

A map of the Gulf of Mexico coastline, showing the states of Texas, Louisiana, Mississippi, Alabama, and Florida. Major cities like Houston, New Orleans, and Mobile are labeled. The text is overlaid on the map.

US GoM Diving Safety Work Group

Pipeliners Association of Houston

**“Introduction to DSWG”
&**

“Pipelines - Learning from Incidents”

August 26th 2019



Reason's why we are here..
Why I Work Safe.





Steve Acton

Mark Begnaud

Ryan Erter

Chris Mouritensen

Patrick Ireland

Chris Primeau

David Witherow

Chandon McGrath

Scott Mercer

Allan Anderson

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Explosion - Grinding

Explosion- Burning

DCS /Embolism

Equipment /Hose Mgmt

Embolism (Manta Ray)

Crushed – Crane

Crushed – Crane

Lost Gas / Equipment

Explosion –Burning

Uncontrolled Ascent

These guys didn't go home

US GoM Diving Safety Workgroup

Vision Statement

The US GoM Diving Safety Workgroup is a US GoM focused, non-competitive and non-commercial group of oil and gas operators, transmission companies, commercial diving companies, supporting sub-contractors, organizations and industry stake holders. The group will provide a unified voice to promote and improve diving safety, through the following:

- identification and sharing of best practices
- identify and seek solutions to industry challenges and issues
- review and comment of existing and proposed standards and guidelines
- provide input to the regulators and industry associations

Anti-Trust / Competition Law

- While the purpose of these meetings is improving safety which is a legitimate context for competitors to discuss, we must remember that we are competitors and that anti-trust laws apply.
- Therefore, we must adhere to the agenda and only discuss Diving Safety matters (of non-commercial, non-confidential nature).
- Do not discuss prices or costs of petroleum products, production and marketing decisions, sales and purchases, suppliers, customers, business plans, commercial strategies or other competitively sensitive information.
- If in doubt consult your own legal / intellectual property advisors. All in the meeting are to remain vigilant and if anyone believes the rules are transgressed then they are expected to intervene and alert the meeting of your concern.

2019 Executive Board / Roles

Chairman – David Gilbert
Vice Chairman – Ted Roche
Membership – Billy Bratkowski
Website - Billy Bratkowski
Presentations – Ed Klein
Incident Shares and LFI- Kevin Lord
Incident Shares Spreadsheet- Ed Klein
Medical Presentations – Ed Klein
Scribe – Gary Kane
Industry updates – Gary Kane
OOC - Steve Frantz
Operator Recruitment -Steve Frantz

About the DSWG

History-

- Concept discussed in 2011
- First DSWG General meeting held in February 2012
- By-Laws adopted in May 2012
- DSWG website rolled out in January 2013
 - <http://usgomdswg.com>
- LinkedIn Page- *US GOM DSWG* created in August 2017
- 2012 Membership – 33 General Members
24 Affiliate Members
- May 2019 Membership – 132 Member Companies
 - 58 General Members
 - 74 Affiliate Members

There are no dues or fees for DSWG membership, all we ask for is a passion for safety and active participation

DSWG General Members



- American Marine Corporation
- Anadarko Petroleum
- Aqueos Corporation
- BHP Billiton Petroleum
- Blackwater Diving LLC.
- Bosarge Diving Inc.
- Brown Integrity Group
- Central States Underwater
- C-Dive, LLC.
- Chet Morrison Contractors
- Chevron
- Chevron Environmental Management Group
- Couvillion Group
- DOF Subsea
- Enbridge Energy Partners, LLC.
- Energy transfer (Sea Robin Pipeline)
- Epic Diving and Marine Services
- EXND Diving and Marine Services LLC.
- ExxonMobil Development Company
- ExxonMobil U.S. Production
- Fieldwood Energy
- Global Diving and Salvage, Inc
- Inland Salvage, Inc.
- J&J Diving Corporation
- Kinetica Energy Express, LLC.
- Legacy Offshore, LLC.
- MADCON Corporation
- Oceaneering International
- Onyx Services, Inc.
- Phoenix International
- Ranger Offshore (bought by Epic)
- Shell Exploration and Production Company
- Shell Pipeline Company, LP.
- Specialty Diving
- Spectra Energy
- Subsea 7
- T&T Subsea, LLC.
- Talos Energy
- Taylor Energy Company, LLC.
- Titan Salvage
- TransCanada Offshore, LLC.
- Triton Diving Services, LLC.
- U.S. Underwater Services, LLC
- WNT

