

International Association of Drilling Contractors



HSE&T Committee Meeting
 15 May 2024
 IADC Office: 3657 Briarpark Drive, Suite 200
 Houston Tx 77042
 Zoom option available

Attendance

V = Virtual attendance, IP = In-Person attendance

In-Person Sign-in sheet [attached](#).

In-Person Attendees					
Name	Company	A	Name	Company	A
Brooke Polk	IADC	IP	Vito Garcia	Relyon Nutec	IP
Ricky Banks	Noble	IP	Kristin Ward	IADC	IP
Marcelo Azeredo	Transocean	IP	Jason Jensen	Ensign	IP
Caitlin Menard	Precision Drilling	IP	Nicolas Le Geouhinec	Valaris	IP
Shane Phipps	Wilbanks Trucking	IP	Micah Backlund	H&P	IP
Alma Roberts	IADC	IP			IP
Zoom Attendees					
Name	Company	A	Name	Company	A
Chidinma Obi Sedenu	My Freedom From Fear	V	Bill Krull	IADC	V
James Taylor	Noble Drilling	V	Jonathan Covington	Precision Drilling	V
Javed Birbal	3T Drilling Systems	V	Travis Warden	HWCG	V
Jaun Pablo Arias	Training Consultors	V	Ken Scott	NIOSH	V
Garrett Reinert	Valaris	V	Alejandra Ramirez-Cardenas	NIOSH	V
Stephanie Schultz	Enterprise Offshore	V	Jarand Hindeness	International SOS	V
Ken Shaw	Chevron	V			

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International Association of Drilling Contractors

Agenda

9:00 – 9:05	Welcome & Introductions <i>Ricky Banks, Noble Drilling</i>
9:05 – 9:10	IADC Antitrust Policy <i>Kristin Ward, IADC</i> Safety Moment Ricky Banks: Dehydration and Humidity. Approaching the extreme heat months; need to be thinking about strategies for mitigating the risks of dehydration. Reiterate to crews to watchout for each other and the signs of dehydration. Subcommittee kicked off
9:10 – 9:35	HR Subcommittee Overview <i>Jonathan Covington, Precision Drilling</i> <ul style="list-style-type: none"> • Subcommittee kicked off 19 March 2024. • Recruiting / retention / attracting new generation issues • Human performance initiatives • Clear opportunity to form committee to serve purpose with knowledge • Working towards drafting the wording for the Mission Statement • James Penny to Co-Chair • Short Term goals <ul style="list-style-type: none"> • Attraction of talent • Share data • Build surveys (possibility) • Long Term Goals <ul style="list-style-type: none"> • Competency framework • Standardization • Meetings will be quarterly with expert speakers then broad discussion Ricky: ‘Kid’ friendly → attracting new generation → ‘gamer kids’. Moving forward → intentional in hiring; going to service hiring events. Nicolas: Is this a global/onshore/offshore focus? Jonathan: Everything Alma: Has Canada reached out to the High Schools? Jonathan: In Alberta they do an awesome job. There are high schools that come into the space about once a quarter. Ricky: If anyone is interested in joining the HR Subcommittee, reach out to Brooke Polk.
9:35– 9:45	MODU Safety Alert Review and Discussion <i>Ricky Banks, Noble Drilling speaking on behalf of Ryan Smallwood, Patterson-UTI Drilling Company LLC</i> <ul style="list-style-type: none"> • Didn’t follow protocol • Moored semi-submersible without positioning and drifted 800m • 3rd day moor line Weather Protocol Presentation and Discussion <i>Ricky Banks, Noble Drilling</i> <ul style="list-style-type: none"> • Weather situations where weather picks up → should see it on radar • Times of extreme weather where it hits so fast that there isn’t time to react • Watch circles • Bad enough → can do emergency disconnect

