reported both as potential and actual results of incidents involving a dropped object. For example, if an object weighing 25 lbs. dropped from a height of 100 ft and there were no injuries as a result of this drop, it would be reported as *potentially fatal* but resulting in *zero actual harm*.

A total of 298 dropped object incidents were reported for 2024. COS Member Operators reported 263, and COS Member Contractors reported 35. Of these 298 Dropped Object incidents, 288 (97%) resulted in zero injuries.

FIGURE 4.8-1: SPI 10 Dropped Object Fatality Potential

		2023	2024
Number of Dropped Objects with Fatality Potential :		72	82
Actual Results:	# with Fatalities	0 (0%)	0 (0%)
	# of Major Injuries	1 (1.4%)	2 (2.4%)
	# of Minor Injuries	3 (4.2%)	0 (0%)
	# of Slight Injuries	0 (0%)	2 (2.4%)
	# with Zero Injuries	68 (94.4%)	78 (95.2%)

FIGURE 4.8-2: SPI 10 Dropped Object Major Injury Potential

		2023	2024
Number of Dropped Objects with Major Injury Potential:		17	23
Actual Results:	# of Major Injuries	1 (5.9%)	0 (0%)
	# of Minor Injuries	0 (0%)	0 (0%)
	# of Slight Injuries	0 (0%)	1 (4.3%)
	# with Zero Injuries	16 (94.1%)	22 (95.7%)

FIGURE 4.8-3: SPI 10 Dropped Object Minor Injury Potential

		2023	2024
Number of Dropped Objects with Minor Injury Potential:		71	73
Actual Results:	# of Minor Injuries	5 (7.0%)	0 (0%)
	# of Slight Injuries	1 (1.4%)	1 (1.4%)
	# with Zero Injuries	65 (91.6%)	72 (98.6%)

FIGURE 4.8-4: SPI 10 Dropped Object Slight Injury Potential

		2023	2024
Number of Dropped Objects with Slight Injury Potential:		89	120
Actual Results:	# of Slight Injuries	2 (2.2%)	4 (3.3%)
	# with Zero Injuries	87 (97.8%)	116 (96.7%)

4.9 NORMALIZATION FACTOR (WORK HOURS)

The data reported for 2024 represents more than 54.3 million Operator and Contractor work hours on the U.S. OCS. The years 2022-2024 have the three highest reported numbers of work hours since 2015. The 54.3 million work hours reported for 2024 represent 78% of the total natural gas and oil activity on the U.S. OCS for the year.

Work hours for both COS Member Operators and Contractors are reported only by COS Member Operators for work occurring within 500m of their facilities.

FIGURE 4.9-1: Work Hours (Millions) by Operation Type

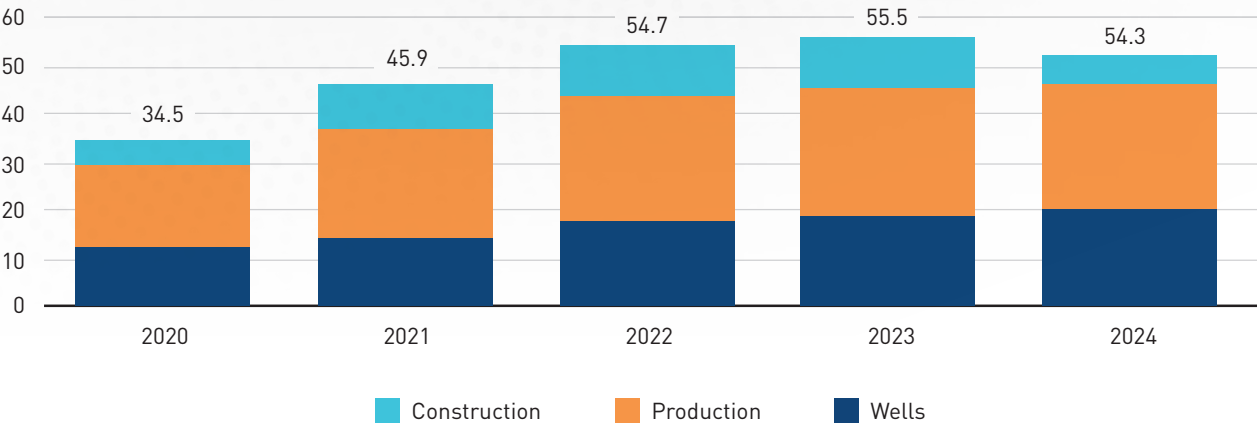
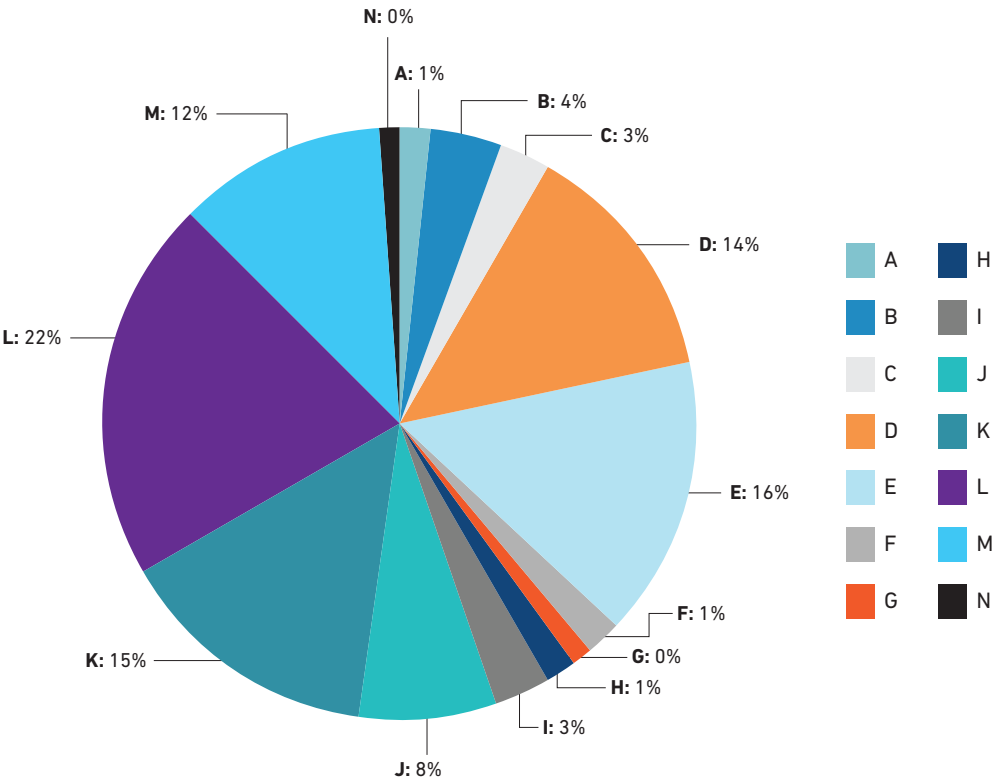


FIGURE 4.9-2: 2024 Work Hours per COS Member Operator





LEARNING FROM INCIDENTS AND HIGH-VALUE LEARNING EVENTS

5.1 INTRODUCTION

The Learning from Incidents and Events (LFI) Program was established to provide a means for COS members to share and learn from incidents and High Value Learning Events (HVLE). Reporting is voluntary, and data confidentiality is maintained through a process administered by the API Statistics Department before submittal to COS.