DSWG Affiliate Members



- Air Liquide America Specialty Gases, LLC
- Alpha Rentals, LLC.
- Association of Diving Contractors International**
- Aqua-Tech Services, LLC.
- B+J Martin, Inc.
- Bay-Tech Industries, Inc.
- Bourgeois Medical Clinic
- Creville Management Services
- Delta Marine Technologies
- Diver Inst. Of Technology
- Divers Supply, Inc.
- Diving Unlimited International
- DOF Subsea USA
DonJon Marine
- Enermech
- Falck Alford
- Fast Forward Rentals, Inc.
- First Insurance
- Fisk Marine Insurance International, LLC.
- Flange Skilllets International
- Fugro Chance, Inc.
- Global Data Systems
- Integra Services Technologies, Inc.
- International Marine Contractors Association
- Javelier Marine Services, LLC.
- JW Fischer
- JFP Safety Systems
- J.H. Daniels and Associates
- Keith Van Meter & Associates
LSU Division of Hyperbaric Medicine
- LBJ Maritime
- Mac Tech
- Magellan Marine International, LLC
- Manson Gulf, LLC.
- Marin
- Montco Oilfield Contractors, LLC.
- Morgan City Rentals
- Occupational Medicine Clinics of South Louisiana
- The Ocean Corporation
- Oceanic Services, LLC.
- Offshore Process Services, Inc.
- Offshore Technical Solutions
- Power Performance
- Praxair Distribution, Inc.
- Project Consulting Services, Inc.
- Proserv
- Redfish Rental, Inc.
- Saturation Services
- Seabreeze Inspections
- Sea-Force Hyperbaric Inc.
- SEARCH
- SPX Bolting
- SubSEA Consulting Group, LLC.
- Team Trident, LLC.
- ULO Systems LLC. (USA)
- Tusk Subsea Services, LLS.
- Unique System, LLC.
- West Jefferson Industrial Medicine
- X-Subsea USA, LLC.

About the DSWG



Continual Interaction with Regulatory and Industry Groups

- USCG (U.S. Coast Guard)
 - ADCI (Association of Diving Contractors International)
 - IMCA (International Marine Contractors Association)
 - IOGP (International Oil and Gas Producers)
 - OOC (Offshore Operators Committee)
 - API (American Petroleum Institute)
 - CBP JADE (Customs and Border Patrol - Jones Act Division of Enforcement)
 - National Board of Hyperbaric Physicians
-
- ✓ Recognized by these groups
 - ✓ Requested to comment on proposed rules, Recommended Practices, etc.
 - ✓ Representatives from some of these groups regularly attend our meetings

About the DSWG



Accomplishments

- ✓ Through group comments and vetting, provided input into future USCG Commercial Diving Regulations
- ✓ Provided comments to IMCA on document revisions
- ✓ Provided comments and influence related to Diver Certification Acknowledgment through face to face meetings in Washington, DC
- ✓ Developed Guidance documents
- ✓ Provide an Industry Forum for Incident, Safety, and Information Shares (over 600 Incident Shares to date)
- ✓ Hyperbaric physicians participation and presentations regarding diver medical concerns.

About the DSWG

Committees and Developed Guidance Documents

- ✓ Live boating Guidelines
- ✓ Underwater Burning Guidelines
- ✓ Underwater Lift-bag Guidelines
- ✓ Hyperbaric Evacuation System Planning
- ✓ Hand Jetting for Underwater Excavation
- ✓ Minimum Manning Levels
- ✓ Emergency Response and Procedures
- ✓ Company Representative Guidelines
- ✓ Recommended Emergency Drills
- ✓ Hurricane Response Readiness
- ✓ Ships Husbandry (Committee in Progress – Review/Comment on ADCI guidance document)