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9:45-10:12	BREAK
10:12 – 11:02	<p>Freedom from Fear Water Safety Presentation <i>Chidinma Obi Sedenu</i></p> <p>The presentation is attached below.</p> <ul style="list-style-type: none"> • Reevaluating Water Safety Training • Started as a Field Engineer • BOSIET → safety is highest priority <ul style="list-style-type: none"> • Offshore survival • Hear alarm → grab life jacket → go to muster point • HUET → simulate helicopter crashing into water; emersed and flipped upside down → unbuckle → open window → swim to top • Must pass a swim test at MIT • 2005 Ocean survival safety training → didn't get in due to fear of being in deep water • 2007 BOSIET + HUET certified • 2011 Near miss with a defective life vest <ul style="list-style-type: none"> • Inflatable vest was leaking while snorkling in Hawaii • 2016 Near drowning in hotel pool <ul style="list-style-type: none"> • No lifeguard on duty • Learned 'doggy paddle'; tried to make it across pool using 'doggy paddle' but ran out of energy mid-way in the deep end. Had no energy to switch to front crawl and submerged underwater • Unable to self-rescue → stranger pulled me out of the water • Certified but could not self-rescue • 46% of adults afraid in pool water over their heads • 64% if adults afraid in deep, open water (rivers, lakes, ocean) • 80% Americans reported could swim but only 56% could do all 5 basic steps (Red Cross) 2014 survey • Suggesting <ul style="list-style-type: none"> • 1-No judgement water competence test before BOSIET & HUET training • 2-Foundational swim training for those who do not pass test or have fear of deepwater • Outcomes <ul style="list-style-type: none"> • Increased retention & reduced cost of turnover • Reduced friction in next-generation hiring • Diversity & Inclusion • True safety (onsite & offsite): Beyond SHES metrics <p>Micah: Did you approach any training centers? Answer: M&A/Relyon willing to have conversation → find out if drilling contractors and industry are asking for it.</p> <p>Nicolas: Have you approached OPITO as they set standard? Answer: Not yet but happy to have that conversation. Anyone have a good contact?</p> <p>Vito: Is there any pre-requisites for being able to swim for employment? Answer: No there is not; if you ask people 'can you swim' most people will say yes, but can they really? Still would make them pass the Red Cross' 5 steps before BOSIET & HUET.</p> <p>How much extra time would it take if adding? Answer: 27 hours over 9 sessions.</p>

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<p>11:02-11:21</p>	<p>IOGP Control of Work (CoW) Initiative <i>Ken Shaw, Chevron</i></p> <p>The presentation is attached below.</p> <ul style="list-style-type: none"> • Set up group within IOGP for CoW • 33 fatalities reported by IOGP member companies in 2022; 27 fatalities in 2023 <ul style="list-style-type: none"> • Hazard ID • Decision making • Supervision • Communication • Training/Competency • Components of CoW <ul style="list-style-type: none"> • JSA/ Stop Work Authority/ Toolbox Talk/ Risk Assessment/ etc • Human performance tools included in CoW in last 5-10 years • Gap <ul style="list-style-type: none"> • Very specific docs • Fragmented • Out of date • Does not cover the 4 parts • Scope • Deliverables <ul style="list-style-type: none"> • Develop CoW framework • Create communication <p>Marcelo: Timeline? Answer: Currently working on it with draft ready by end of 2024; vetting in 2025, publishing by end of 2025.</p> <p>Nicolas: Any representation from Drilling Contractors? Need to ask Ryan who is working IOGP from IADC.</p>
<p>11:21– 12:06</p>	<p>Workgroup Updates</p> <ul style="list-style-type: none"> • ISP Update – <i>Bill Krull, IADC</i> • Health Committee Update – <i>IADC</i> • Rig Move Update – <i>Shane Phipps, Wilbanks Trucking</i> • IADC Accreditation Update – <i>IADC</i> • IADC Onshore Update – <i>IADC</i> • NIOSH Update – <i>Ken Scott, NIOSH</i> <p>ISP Update</p> <ul style="list-style-type: none"> • www.iadc.org/ISP • 74 active members of ISP; represents 84% drilling worldwide • Released analytics for 1st quarter of 2024 • First time in 60 years companies able to enter directly into system instead of the spreadsheet <p>Health Committee Update</p> <ul style="list-style-type: none"> • SIF Definition <ul style="list-style-type: none"> • The definition will not be endorsed by IADC and was previously reviewed and voted on by the SIF workgroup. We will support the review and decision of the SIF workgroup.

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- The Health Subcommittee sent the Mental Health document for review to the committee. Feedback was submitted by committee members and reviewed by the Health Subcommittee. The document went to vote and the HSET committee voted to approve the document for publication on the IADC website. The document will move to IADC marketing for branding and then be placed on the HSET committee page of the IADC website.

Ricky: Forming Safety-Alert subcommittee to review/revamp how to improve the submission of the safety-alerts.