While COS maintains a complete record of data collected since 2013, the data reported in this APR represents the five most recent years. The LFI Section of this report provides an analysis and comparison of the SPI 1, SPI 2, and HVLE LFI data submitted for reporting years 2020-2024. It includes learnings from the 2024 reporting year data that can be shared within companies to potentially prevent recurrence of similar or more severe incidents.

The data are comprised of the reported learnings from SPI 1 and SPI 2 incidents, as well as those from HVLE. A summary of the definitions for SPI 1, SPI 2, and HVLE is presented below.

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:

- A. Tier 2 Process Safety Event
- B. Collision resulting in property or equipment damage ≥ \$25,000
- C. Mechanical Lifting or Lowering Incident resulting in one of the following:
 - One - four recordable injuries
 - \$25,000 - \$1 million direct damage
 - Tier 2 Process Safety Event
 - Dropped load that strikes live process equipment

LFI data submittals include four key fields:

- **Description of the Incident or HVLE:** A brief explanation of activities, conditions, and acts leading up to, during, and after the incident or HVLE, including sufficient details so that the situation and operations underway at the time of the incident can be understood.
- **Corrective Actions to Repair / Mitigate Reported Incident:** Actions taken at the time of the incident to mitigate the consequences and secure the equipment and facility.
- **Lessons Learned / Actions to Mitigate Recurrence:** Actions taken as a result of this incident to prevent it from happening again.
- **Areas for Improvement (AFI):** A selection of pre-determined general categories and sub-categories. Submitters had the option to add comments to provide further clarity and content.

Within the AFI fields, submitters choose from three general categories and 15 sub-categories. Multiple AFI can be selected for a single incident or event. The three general categories are:

- **Physical Facility, Equipment, and Process:** Enhancements in the quality of the physical process and equipment design, layout, material specification, fabrication, or construction were highlighted for improvement.
- **Administrative Processes:** Enhancements in the quality, scope, or structure of administrative processes for managing various aspects of work execution were highlighted for improvement.
- **People:** Enhancements to the personnel actions linked to the execution of work tasks were highlighted for improvement.

5.2 SUMMARY

The effectiveness of this program is dependent on active participation by COS members to facilitate maximum learning opportunities through:

- Sharing quality information from incidents and HVLE that meet the reporting criteria; and
- Reviewing submitted incidents and HVLE, along with other data in this report, to identify and implement applicable learnings appropriate to different levels and functions within their organizations.

The LFI data presented in this report includes information from 46 LFI submittals received for the 2024 reporting year, with 30 of the reported incidents and HVLE occurring on the U.S. OCS and 16 occurring at international or onshore locations.

Due to the voluntary nature of the LFI program, this is not an all-inclusive list of incidents or HVLE that have occurred in any given year. COS members use their discretion in selecting which incidents or HVLE to share via this program. Given this, while the data below is displayed as a comparison of data submitted for each of the last five years, the percentage increase or decrease from year to year is not necessarily indicative of a trend.



FIGURE 5.2-1: Count of U.S. OCS LFI Reports by Incident or Event Category

YEAR	2020	2021	2022	2023	2024
COS SPI 1	7	6	5	1	1
COS SPI 2	6	16	20	9	6
HVLE	11	21	29	26	23
TOTAL	24	43	54	36	30

FIGURE 5.2-2: Count of LFI Reports by Location

LOCATION	2020	2021	2022	2023	2024
U.S. OCS	24	43	54	36	30
U.S. Onshore / State Waters	3	0	4	6	9
International	5	8	6	5	7
TOTAL	32	51	64	47	46

A review of the 2024 reporting year LFI data (U.S. OCS only) identified the top reported activity types as:

- Mechanical Lifting – (37%)
- Production Operations – Normal, Routine (27%)
- Drilling Operations – Normal, Routine (13%)
- Maintenance, Inspection and Testing (10%)

Additional Activity Types reported include Material Transfer or Displacement and Marine Vessel/Station Keeping.

In addition to the topics mentioned above, the top AFI identified for U.S.OCS LFI Reports* for 2024 were:

- Quality of Task Planning and Preparation (61%)
- Quality of Task Execution (57%)
- Individual or Group Decision Making (39%)
- Personnel Skills and Knowledge (39%)
- Operating Procedures or Safe Work Practices (26%)
- Quality of Hazard Mitigation (26%)
- Design or Layout of Facility or Individual Piece of Equipment (26%)

**Due to a one-time data submittal anomaly, the data for AFI in this section represents 23 of the 30 U.S. OCS LFI reports submitted*



A change to the data collection process for AFI was implemented for 2024 data. This new process allows COS members to provide more specific information on why a particular AFI was selected. For example, if a COS member selects 'Operating Procedures or Safe Work Practices,' they are presented with a 'select all that apply' list of reasons to choose from:

- No operating procedure(s) for this activity
- Operating procedures were not available or accessible
- Operating procedures were available, but out-of-date / inaccurate
- Operating procedures were available and up-to-date, but not followed

This change in the data collection process has resulted in greater clarity and more accurate mapping of responses to the 15 AFI. That greater clarity is reflected in the shift of the top AFI reported from previous years. This is the first year for collecting AFI data via this process; therefore, readers of this report are encouraged not to read too much into the shift. COS will monitor this realignment for the next few years before identifying any trends or reaching conclusions.