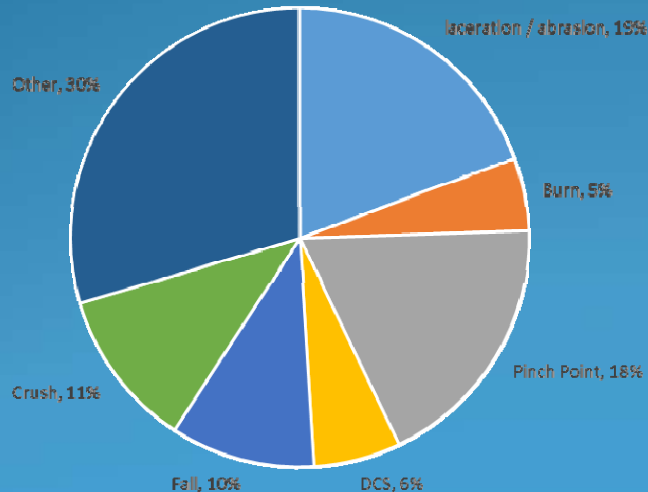
DSWG Incident Sharing

Incident and Near Miss Shares are a regular agenda item for our meetings. From 2012 to date over 600 incidents have been shared, categorized and published on our website.

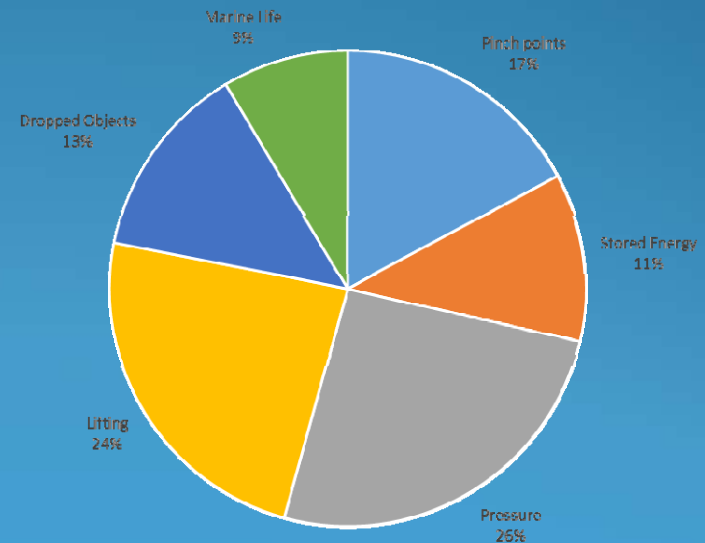
We also recently added to our meeting agenda - LFI “*Learning From Incidents*”

A volunteer from the work group presents a detailed incident with root cause and what we can do to mitigate the hazards and prevent a similar incident from happening again. Our 2018 UI presentation was titled- *Positive Direction to Zero Incidents - “Lessons will be repeated until they are learned.”*