Rig Move Update

- Recruiting/ retention/ HR issues
- High turnover rate
- Same issues as others

IADC Accreditation Update

- H2S
 - 5 accredited Training Providers
 - 3 applications currently under review
 - 5 applications pending review
- Subsea
 - Workgroup completed question review of the 300 most missed/correct questions in January 2024.
 - 51 Exams have been taken since April 2023. The overall passing rate is 75%.
 - Over 80 applications have been processed, and most applications were submitted November 2023 – January 2024.
 - Transition to Proctor360 has improved exam taker experience, received several compliments for how easy the process is.
- MPD
 - Workgroup has added over 250 questions, doubling the question bank for the exam. Those questions will be added to the exam in the coming weeks.
 - Technical Reviewer and Review Panel are in place.
 - Aberdeen Drilling School, Beyond, and Seed Group have also submitted their applications for course approval.
 - Several companies are preparing applications for accreditation such as Weatherford and Blade Energy.
 - Over 50 online and email inquiries from companies and individuals looking for more information on MPD application and course.
- WellSharp
 - Drilling Operations
 - Workgroup finished reviewing Driller, Supervisor, and Introductory level questions in the Database.
 - Approximately 750 questions were updated and are currently being translated and uploaded to the database.
 - Well Servicing
 - Changes to the Equipment Operator and OGOR curricula have been reviewed and approved by WSP Advisory Panel.
 - Updated curricula, cross reference tools, and application documents will be distributed Q3 of 2024 with 01 Jan 2025 as the tentative full implementation date.

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IADC Onshore Update

- EPA Rule

IADC recently signed onto a letter, along with several other US based trade associations, requesting a petition for review of the EPA's recent Standards of Performance of New, Reconstructed, and Modified Sources and Emissions Guidelines for Existing Sources: Oil and Natural Gas Sector Climate Review. The group believes the EPA has overreached their authority and is trying to implement rules that will not benefit the environment or the oil and gas industry.

- DC Fly-In

In April several IADC member company reps visited Washington DC to meet with members of Congress and the Senate. IADC introduced a new messaging theme: IADC CARES. Which stands for Clean, Affordable, Reliable, Efficient and Sustainable. The group held discussions with both Democrats and Republicans. On the land side, they met with both Senators from Oklahoma and Senator Luhan's office in New Mexico. The New Mexico Senator's office remains concerned about methane emissions related to the drilling industry and is somewhat hesitant to work together, in spite of the billions of dollars our industry contributes to their state budget, roads and schools (: Land drilling companies represented on the fly in included: Unit, Latshaw, H&P, Citadel, and Cactus. Transocean, Enterprise, Seadrill, Diamond and Noble were in DC from the offshore side. If you are interested in attending the September fly-in please contact Thad Dunham with IADC.

- Geothermal Drilling

As geothermal drilling continues to pick up steam...A panel of geothermal experts will convene at the Onshore Drilling Conference tomorrow to discuss geothermal drilling in detail. Also, at the World Drilling conference in Madrid Spain the IADC geothermal committee will be announcing their recently developed well classification system for geothermal wells. Scott Farmer with H&P is now the committee chairman.

- Lithium Drilling

In 2023 Exxon acquired 120,000 acres in Arkansas with plans to begin developing Lithium. They are in the planning stage but looking to drill to around 10,000 feet using conventional rigs and drilling methods, to reach lithium rich saltwater reservoirs. The lithium will be converted onsite into battery grade material and the remaining saltwater brine is reinjected back into the reservoir. They are targeting first lithium production for 2027. Their goal is to produce enough lithium to supply the manufacturing needs of about 1 million EV's a year.

- IADC DrillersPAC

The DrillersPAC hosted a luncheon in March for Congressman Wesley Hunt at Patterson UTI in Houston. The event was a success with over 50 attendees. The PAC donated 5K to the congressman and plan to continue supporting him, as he is a critical ally in Washington DC. The PAC will host its second annual 3-gun shooting competition this October outside of Houston. They will welcome congressman Morgan Luttrell as special guest for the event. If you would like to enter a team, or your company would like to sponsor please contact Thad Dunham.

NIOSH Update

The presentation is attached [below](#).

- Oil & Gas Extraction Safety & Health Research
- Guidance docs/recommendations (occasionally)
- Research studies → science based
 - Voluntary/ identity confidential/ give back data (no identifying information)
 - Noise Exposures & Hearing Loss
 - Fatigue
 - Dermal Exposure to Drilling Fluids

12:06

ADJOURNMENT

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HSE&T Committee Meeting


15 May 2024

9:00am – 11:30am

IADC Office

Sign in Sheet

Name	Company	E-mail address
Betsy Banks	Noble	Bbanks@Noblecorp.com
Fidel "Vito" Garcia	Reylon NUTEC	fg@us.reylonnutec.com
MARCELO AZEVEDO	TRANSOCEAN	MARCELO.AZEVEDO@DEEPWATER.COM
Alma Roberts	IADC	alma.roberts@iadc.org
Shane Phipps	Wilbanks	spphipps@wilbanks.us
Jason Jensen	Ensign	jason.jensen@ensignenergy.com
NICOLA LOCOUWER	VALARIS	NLOCOUW@VALARIS.COM
Caitlin Menard	Precision Drilling	cmenard@precisiondrilling.com
Micah Backlund	H&P	Micah.Backlund@HPIADC.COM
Kristin Ward	IADC	Kristin.Ward@iadc.org

An aerial photograph of a large blue and red offshore supply vessel, labeled 'OSX 1', sailing on the ocean. The vessel is equipped with complex white and yellow structures, including cranes and scaffolding. In the background, a coastal city with numerous buildings is visible, nestled at the base of a range of rugged, brown mountains under a clear sky. A yellow crane arm is visible on the deck of the vessel.