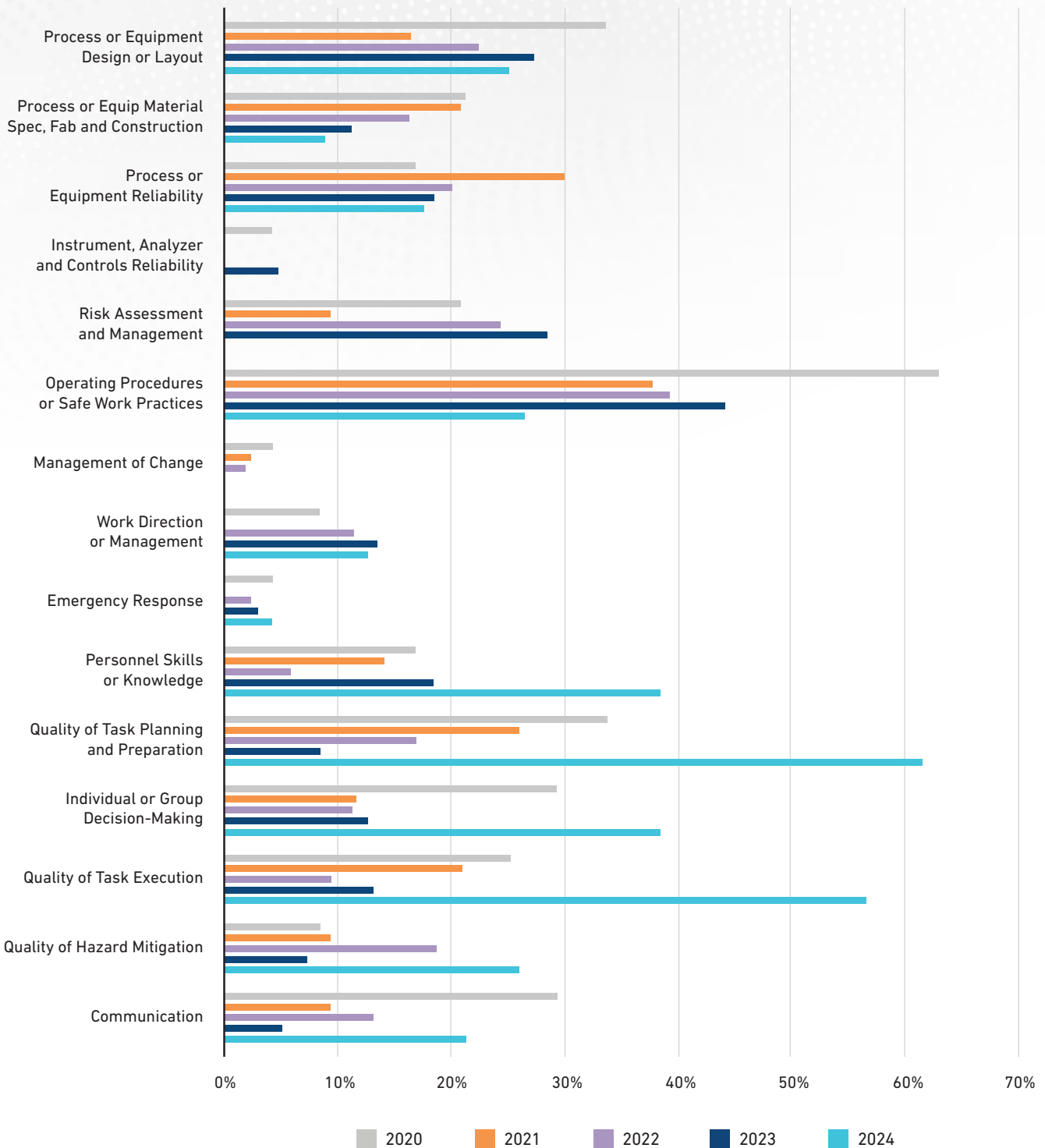
Additional review of the 2024 data identified the following as common threads through many of the 30 U.S. OCS and 16 International or Onshore LFI submittals, plus the additional seven **SPI 2C** Crane Incident Reports:

- Mechanical Lifting - 22 of 53 (42%)
- Dropped Objects - 17 of 53 (32%)
- Injuries - 15 of 53 (28%)

FIGURE 5.2-3: LFI Areas for Improvement Distribution (U.S. OCS Only)

AREA FOR IMPROVEMENT	2020	2021	2022	2023	2024	5-YR AVG
Operating Procedures or Safe Work Practices	62.5%	37.2%	38.9%	44.4%	26.1%	41.8%
Quality of Task Planning and Preparation	33.3%	25.6%	16.7%	8.3%	60.9%	29.0%
Facility or Equipment Design or Layout	33.3%	16.3%	22.2%	27.8%	26.1%	25.1%
Quality of Task Execution	25.0%	20.9%	9.3%	11.1%	56.5%	24.6%
Individual or Group Decision-Making	29.2%	11.6%	11.1%	16.7%	39.1%	21.5%
Facility or Equipment Reliability	16.7%	30.2%	20.4%	19.4%	17.4%	20.8%
Personnel Skills or Knowledge	16.7%	14.0%	5.6%	19.4%	39.1%	19.0%
Risk Assessment and Management Process	20.8%	9.3%	24.1%	27.8%	0.0%	16.4%
Communication	29.2%	9.3%	13.0%	5.6%	21.7%	15.7%
Facility or Equipment Material Specification, Fabrication, and Construction	20.8%	16.3%	14.8%	11.1%	8.7%	14.3%
Quality of Hazard Mitigation	8.3%	9.3%	18.5%	2.8%	26.1%	13.0%
Work Direction or Management Process	8.3%	0.0%	11.1%	13.9%	13.0%	9.3%
Emergency Response Process	4.2%	0.0%	1.9%	2.8%	4.3%	2.6%
Instrument, Analyzer, and Controls Reliability	4.2%	0.0%	0.0%	5.6%	0.0%	1.9%
Management of Change Process	4.2%	2.3%	1.9%	0.0%	0.0%	1.7%

FIGURE 5.2-4: Areas for Improvement Distribution (U.S. OCS Only)



NOTE: LFI submittals typically identify more than one AFI for any given incident. The graph above illustrates the percent of times an AFI was identified relative to the number of LFI forms submitted for U.S. OCS. Because the number of AFI exceeds the number of LFI forms, the sum of the percentages will be $\geq 100\%$.

5.3 SEMS ELEMENTS

A primary focus of COS is on Safety and Environmental Management Systems (SEMS), based on API RP 75, *Recommended Practice for Development of a Safety and Environmental Management Program for Offshore Operations and Facilities*, 3rd Edition, which is incorporated into federal regulations administered under BSEE jurisdiction.