Injury Type



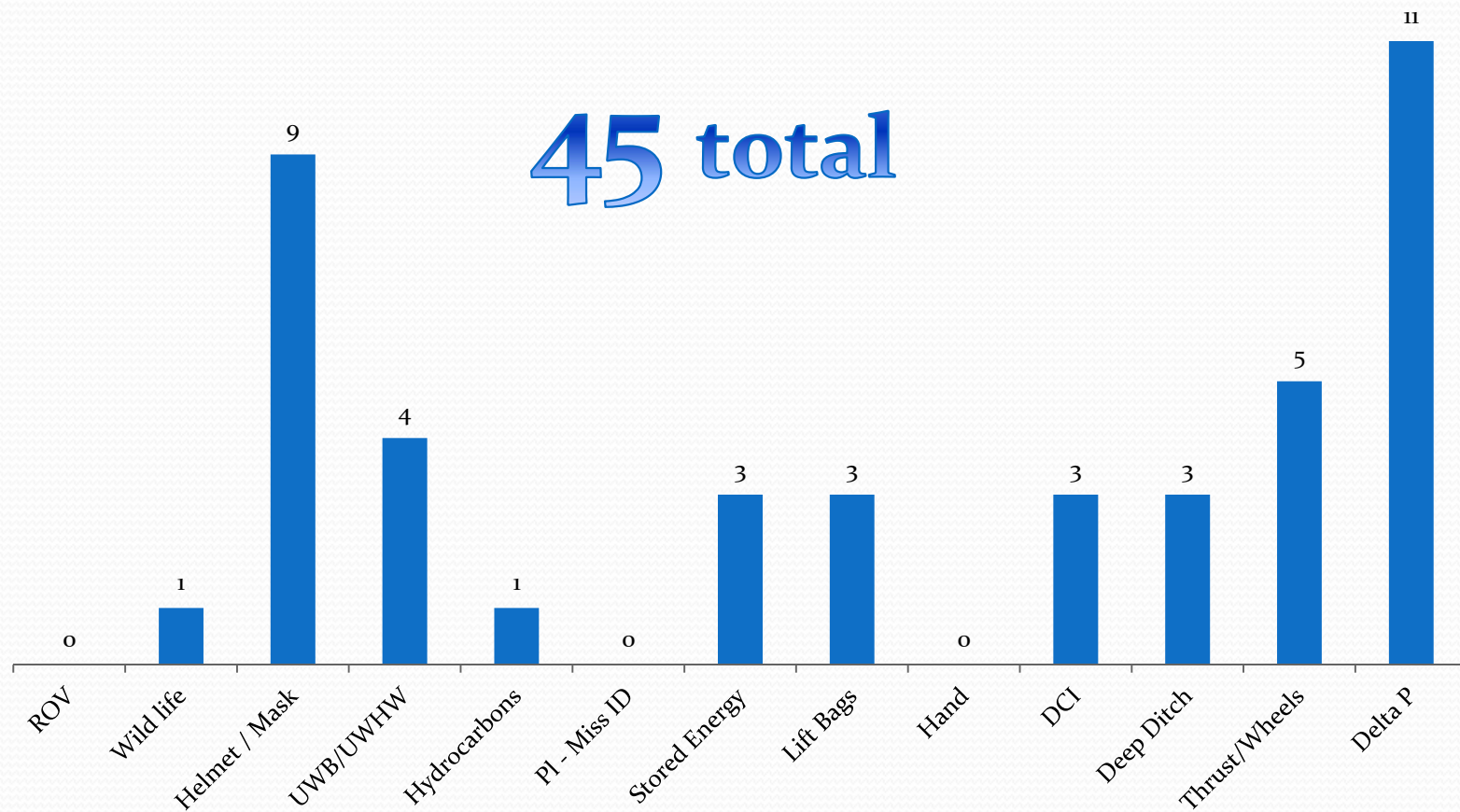
Hazard Category Makeup



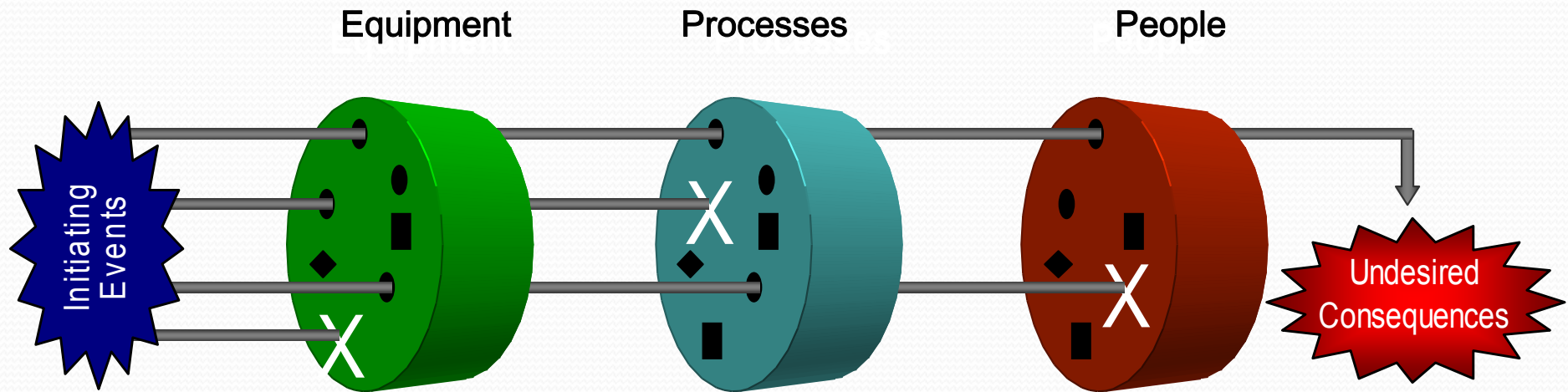
□ Laceration / abrasion □ Burn □ Pinch Point □ DCS □ Fall □ Crush □ Other