Reevaluating Water Safety Training for the Offshore Industry

Chidinma Obi Sedenu, Founder, *my Freedom From Fear*

Outline

- **Review the current water safety training requirements for the offshore oil and gas industry**
- **My experience as a case study**
- **The importance of reevaluating foundational water safety training**
- **Best practices in ensuring crew water safety both onsite and offsite**
- **Outcomes**

Oil and Gas Career

- 2017 - Date: Head of Strategy + multiple roles, LEKOIL Nigeria Limited
- 2015: Cofounder and Managing Director, GTP Oil Field Solutions Ltd
- 2013: Country Marketing Manager (Nigeria), Transocean

- 2011: Drilling Engineer, ADTI (subsidiary of Transocean)
 - **Offshore Ghana**
- 2007: Advanced Drilling Technologies Engineer, Halliburton
 - Shell RTOC, Houston
 - **Offshore Gulf of Mexico**
- 2005: Field Engineer (MWD/LWD), Schlumberger
 - Various field locations, South America



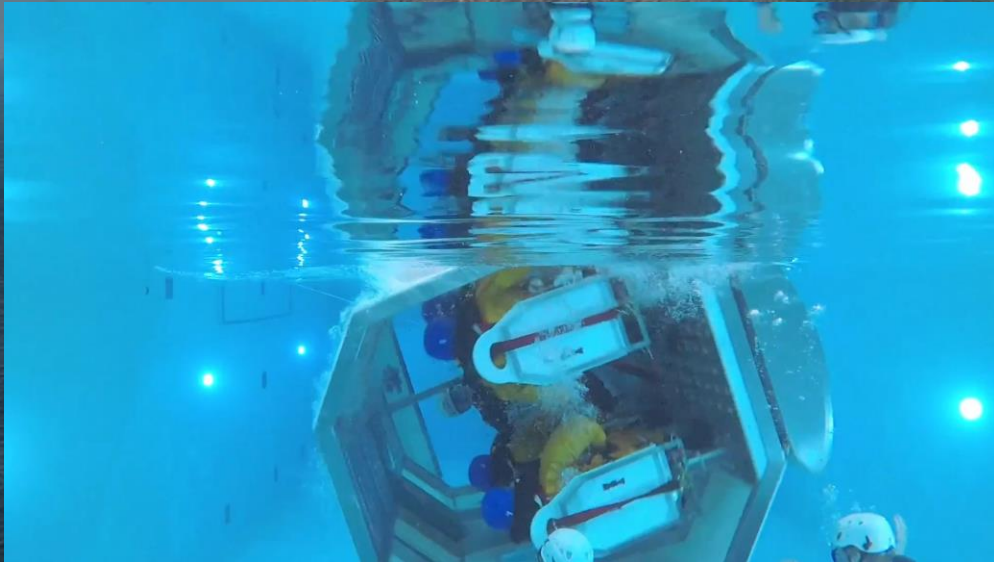
Current Water Safety Training Requirements

Basic Offshore Safety Induction and Emergency Training (BOSIET)

- **SAFETY IS OUR HIGHEST PRIORITY!**
- Offshore hazards, risks, mitigations, and controls
- Key safety regulations
- PPE requirements
- Basic Firefighting and self-rescue from smoke-filled areas
- Emergency First Aid
- Reporting incident, accidents and near misses
- **Evacuation from offshore installation and sea survival**



Current Water Safety Training Requirements



Video credit: OMV

Helicopter Underwater Escape Training (HUET)

- Helicopter Safety and Escape Training using a Modular Egress Training Simulator (METS)
- Escape through window (no-pane) of the simulator
- Escape through window (with pane) of the simulator
- Escape through window (with pane) and simulator upside down

Pre-Training Swimming background

- **Traditional Beginners Swimming** class at MIT
 - University requirement to graduate
 - Front crawl (arms and legs)
- **Traditional Swimming** course at Georgia Tech
 - Front crawl (breathing)



• Result: Could move in water but still afraid of deep water. No knowledge of how to prevent panic, stop, rest, or self-rescue from deep water.