It was with this focus in mind that, starting with 2021 Reporting Year data, COS added a new question to the LFI forms that members submit, "Choose all that apply - SEMS elements, per API RP 75 4th ed - related to this incident." This same question was also included on the SPI 2C-Crane incident supplemental data form [Section 4.3.1].

As mentioned in Section 5.2, COS members use discretion in selecting incidents to report to the LFI program. Therefore, while this data is interesting and potentially useful, it should not be viewed as all-inclusive or necessarily indicative of a trend.

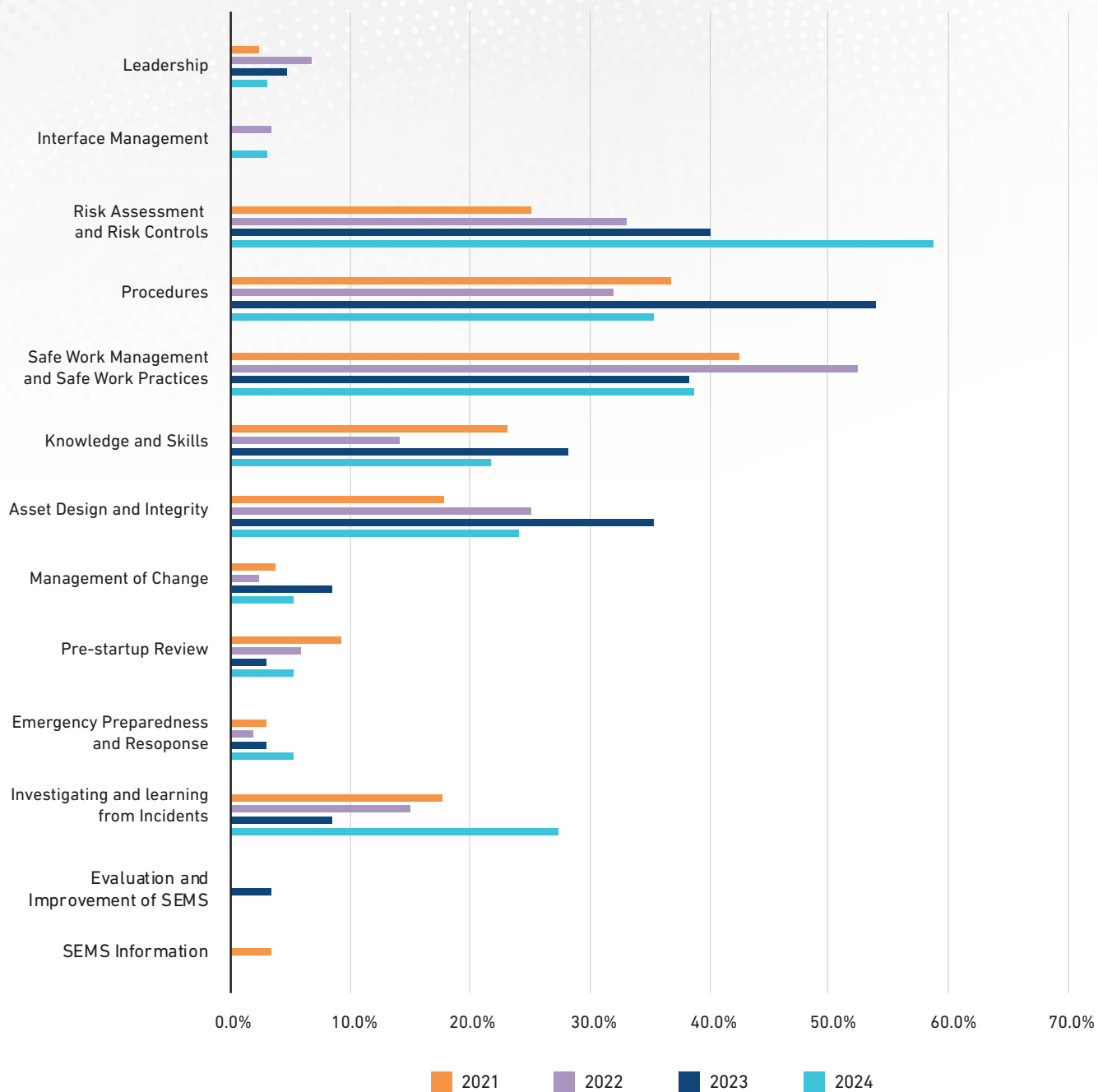
Below is the breakdown of SEMS elements selected for the 30 U.S. OCS LFI reports, plus the seven SPI 2C-Crane incident reports:

FIGURE 5.3-1: 2021-2024 SEMS Elements - U.S. OCS LFI Reports and SPI 2C Supplemental Reports

SEMS ELEMENTS	2021	2022	2023	2024	4-YR AVG
Leadership	1.9%	6.5%	4.4%	2.7%	3.9%
Interface Management	0.0%	3.2%	0.0%	2.7%	1.5%
Risk Assessment and Risk Controls	25.0%	33.9%	40.0%	59.5%	39.6%
Procedures	36.5%	32.3%	53.3%	35.1%	39.3%
Safe Work Management and Safe Work Practices	42.3%	51.6%	37.8%	37.8%	42.4%
Knowledge and Skills	23.1%	14.5%	28.9%	21.6%	22.0%
Asset Design and Integrity	19.2%	25.8%	35.6%	24.3%	26.2%
Management of Change	3.8%	3.2%	8.9%	5.4%	5.3%
Pre-Startup Review	7.7%	6.5%	2.2%	5.4%	5.5%
Emergency Response and Preparedness	1.9%	1.6%	2.2%	5.4%	2.8%
Investigating and Learning from Incidents	17.3%	16.1%	6.7%	27.0%	16.8%
Evaluation and Improvement of SEMS	0.0%	0.0%	2.2%	0.0%	0.6%
SEMS Information	1.9%	0.0%	0.0%	0.0%	0.5%

NOTE: The graph above illustrates the percentage of times a SEMS element was identified relative to the number of LFI and SPI 2C-Crane incident reports submitted for the U.S. OCS. Because the number of SEMS elements selected may exceed the number of LFI and SPI 2C incident reports, the sum of the percentages will likely be $\geq 100\%$.