□ Pinch points □ Stored Energy □ Pressure □ Lifting □ Dropped Objects □ Marine Life

Lessons Learned from Incidents - Fatalities per Category 2002-2018



Barrier Model



Design Standards

Equipment Strategies

- Equipment is certified & available for use
- Safety Equipment
- Beacons/sonar/ Survey Systems
- Vessel DP Systems
- Mooring Systems
- Fire fighting / detection
- Dive Equipment Audits
- Crane Inspections
- Rescue Equipment / Emergency Response Equipment

Operating Procedures

Work Management

- Regulations and Standards
- Industry Guidance's
- Life Saving Actions
- Risk Assessments
- JSAs/Work Permits
- Procedures/Work Aids
- SIMOPS Matrix
- Pre start check lists
- Integrity Test/Inspections
- Weather forecast
- Emergency/Rescue Plans

Leadership & Communication

Accountability / Training

- Required personnel in place
- Training and Competency verified
- Sufficient controls in place.
- Experienced Supervisor/Lead
- Stop, Think.. & Act in use
- SAFE Choices- Our last line of defense
- STOP Work Authority
- Supervisor/Lead attended Risk Assessment
- Pre-Job Crew Meetings /Level 2 RA
- **Emergency Drills completed**

Misidentified Pipelines/Risers

Incidents

2004 Near miss diver cut live gas line with pipe cutters

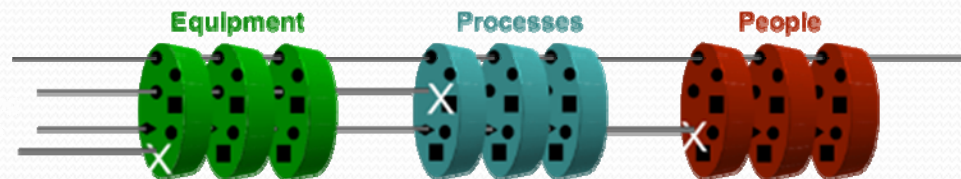
2011 Diver Cut the wrong line, fortunately it was abandoned.

2011 Hot tapped the wrong pipeline (Live HP gas) due to diver survey tag misidentification.

2012 Cut wrong pipeline with broco

2013 Active pipeline hot tapped, miss tagged during survey

2013 Hot tapped LP gas line, topside misidentification



Misidentified Pipelines/Risers and Severing the Wrong Pipeline



Misidentified Pipelines/Risers cont.

Contributing Points Of Failure

Equipment

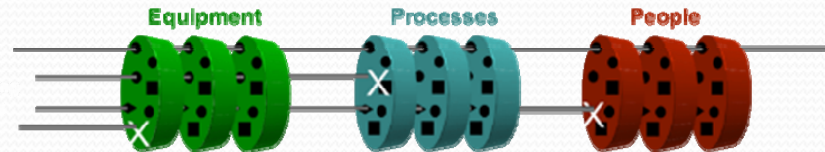
- Inherited pipelines and risers through multiple operators that are out of service and/or not labelled correctly
- Gauge pressure indicating ZERO pressure when pipeline is still pressurized
- Pipeline valves leaking to allow pipeline to slowly pressurize through multiple closed valves. Double block and bleed not 100% guaranteed

Processes

- Procedures not followed
- Shortcuts taken to “get ahead”

People

- Diver crossed over to the wrong pipeline in low visibility diving in congested field
- Constant turn-over at the operator level resulting in onsite operator inexperience or lack of familiarity with assigned field
- Not utilizing stop work authority if you believe something is not right



Misidentified Pipelines/Risers cont.