Offshore Water Safety Training

2005: Ocean Survival Safety Training, Peru

- Didn't enter the ocean due to fear and deep-water incompetence



- Earned my BOSIET and HUET certifications
- **Water Safety = Life vest first**

2007: BOSIET + HUET Training, Louisiana, USA

- Claustrophobia and panic during "Re-breather" CCUBA training

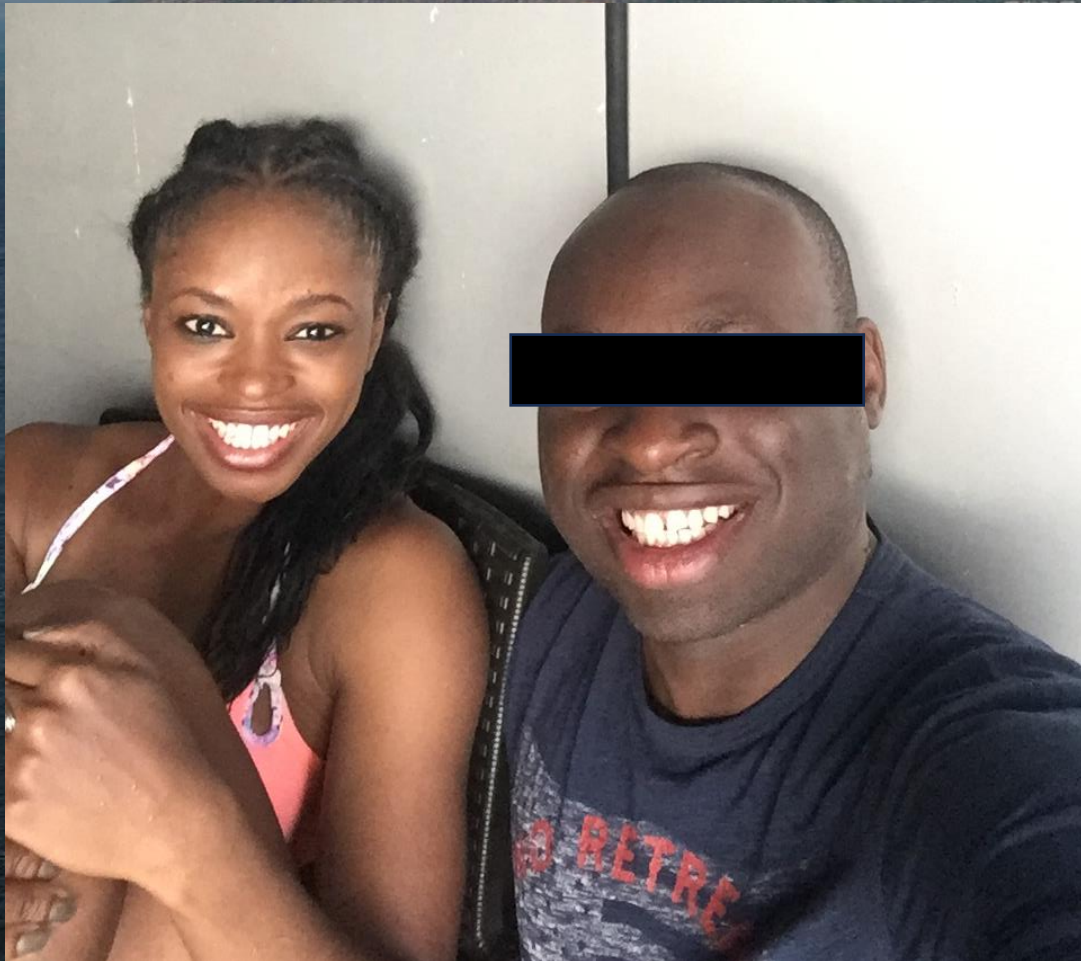


2011 Incident: Near-miss with defective life vest

- Snorkeling in Kauai, Hawaii
- Inflatable **life vest was leaking**
- No alternate vest (Lifeguard did not believe there was a leak)
- Did not proceed to deep water until given a lifeguard's rescue tube



2016 Incident: Near-drowning in hotel pool



- Casual pool hangout with friends at hotel pool in Lagos, Nigeria
- No lifeguard on duty
- Tried to learn “doggy paddle” stroke
- Got tired over the deep end and submerged. **Inability to self-rescue**
- Rescued by stranger