FIGURE 5.3-2: 2021-2024 Selected SEMS Elements



5.4 LEARNINGS FROM LFI REPORTS AND CRANE INCIDENT REPORTS

The charts and graphs earlier in this section reflected LFI data for U.S. OCS incidents and HVLE only. In addition to these U.S. OCS LFI submittals, the following sections may include learnings from International or Onshore/U.S. State Waters incidents and HVLE, as well as the seven SPI 2C-Crane incident submittals (Section 4.3.1) – a total of 53 reported incidents and events. Selected learnings from these submittals are excerpted below.

As noted in Section 5.2, Mechanical Lifting, Dropped Objects, and Injuries were cited in many of the incidents and events reported for 2024.

Note that throughout this section, the incident descriptions and lessons learned are presented ‘as written’ in the LFI and SPI 2C-Crane incident reports submitted to COS.



5.4.1 DROPPED OBJECTS

Seventeen of the LFI and Crane incident submittals (32%) included a dropped object as either a cause or a consequence of an incident.

The following incident descriptions and learnings are excerpted examples of learnings from Dropped Objects:

PIPE LOST OVERBOARD WHEN BEAM CLAMPS SLIP

Incident Description: Construction crew had rigged up on a pipe support with air tuggers, straps, and beam clamps. When they were trying to get the pipe support into place by using the air tugger, once the weight of the pipe support was completely on the beam clamps the beam clamps slipped off causing the load to be dropped overboard. The pipe support did not hit/strike anything when it was lost overboard.

The job was shut down until a safer and more efficient way to get the pipe supports in place is identified. Upon review of the JSA there were no steps for moving or installation of pipe supports.

The Company tugger checklist states... for Tie-Down/Welding: WELDING is the preferred choice for securing tuggers. Any other methods (chain-falls, come-a-longs, cable, etc.) must be assessed and accepted by the Company's Construction Foreman and Engineer.

- **Corrective Actions to Repair / Mitigate Reported Incidents:**

- Construction crew updated their method of lifting remaining supports to include cutting a hole in the vertical I-beam to install a shackle for attaching rigging.
- Moving and/or installing pipe supports is now required on a JSA when that work is done as opposed to being generically referenced along with other construction activities.
- The crew did not follow the Company tugger checklist requirement relative to "other methods" for securing tuggers that it is assessed and accepted by the Company's Construction Foreman and Engineer.

- **Lessons Learned / Actions to Mitigate Recurrence:**

- Poor rigging choices were made in the planning process before this work started. The choker rigging on a vertical I-beam was left open ended, relying on the beam clamp as a stopper.
- A strap could have been choked on the horizontal beam and half-hitched to vertical for a stable and secure lift.
- A hole should have been cut in the vertical beam for shackle attachment.
- A pad eye should have been installed on the vertical beams during fabrication for safer rigging attachment.
- The rigging up of the tugger and associated equipment should also have been assessed and accepted by the Company's Construction Foreman and Engineer.

BLOWN FUSE LEADS TO 25,000 LB DROPPED RISER

Incident Description: The Main Driller was in the process of picking up a riser joint from the forward riser skate catwalk. The hydraulic Riser Running Tool (RRT) had lifted the front end of the riser approximately 25 feet above the rig floor when the tail end of the riser unseated from the bucket. Simultaneously, the RRT sheared off, causing the front end of the riser weighing 25,000 lbs. to drop. The joint came to rest on the forward riser skate catwalk, resulting in damage to both saddles on the arms of the riser skate. No injuries resulted as all personnel were outside of the "red zone" when the event occurred.

- **Corrective Actions to Repair / Mitigate Reported Incidents:**

- An immediate all stop was called by the daytime Tool Pusher. Notifications were promptly made to appropriate parties. A Safety Stand down was conducted in the Driller's shack, involving all personnel on the rig floor.

• **Lessons Learned / Actions to Mitigate Recurrence:**

Lessons Learned:

- After the incident, a loose wire and a blown fuse was found on the riser cart shuttle brake solenoid that caused blown fuse.
- It is a common occurrence for riser to “jump” out of skate shuttle cart. However, it is not common for Hydraulic Riser Running Tool (HRRT) to shear following such an incident. According to the manufacturer, the HRRT is not designed to withstand the stresses placed on it after the riser “jumps” out of the skate shuttle.
- Annual preventative maintenance was completed on the skate shuttle cart. However, it does not specify checking the wire screw terminals which can cause the brake to not release and cause the riser to “jump” out of the cart.
- Load Path Job Template is not detailed enough on how to inspect all load path components of the Hydraulic Riser Running Tool.
- Drill crew abided by the Standard Operating Procedure which implemented restricted zones around the lift area.

Actions:

- Create Rig Move for the electric and hydraulic components for Riser Cart Shuttle Brake system
- Create a request for engineering assistance for implementing upgrades to riser cart shuttle
- Send Hydraulic Riser Running Tool (HRRT) to third party metallurgic lab for destructive testing to help determine cause of failure.
- Create a request for engineering assistance to work with manufacturer of hydraulic riser running tool related to its material design.
- Revise Job Task to include specific items to inspect on riser cart shuttle
- Update Job Task to include checking the tightness of the screw terminals on the riser shuttle cart.

SHEARED PIN CONTRIBUTES TO 50 LB VAYLE DROPPING 16 FT

Incident Description: During wireline operations while removing the Wireline Retrievable Control Subsurface Safety Valve (WLRSCSSV)...from the tool string that was lowered from the lubricator through the barricaded open hatch above the Well, the Company representative stepped in to assist the wireline crew and was holding the WLRSCSSV by hand while a wireline worker went to get a pipe wrench. The valve slipped from his hands and dropped down when it was released by the pulling tool, striking the well manual wing valve below. The perimeter around the Well was flagged off while the wireline work was taking place. No personnel were in the well bay at the time of the event.

The WLRSCSSV was retrieved from the well bay and inspected. The Company representative function tested the WLRSCSSV twice and prepared to dress the metal that was rolled on the bottom of the WLRSCSSV which was the area damaged by striking the wing valve. He then contacted the Project Engineer to explain the event. The Company representative then proceeded to dress the rolled metal. He then flushed the WLRSCSSV, and function tested it 3 more times.

After further investigation it was found that the pin in the pulling tool was sheared and as it was being manipulated the WLRSCSSV suddenly released from the pulling tool slipping through the hands of the Consultant. The WLRSCSSV weighs 50 lbs. and was dropped 16 ft.

• **Corrective Actions to Repair / Mitigate Reported Incidents:**

- The Company representative contacted the project engineer to discuss the event and start the investigation.
- Corrective action is to require secondary retention in addition to personnel holding the WLRSCSSV in the future in case the shearing pin is sheared.
- The WLRSCSSV was tested a total of 5 times and passed each test.