Corrective measures

Equipment

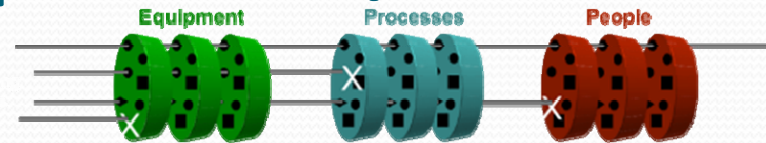
- Never trust a gauge! Ensure all pipelines to be abandoned are open to the atmosphere prior to making subsea cuts during pipeline abandonment operations
- All pipelines should be locked and tagged out prior to pipeline abandonment. Double check for leaking valves and service with valve technician if valve is found to leak after placed in closed position

Processes

- Utilized pre-job meetings and discussed procedures
- Perform walk through prior to commencing abandonment operations to include field operator, DSV Superintendent, and company rep. All must be in agreement of scope of work.

People

- All involved personnel must be encouraged to utilize Stop Work Authority
- No HSE policy and project procedure will be effective if not followed and utilized.



Stored Energy

Concern

- **Stored energy injuring diver when severing a pipeline during abandonment operations**

Known Causes of Pipeline Stored Energy

- **Mudslide or anchor drag causing pipeline to be moved from original installation area**
- **Poor line up, calculations, or closing spool measurement resulting in excessive tension placed on pipeline during closing spool installation**
- **Crane, winch, or rigging tension placed on pipeline while diver is severing pipeline**
- **Pipeline not properly relieved of internal pressure prior to severing resulting in a release in pipeline pressure**
- **Improperly maintained valves or valve failure resulting pipeline re-pressurization after Lock out – Tag out performed**

Stored Energy cont.

Corrective measures

Equipment

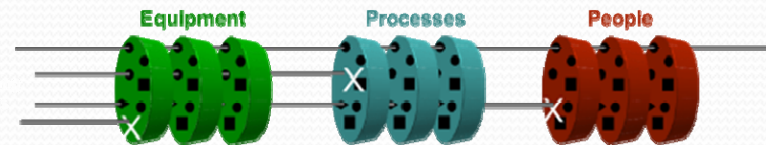
- Utilize rigging, ditch cover, Deadman anchors, winches, and/or crane to hold risers or pipeline in place before severing

Processes

- As a general rule; always sever hard to reach portion of pipeline first and save the easiest cut for last
- Whenever possible utilize automated machine, i.e., diamond wire saw and self adjusting guillotine saw to cut pipeline that may be under tension

People

- Ensure divers are clear of a potential pinch point when severing pipelines
- Utilize ROVs when applicable to make initial relief cuts
- Personnel to utilize Stop Work Authority if they believe something to be unsafe.



Deep Ditch

Incidents

2005 - Diver Fatality from Deep Ditch

2013 - Diver Fatality Deep Ditch only 3 man team diver struck by scrap assembly.

2012 – Near Miss, diver buried under pipeline in 4' ditch while buffing pipeline Stand by diver required to rescue.

July 2019 - diver was killed while working in a 15' deep ditch that caved in on him- stand-by diver took > 2 hours to get to him.

Deep Ditch cont.

4 Typical Methods of Subsea Excavation

Rotech – Large blower used to disperse a large amount of bottom material.

Toyo Pump – Rotating pump used to suck in and relocate a large amount of bottom material.

Hand Jetting – Diver operated nozzle that uses jet pump pressure to disperse bottom material.

Air or Water Lift- utilizes venturi affect to lift or suck water and bottom material through large diameter pipe or hose



Example: Improperly Excavated Ditch Wall

Increased Risks to Diver

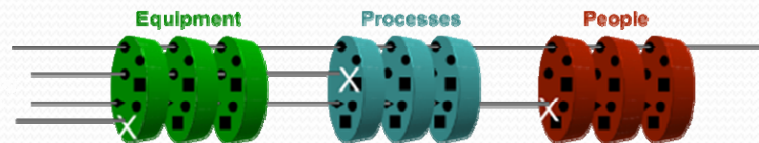
- 1) Ditch depth greater than six feet
- 2) Ditch wall not designed with a 3:1 slope



Properly Excavated Ditch Wall - ??



Cave In or Ditch Wall Collapse



Corrective measures

Equipment – If excavation on bottom exceeds six feet a redundant jet pump and hand jetting system must be on location and ready for use by the stand by diver.