Oil and Gas Career

Water Safety Training vs Incidents

- 2017 - Date: Head of Strategy + multiple roles, LEKOIL Nigeria Limited
- 2015: Cofounder and Managing Director, GTP Oil Field Solutions Ltd
 - 2016 Incident: Near drowning in hotel pool
- 2013: Country Marketing Manager (Nigeria), Transocean
- 2011: Drilling Engineer, ADTI (subsidiary of Transocean)
 - 2011 Incident: Near-miss with defective life vest
 - Offshore Ghana
- 2007: Advanced Drilling Technologies Engineer, Halliburton
 - Shell RTOC, Houston
 - Offshore Gulf of Mexico
 - 2007 BOSIET, HUET certifications
- 2005: Field Engineer (MWD/LWD), Schlumberger
 - 2005 Ocean Survival Safety Training, Peru
 - 2005 Traditional swimming classes

Importance of Reevaluating Foundational Water Safety Training

- Not a fringe problem. Majority of adults have apprehension in deep water.
 - Historically, **46% of adults afraid in pool water** over their heads. **64% of adults afraid in deep, open water** e.g. rivers, lakes, ocean (USA Gallup poll)
 - 80% Americans reported they could swim. **Only 56% of the “swimmers”** could do all 5 basic water safety skills (Red Cross, 2014 poll).
- 90% of unintentional drowning deaths from Low to Medium Income Countries (WHO)
- Life vest = First step, without addressing deep water apprehension is unsafe
 - Over-reliance on offsite life vests which may be defective
 - Inability to self rescue when no life vest on, or when life vest is defective
 - Comfort enables the ability to follow safety instructions

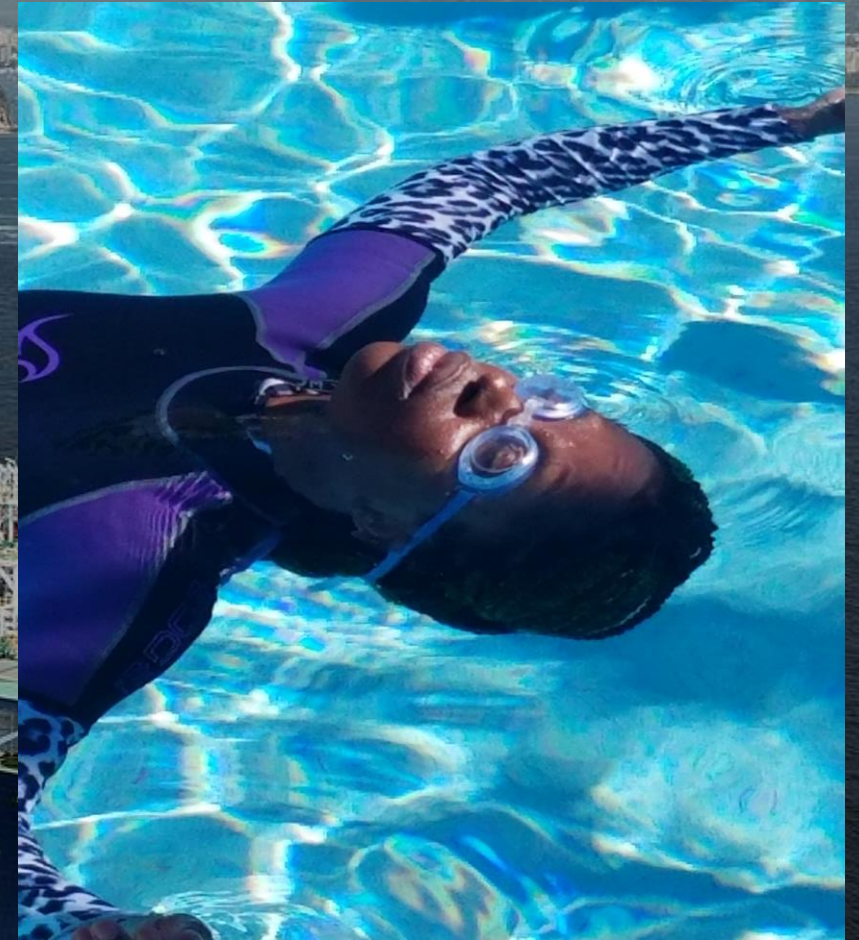


Best practices for crew water safety onsite and offsite (What needs to happen)

1) **NO-JUDGMENT water competence test*** before BOSIET & HUET training

- I. Enter water that's over your head (submerge), then return to the surface.
- II. Float or tread water for at least 1 minute.
- III. Turn over and turn around in the water.
- IV. Swim at least 25 yards.
- V. Exit the water (without stairs/ladder)

Crew members must never feel like their employment is in jeopardy because of deep-water apprehension or lack of deep-water competency