- **Lessons Learned / Actions to Mitigate Recurrence:**

- The hazard associated with the WLRCSV falling if the pin shears was not taken into consideration during pre-job planning.
- The Company representative is not a part of the wireline crew and was unaware that the pin had sheared and that the WLRCSV was holding in place from friction when it was released while he was holding it.

5.4.2 MECHANICAL LIFTING

Twenty-two of the LFI and Crane incident submittals (42%) were related to Mechanical Lifting activities.

The following incident descriptions and learnings are excerpted examples of learnings for Mechanical Lifting:

BENT EQUIPMENT FOUND TWO DAYS AFTER PERSONNEL FAILED TO REPORT LOUD NOISE FROM CRANE BOOM

Incident Description: A contract crane operator operated crane #2...to backload flow back equipment from the platform to a support vessel.

The operation involved approximately 20 lifts, beginning with the heaviest lift, approximately 29,000 pounds, using the load line, followed by subsequent lifts utilizing the auxiliary line. The remaining loads were positioned near the crane's base, necessitating minimum radius lifts.

During the series of lifts, rigging personnel reported hearing a single loud noise coming from the crane's boom. Personnel did not report hearing a noise coming from the boom.

[Two days later], during an annual inspection, a contract crane mechanic observed that one boom cord and two boom lacings on the left side of crane #2 were bent. The mechanic promptly reported this finding to the Production Team Lead (PTL), prompting crane # 2 to be immediately taken out of service pending an engineering assessment.

- **Corrective Actions to Repair / Mitigate Reported Incidents:**

- Upon detection of boom damage, crane # 2 was immediately taken out of service pending assessment.
- A third crane mechanic and facility personnel conducted the crane boom damage assessment and provided it to third-party engineering for review.

- **Lessons Learned / Actions to Mitigate Recurrence:**

- Ensure training provided to third-party crane operators is effective in teaching them to recognize high-angle work and its avoidance, awareness of boom and load positioning and movement, and listening/watching for machine interface alerts and alarms.
- Contractor crane provider will revise their offshore crane operator course...to incorporate a section on operating close to the maximum allowable radius and how (momentum, flex, and/or environmental factors) can cause the boom to travel further than normal at the high angle kick out mark.
- The audible alarm setting will be changed from 77 degrees to 75 degrees to ensure early audible/visual warning of boom high angle positioning.
- Crane operator assessment will be performed before operating a crane.

DISTRACTED WORKER PUTS HIMSELF IN LINE OF FIRE

Incident Description: While unloading a 16" casing from a supply vessel to the pipe deck, the load swung and contacted a worker reviewing paperwork near a fixed sub-rack basket, resulting in an injury.

- **Corrective Actions to Repair / Mitigate Reported Incidents:**

- Work stopped. The control room was notified, and the rescue team and medic immediately responded to the injured worker.

- **Lessons Learned / Actions to Mitigate Recurrence:**

- Routine blind lift JSA was in use with general Permit-to-Work and Start-Work-Check. JSA for (un)bounding tubular was not in use.
- The east side crane (ESC) was out of service, so the crane operator (ESC) was part of the job as a rigger. Because the ESC crane was down, 4 additional workers were on location.
- Crew utilized taglines, and push pulls sticks were used to assist the load.
- Injured personnel (IP) was utilizing a sub basket, within 8 feet of the load, as a workstation to tally the casing. The workstation placement was not adjusted as the impact zone moved closer to the sub-rack.
- IP turned away (turned back to the load) from the load before being contacted.
- Identify and align the work team's roles and responsibilities before a high-risk task takes place. Any specific permitted work identified...such as Lifting and rigging, Isolation of Hazardous Energy, Work at Height, etc., should be planned to prevent a serious injury or Fatality.

WORK CONTINUED AFTER JOB SCOPE CHANGE, LEADING TO DAMAGED CRANE

Incident Description: At approximately 09:30, a contract construction crew was on location to replace the 3-inch deck timbers with 2-inch grating. The crew needed to raise the elevation of the beams by approximately one inch to line up the corresponding surface for grating installation. The original scope of work was to utilize the crane to stabilize the beam and use two come-alongs to winch up the I-beam. This effort was unsuccessful.

The scope of work changed, and the crew decided to use the crane's main line to pull tension on the I-beam, utilizing two 4" 4-ply straps in a basket configuration to raise the elevation. During this process, the main line was overloaded, and damage was sustained to the heel of the boom section. The platform crane has been placed out of service, and the incident is under investigation.

- **Corrective Actions to Repair / Mitigate Reported Incidents:**

- Immediately after the boom damage was noticed, SWA was initiated.
- An initial assessment of the crane boom's damage was done by upper facility management.
- The crane was laid safely down in its boom rest. Crane was taken out of service

- **Lessons Learned / Actions to Mitigate Recurrence:**

- Onsite supervision shall ensure and acknowledge the contractor's understanding of crane policy before starting job-related tasks.
- [Operator] shall have a classified "A" Crane Operator or Qualified Crane Assessor evaluate the 3rd Party crane operator before being allowed to operate the crane on location.
- Onsite supervision shall ensure that if the job scope changes, a work pause will be initiated, and a thorough hazard analysis shall be performed with a JSA revision, as required. (Communicate Lesson Learned Crane Incident - Bent Boom Heel)
- Job scope changes will be communicated to project office management and approved by them before implementation.
- Send the crane operator back to training to improve his knowledge of potentially heavy lift operations.
- [Operator] will only utilize crane operators who are not influenced by (not working for) the construction company performing the work.



5.4.3 INJURIES

Fifteen of the LFI and Crane incident submittals (28%) were for incidents that occurred during Decommissioning Activities.

The following incident descriptions and learnings are excerpted examples of learnings for Decommissioning:

DROPPED WIRELINE TOOL RESULTS IN BROKEN FINGER AND STITCHES

Incident Description: The *[Injured Party]* (IP) and *[Toolpusher]* (TP) were changing the wireline tool when the TP the asked the winch to 'hoist up' creating a 4" gap between the upper C-plate and assembly. The IP grabbed the C-plate to assist as the TP released the tool causing the IP's hand to be caught breaking a finger and requiring stitches.

- **Corrective Actions to Repair / Mitigate Reported Incidents:**

- IP left the rig floor and reported to the medic. The floor was secured and a safety stand-down meeting was held to discuss the incident as well as refocusing on line of fire & hand protection.