Processes – When excavating on bottom a minimum of a 3:1 ditch slope must be maintained for safe diver access. Example; a 20' deep hole would require a 120' diameter opening. If soil conditions are especially soft a greater slope may be required and should be discussed by diving management personnel.

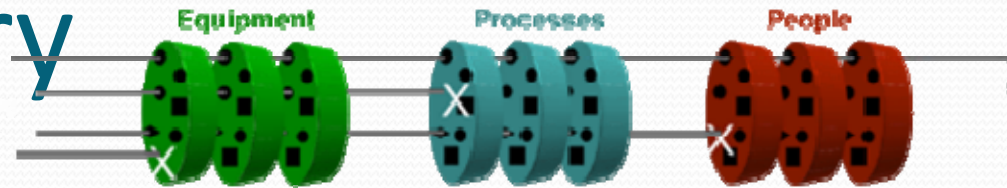
People – “Have a plan and dive your plan”. When diving in a deep ditch a standby diver should be dressed in and ready to assist in the event of a cave in. Do not wait till an issue arises to figure out how to rescue the other diver.



Other Pipeline Related Hazards

- Vessel Encroachment
- Differential Pressure
- Hydrocarbons in the bell
- Burns to diver skin
- Improperly Anchored Lift Bags
- Hand Injuries
- Crane / Lifting / Line of fire

LFI Summary



Is Our Goal of ZERO Incidents achievable?

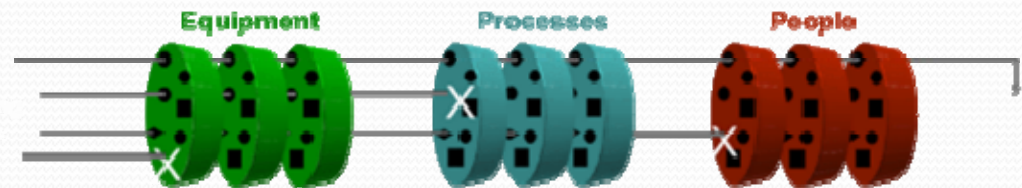
We believe that by putting the correct barriers /mitigations in place it is.

The diving industry has developed a strong culture of sharing our incidents. We understand that an incident or near miss at a worksite at our company or in our region could happen at any company or location around the world, and with the potential of a more serious outcome.

Through ADCI, IOGP, IMCA and the DSWG; an open forum for sharing and learning from incidents has grown. We believe ALL incidents are preventable, therefore if we look closely at every incident we can find mitigations that can be implemented to prevent a future re-occurrence.

Near Miss, accident and incident sharing has become a standard practice that is leading us in that positive direction towards our goal of *Zero Incidents*.

LFI Summary



How can we continue on Our positive direction toward Zero Incidents?

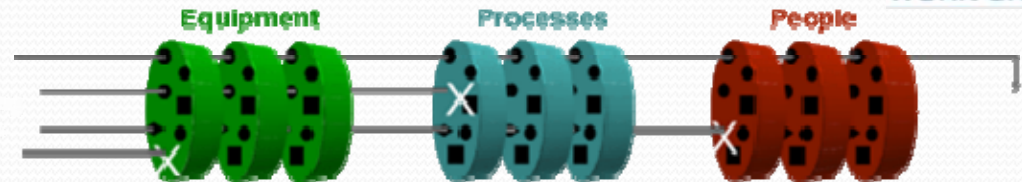
Sharing of Incidents, near misses and accidents through the industry groups mentioned previously is crucial, and then we must *apply these learnings* during our work planning and execution.

Make sure the correct equipment for the project is identified, including the equipment required for emergency response and rescue. Verification of the equipment certifications through audits and inspections is key.

We must utilize the industry standards and best practices *developed and written in blood*. Work Management through a robust system of procedure development/ reviews and then risk assessments must be followed.

When SIMOPs are identified that could jeopardize the safety of the diver, implementation of mitigations or elimination of the simultaneous activity must be addressed.

LFI Summary



How can we continue on Our positive direction toward Zero Incidents?