*Red Cross swimming competence

Best practices for crew water safety onsite and offsite (What needs to happen)

2) Foundational swim training that tackles deep water apprehension and water competency for those who do not pass test

Traditional
~~swim~~
classes that
focus on
strokes



my Freedom From Fear establishes five (5) firm foundations:

- **Foundation #1: We are of the nature to feel fear. *It is how the body protects us***
 - Remove stigma. Discuss fear, panic, apprehension and why it is normal.
- **Foundation #2: Fear is not always useful. *It can be deadly***
 - Tackle apprehension. Discuss how apprehension gets in the way of safety and self-rescue
- **Foundation #3: Stay in your body**
 - Prevent panic
- **Foundation #4: From a place of presence, practice the (foundational and self-rescue) skills**
 - Practice competency skills from a non-apprehensive state
- **Foundation #5: Lean into the Truth of what you've learned**
 - Shed myths and understanding how the water works

Outcomes

With implementation of



~~NO-JUDGMENT~~ water competence test ahead of current BOSIET & HUET requirements



Foundational swim training that tackles deep water apprehension and water competency for those who do not pass test

Our industry fosters:

- **Increased retention and reduced cost of turnover**
- **Reduced friction in next-generation hiring**
- **Diversity and Inclusion**
- **True safety (onsite and offsite):** Beyond SHES metrics



International
Association
of Oil & Gas
Producers

Control of Work (CoW)

15 May 2024



IOGP Data

- IOGP has been collecting, analysing and reporting safety data from its members since Mid-80's.
- The 2022 report is based on the analysis of 2,579 million work hours of data.
- Submissions were made by 51 of the 65 operating company IOGP Members.
- The data reported cover operations in 92 countries.
- In 2022 – 33 fatalities were reported by IOGP Member companies.

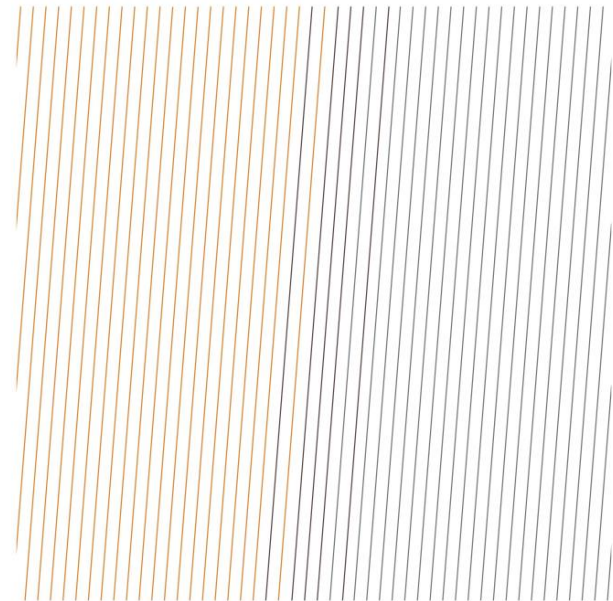


REPORT
2022s

APRIL
2023

DATA SERIES

IOGP Safety performance indicators - 2022 data



Available at: [2022s.pdf \(sharepoint.com\)](#)

Causal factors –fatalities

Causal factor	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total
PROCESS (CONDITIONS) : Organizational : Inadequate hazard identification or risk assessment	13	18	11	10	10	15	9	1	5	6	98
PEOPLE (ACTS) : Inattention/Lack of Awareness : Improper decision making or lack of judgment	16	13	10	13	9	14	9	2	6	4	96
PROCESS (CONDITIONS) : Organizational : Inadequate supervision	14	13	9	9	12	17	7	4	5	5	95
PEOPLE (ACTS) : Following Procedures : Improper position (in the line of fire)	12	14	6	11	7	13	7	2	3	17	92
PROCESS (CONDITIONS) : Organizational : Inadequate training/competence	21	16	11	6	4	11	3	3	3	4	82
PROCESS (CONDITIONS) : Organizational : Inadequate work standards/procedures	15	18	8	4	4	3	3	3	7	3	68
PEOPLE (ACTS) : Following Procedures : Deviation unintentional (by individual or group)	11	9	9	2	6	5	5	2	2	4	55
PROCESS (CONDITIONS) : Protective Systems : Inadequate/defective guards or protective barriers	10	6	4	2	8	4	4	0	3	4	45
PROCESS (CONDITIONS) : Organizational : Inadequate communication	8	6	6	3	1	5	3	3	2	5	42
PEOPLE (ACTS) : Use of Protective Methods : Failure to warn of hazard	6	4	5	5	5	4	4	0	2	3	38