- **Lessons Learned / Actions to Mitigate Recurrence:**

- When creating a team for a task it is paramount that the right individuals are selected. In this case, the TP had never completed this operation on a vessel and was uncomfortable with the assignment.
- If there are ever questions about the operations employees are required to stop work. Upon learning the TP had not completed this task before the IP should have stopped work.
- Transition to work meetings are critical to ensuring the success of an operation and supervisors are encouraged to hold active meetings communicating the steps and risks associated with the task.

CREW MEMBER FALLS THROUGH OPEN HATCH (HiPo)

Incident Description: At approximately *[Time and Date]*, the Injured Person (IP) entered a control area to monitor a subsea acoustic positioning system. After accessing and closing the compartment door, the IP approached the system panel and inadvertently stepped into an open hatch, partially falling in. The IP immediately called for assistance, and a nearby Crew Member helped the IP back to a safe position. The open hatch led to a vertical ladder extending ~8 meters (~26 feet) below. Fortunately, the IP did not fall entirely into the hatch. The IP received first aid treatment for minor contusions and returned to duty the following day. No serious injuries were reported.

- **Corrective Actions to Repair / Mitigate Reported Incidents:**

- IP treated by Medic - Informed Crew about the importance of paying attention to their path while moving around the vessel.
- Emphasized to Crew that the workplace must be kept safe after completing tasks.
- Conducted a toolbox talk with both shifts to address the incident and reinforce safety measures. Conducted a toolbox talk with the entire local fleet to share the event and lessons learned.
- Secured the hatch with a padlock--hatch opening now under bridge discretion with permit to work (PTW) in place--as a preventive measure until investigation finalization.
- Inspected all access hatches on the vessel and ensured all were properly closed if found open

- **Lessons Learned / Actions to Mitigate Recurrence:**

- Established a routine inspection of the room to ensure proper housekeeping on both the port and starboard sides.
- Posted signage on both doors reading “Hatch on Grating Floor”.
- Refreshed the “Eyes on Path” awareness campaign.
- Kept hatches locked to prevent unauthorized opening.
- Implemented a lock-out/tag-out (LOTO) procedure for accessing the hatches.
- Evaluated relocating the panel outside the room.
- Evaluated changing the hatch hinge so the door can only be opened if the hatch is fully closed.

IMPACT GLOVES PREVENT A MORE SERIOUS INJURY WHEN HAND IS SLAMMED IN A DOOR FRAME

Incident Description: During a period of adverse weather, an *[Operator]* technician *[Injured Party]* (IP) was exiting the Package 1 electrical switch room via the airlock door with a colleague (Technician #2). Technician #2 exited the door first and held it open. The IP took the weight of the door when a strong gust of wind caught the door, pulling the IP towards the doorway at speed. INJURY

The IP’s hand, still attached to the door, was trapped between the door and the door frame as the door closed forcefully. The IP experienced immediate pain and, upon withdrawing their hand from the frame, noticed swelling and bruising to their middle fingers. The IP was wearing impact gloves at the time of the incident.

- **Corrective Actions to Repair / Mitigate Reported Incidents:**

- Door vendor to review relevant and similar doors. Advise/consider method of slowing closure of door where adverse weather has an effect on closure speed.
- Consideration should also be made to integrity where reviewing doors to air locks.

- **Lessons Learned / Actions to Mitigate Recurrence:**

- Reinforcement of proper hand position when opening and closing doors.
- Offshore crews discussed weather impacts and effects on door/hatch opening hazards during pre-job safety meetings.
- Door vendor to assess like doors on platform and install closing-aids as necessary.



APPENDIX - SPI DEFINITIONS & METRICS

SPI NO.	SPI DEFINITION	SPI METRIC	REPORTING ENTITY
SPI 1	<p>Number of work-related incidents resulting in one or more of the following consequences:</p> <ul style="list-style-type: none"> A. Fatality: One or more fatalities. B. Injury to 5 or more persons in a single Incident C. Tier 1 Process Safety Event: (API RP 754 / IOGP Report 456 Tier 1 Process Safety Event) An unplanned or uncontrolled release of any material, including non-toxic and non-flammable materials (e.g., steam, hot condensate, nitrogen, compressed CO2, compressed air), from a process that results in one or more of the consequences listed below: <ul style="list-style-type: none"> ▪ an employee, contractor or subcontractor “days away from work” injury and / or fatality; ▪ a hospital admission and / or fatality of a third-party; ▪ an officially declared community evacuation or community shelter-in-place; ▪ a fire or explosion resulting in greater than or equal to \$100,000 of direct cost to the Company; ▪ a pressure release device (PRD) discharge to atmosphere whether directly or via a downstream destructive device that results in one or more of the following four consequences: <ul style="list-style-type: none"> ▪ liquid carryover ▪ discharge to a potentially unsafe location ▪ an onsite shelter-in-place ▪ public protective measures ▪ and a PRD discharge quantity greater than the threshold quantities for a Tier 1 PSE in IOGP Report 456 Part E in any one-hour period; or ▪ A release of material greater than the threshold quantities for a Tier 1 PSE described in IOGP Report 456 Part E in any one-hour period. D. Level 1 Well Control Incident: Loss of well control <ul style="list-style-type: none"> ▪ Uncontrolled flow of formation or other fluids resulting in: ▪ Seabed / surface release. ▪ Underground communication to another formation or well. ▪ Includes shallow water flows that result in damage or loss of facilities / equipment ▪ Excludes planned shallow gas mitigation operations. E. \$1 million or greater direct cost from damage to or loss of facility / vessel / equipment (excludes costs associated with downtime or production loss). F. Oil spill to water ≥ or equal to 10,000 gallons (238 barrels) 	# of SPI 1 incidents / total work hours * 200,000	<p>COS Member Operator for all incidents within the 500-meter zone and for incidents to direct employees while offshore</p> <p>COS Member Contractor for incidents outside the 500-meter zone while offshore</p>