Inadequate hazard identification

Improper decision making

Inadequate supervision

Inadequate communication

Inadequate training or competency

Control of Work (CoW)

1. How work is planned
2. Prepared
3. Delivered
4. How learning is captured

Components of control of work

Consider the following components of control of work:

- Hazard Identification – Energy Wheel, Task Groupings, etc.
- Task Risk Assessment / Hazard Analysis
- Permit to Work
- Isolation Management
- Standards and procedures
- Dynamic Risk Assessment
- Pre-job brief
- Toolbox Talk
- Start Work Checks
- Last Minute Risk Assessment
- Post job debrief
- Lessons Learnt
- Alerts
- Sharing Learning
- Engagements and feedback
- Verification
- Stop Work Authority
- Training and competency

Considerations for control of work

- Hazard Analysis / Risk Assessment has developed significantly over many years with the increased awareness of the workforce on the identification and management of hazards however industry guidance is decades old.
- Techniques and tools such as dynamic risk assessment, hazard identification tools, last minute risk assessments, situational awareness, start work checks, life saving rules have been layered on to support control of work.
- Human performance tools have been included into control of work in last 5-10 years.

The gap

- IOGP CoW related documents are so specific (i.e. fabrication site)
- Does not cover the four elements of CoW (i.e. How work is planned, prepared, delivered and learnings is captured)
- Fragmented!
- Out of date

Scope

- Review the CoW-related academic literature, industry guidance and practices across industry to support the CoW framework.
- Develop an overarching CoW framework which includes key attributes from existing IOGP tools which contribute to the management of CoW.
- Identify governance and sustainability for the management of Control of Work framework, practices, guidance, and tools to remain current.
- Create a communication strategy to make sure the CoW framework is shared with all stakeholders.

Deliverables

- Develop a CoW framework that IOGP member companies and their contractors can adopt.
- Create a communication strategy to make sure the CoW framework is shared with all stakeholders

For more information please contact:

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*National Institute for
Occupational Safety and Health*
NIOSH®

NIOSH Oil and Gas Research: Noise Exposures and Hearing Loss

Purpose:

To prevent hearing loss amongst workers due to noise exposures and ototoxic chemicals in the oil and gas extraction (OGE) industry.

Goals:

1. Assess noise and ototoxic chemical exposures for workers who drill, complete, and service wells.
 - NIOSH will perform industrial hygiene site visits to onshore oil and gas sites across the country.
 - NIOSH can evaluate noise controls on how well they reduce or eliminate exposures.
2. Identify work history, exposures, and hearing loss symptoms reported by workers
 - NIOSH will use a questionnaire administered to OGE workers at targeted facilities and locations.
3. Understand levels of hearing loss experienced by workers
 - NIOSH will provide audiometry hearing tests to a subset of OGE workers.

Contact Bradley King (Bradley.King@cdc.hhs.gov) for more information and to partner!

NIOSH Oil and Gas Research: Fatigue

Purpose:

To reduce fatigue-related incidents in the oil and gas extraction industry.

Goals:

1. Examine work-related factors affecting fatigue in U.S. onshore oil and gas workers
 - NIOSH will perform fatigue field assessments consisting of 1) questionnaires, 2) sleep measures, and 3) alertness measures at wellsites.
2. Identify worker and company aspects to consider when developing and implementing fatigue management strategies
 - NIOSH will conduct focus groups with workers and interviews with field-level supervisors.
3. Describe what fatigue prevention strategies are being used in the oil and gas industry
 - NIOSH will conduct interviews with senior health and safety leaders from participating companies

Contact Alejandra Ramirez-Cardenas (nxa5@cdc.gov) for more information and to partner!

NIOSH Oil and Gas Research: Dermal Exposure to Drilling Fluids

Purpose: Contact Marissa Alexander-Scott (kbi8@cdc.gov) for more information and to partner!

To identify possible biomarkers for the detection of dermatitis (skin inflammation) after exposure to drilling fluids

Goals:

1. Collect both circulated and non-circulated drilling fluids from wells and identify possible irritants within them
 - NIOSH will send materials to companies to collect and return drilling fluid samples, and a contract lab will analyze for standard water quality measures and chemicals such as acids, bases, silica, PAHs, and bacteria
2. Identify cytokines
 - NIOSH will expose tissue and cell culture samples to drilling fluid to find cytokine biomarkers and changes in the skin barrier (water loss, elasticity, etc.)
3. Perform dermal permeability studies
 - NIOSH will conduct studies using Franz cells and Permeability Assays to learn which components in drilling fluid irritate the skin surface and those that penetrate into deeper layers.