SPI NO.	SPI DEFINITION	SPI METRIC	REPORTING ENTITY
SPI 2	<p>Frequency of work-related incidents that do not meet the definition of a SPI 1 incident but have resulted in one or more of the following:</p> <p>A. Tier 2 Process Safety Event: (API RP 754 / IOGP Report 456 Tier 2 Process Safety Event) An unplanned or uncontrolled release of any material, including non-toxic and non-flammable materials (e.g., steam, hot condensate, nitrogen, compressed CO₂, compressed air), from a process that results in one or more of the consequences listed below and is not reported as a Tier 1 PSE:</p> <ul style="list-style-type: none"> ▪ An employee, contractor or subcontractor recordable injury; ▪ A fire or explosion resulting in greater than or equal to \$2,500 of direct cost to the Company; ▪ A pressure release device (PRD) discharge to atmosphere whether directly or via a downstream destructive device that results in one or more of the following four consequences: <p>B. Collision that results in property or equipment damage ≥ \$25,000</p> <p>C. Incident Involving Mechanical Lifting</p> <ul style="list-style-type: none"> ▪ A mechanical lifting (or lowering) incident that results in one or more of the following consequences. Mechanical lifting includes lifts of an asset or personnel (personnel transfer and man-riding). ▪ Consequences: <ul style="list-style-type: none"> ▪ One to four recordable injuries in a single incident that occurs during the lift ▪ Between \$25,000 and \$1 million direct damage to or loss of an asset (including the load itself) ▪ A loss of primary containment of a material meeting a Tier 2 Process Safety Event threshold quantity ▪ A dropped load that strikes live process equipment ▪ Not Included: <ul style="list-style-type: none"> ▪ Lifting incident resulting only in a first aid injury ▪ Lifting incident resulting only in direct damage to an asset (including the load itself) < \$25,000 ▪ Lifting incident resulting only in a slipped load ▪ Dropped load or object into the water valued at < \$25,000 ▪ Manual lifting incidents <p>D. Loss of station keeping resulting in drive off or drift off defined as a malfunction or improper operation of the dynamic positioning system</p> <p>E. Lifeboat, life raft, or rescue craft event that resulted in a recordable injury or equipment damage or malfunction during lifeboat, life raft, or rescue craft operations or that take it out of service.</p> <p>F. Level 2 Well Control Incident</p> <p>One barrier system within the well design failed and other barrier system(s) either failed or were challenged beyond design capacity resulting in an influx without uncontrolled flow.</p>	# of SPI 2 incidents / total work hours * 200,000	<p>COS Member Operator for all incidents within the 500-meter zone and for incidents to direct employees while offshore</p> <p>COS Member Contractor for incidents outside the 500-meter zone while offshore</p>

SPI NO.	SPI DEFINITION	SPI METRIC	REPORTING ENTITY
SPI 3	<p>Number of SPI 1 and SPI 2 incidents that involved failure of one or more of equipment as a contributing factor.</p> <p>COS Equipment categories:</p> <ul style="list-style-type: none"> A. Well pressure containment system B. Christmas trees C. Downhole safety valves D. Blow out preventer and intervention systems E. Process equipment / pressure vessels, piping F. Automated safety instrumented systems / shutdown systems G. Pressure relief devices, flare, blowdown, rupture disks H. Fire/gas detection and fire-fighting systems I. Mechanical lifting equipment / personnel transport systems J. Station keeping systems K. Bilge / ballast systems L. Lifeboat, life rafts, rescue craft, launch and recovery systems M. Other <p>Definitions for the above systems can be found in the COS Safety Performance Indicator Program User Guide.</p>	<p>Number of SPI 1 and SPI 2 incidents involving failure of equipment / total number of SPI 1 and SPI 2 incidents * 100</p>	<p>COS Member Operator for all incidents within the 500-meter zone and for incidents to direct employees while offshore</p> <p>COS Member Contractor for incidents outside the 500-meter zone while offshore</p>
SPI 4	<p>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.</p>		
SPI 5	<p>Number of planned critical maintenance, inspections and tests completed on time.</p> <p>A planned task can be deferred if a proper risk assessment was completed and approved, and a new due date set.</p> <p>COS Equipment:</p> <ul style="list-style-type: none"> A. Well pressure containment system B. Christmas trees C. Downhole safety valves D. Blow out preventer and intervention systems E. Process equipment/pressure vessels, piping F. Automated safety instrumented systems / shutdown systems G. Pressure relief devices, flare, blowdown, rupture disks H. Fire/gas detection and fire-fighting systems I. Mechanical lifting equipment / personnel transport systems J. Station keeping systems K. Bilge / ballast systems L. Lifeboat, life rafts, rescue crafts, launch and recovery systems M. Other 	<p>Number of critical maintenance, inspections and tests tasks completed on time / number of critical maintenance, inspections and tests tasks planned * 100</p>	<p>COS Owner of Equipment</p>

SPI NO.	SPI DEFINITION	SPI METRIC	REPORTING ENTITY
SPI 6	Number of work-related fatalities	Number of work-related fatalities	COS Member Operator when within the 500-meter zone and for direct employees while offshore COS Member Contractor when outside the 500-meter zone while offshore
SPI 7	Number of DART injuries and illnesses. BSEE defines DART injuries or illnesses as those that resulted in "Days Away from work, Restricted duty, and Job Transfer" outcomes.	# DART / total work hours * 200,000	COS Member Operator when within the 500-meter zone and for direct employees while offshore (same as reported on BSEE-0131 Form)
SPI 8	Number of recordable injuries and illnesses	Number of recordable injuries and illnesses / total work hours * 200,000	COS Member Operator when within the 500-meter zone and for direct employees while offshore (same as reported on BSEE-0131 Form)
SPI 9	Number of spills greater or equal to 1 barrel that enter the water	Number of spills ≥ or equal to 1 barrel / total work hours * 200,000	COS Member Operator for all spills within the 500-meter zone COS Member Contractor for spills outside the 500-meter zone while offshore
SPI 10	Number of dropped objects, their severity per the DROPSONLINE Calculator (dropsonline.org/resources-and-guidance/drops-calculator) and their actual resulting injuries, if any. <ul style="list-style-type: none"> ▪ Potential Fatality ▪ Potential Major ▪ Potential Minor ▪ Potential Slight ▪ Number of dropped objects resulting in zero harm 	Number of dropped objects per severity / total number of dropped objects reported	COS Member Operator for all dropped objects within the 500-meter zone COS Member Contractor for dropped objects outside the 500-meter zone while offshore
Work Hours	For offshore workers, the hours worked are calculated on a 12-hour work day. Work hours are collected in the following categories: <ul style="list-style-type: none"> ▪ Total U.S. OCS construction workforce hours inside 500-meters ▪ Total U.S. OCS well workforce hours inside 500-meters ▪ Total U.S. OCS production workforce hours inside 500-meters ▪ Total U.S. OCS workforce hours inside 500-meters 		COS Member Operator when within the 500-meter zone (same as reported on BSEE-0131 Form)



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