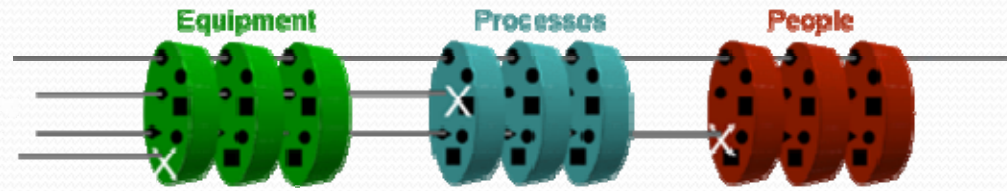
Most importantly for continuation of our journey is to communicate our experiences and learnings to the younger / less experienced workers at our companies. We are responsible for providing them the knowledge to make safe choices on our work sites.

Training is a basic foundation for our personnel, but there is no substitute for hands-on experience. Verification of the knowledge and skills through competency assessments and evaluations allow supervisors to lead effective crews.

Completing various emergency response drills identifies gaps in the system, whether in the equipment, the processes or personnel - they improve response and increase risk mitigation

Personal accountability must be communicated to our crews, understanding that STOP Work Authority is their own responsibility, - observations and interventions when an unsafe action or condition arises has to be our standard.

LFI Summary



How can we continue on Our positive direction toward Zero Incidents?

We must remember that “Lessons *will be repeated* until they are learned.” Communication of incidents and the lessons learned, then implementation of barriers against them is our ultimate responsibility to achieve our goal of *Zero Incidents*.

About the DSWG

2017 Presentations

- ✓ NASA- Neutral Buoyancy Lab (Tour)
- ✓ Treatment Table 6A
- ✓ SEMS Compliance
- ✓ Sonomatic AUT Tool
- ✓ Air Liquide –New Bottle Rack Design
- ✓ Dive School Grads in Downturn Market
- ✓ Nitrox Diving
- ✓ Heat Stress / Diving Decompression/ Energy Drinks
- ✓ Wireless Platform Emergency Shutdown (ESD)
- ✓ Bringing a Vessel back to Work after Stacked
- ✓ Non-floating oil detection and Recovery
- ✓ Halliburton Pressure Pulse
- ✓ Diver Placement Agencies
- ✓ IS Networld
- ✓ Different bacteria associated with Diving

About the DSWG

2018-2019 Presentations

- ✓ Dive Lab Hat Inspections and Maintenance
- ✓ One Atmosphere ADS Hard Suits
- ✓ ADCI/IMCA Reciprocity
- ✓ Flu Safety for Diving Contractors
- ✓ PL abandonments in Significant Sediment Resource Areas (SSRA)
- ✓ NASA - Neutral Buoyancy Laboratory (Tour)
- ✓ Diving Equipment Cert. - Audit Verification – Diving Assurance Audits- Audit reciprocity- Interpretation and Sharing equipment audits.
- ✓ MPA/ MRSC - Concept discussion about MSRC vessels hyperbaric recovery service.
- ✓ Decommissioning Projects and Diving Safety
- ✓ ABS – Classification Societies and Diving Equipment
- ✓ OOC HazId Tool
- ✓ OVID presentation
- ✓ Non-floating oil detection and Recovery
- ✓ Pipeline P&A / Recovering pipelines in SSRA's
- ✓ ADCI Version 6.3 Update
- ✓ Introduction to the latest re-breather Cobra
- ✓ Glove Presentation
- ✓ Air Winch Presentation

About the DSWG



2019-2020 Planned Presentations

- Dr Allemand / Sanders- AGE (Lafayette- July) as seen at UI 2019
- EHS or other Commercial ISO 9001 BBSO/STOP card program application
- JSEA Audit Process by managers – Break out session for March meeting
- FAST Intervention Tool, Cuts, Crimps, and Seals pipelines
- PVHO/ASME Presentation -- FMS Engineering
- Types of damage on rental equipment that is charged back to the contractor / condition of equipment when it arrives to dock-
- Kirby Morgan – New Reclaim hat – KMB presentation
- Kirby Morgan – Hat Maintenance
- Real time breathing air quality (LBJ) Launch and Recovery system presentation – LARs inspections/maintenance
- Torpedo Current meter – Aqua Tech Lafayette - July
- Seismic survey impact on diving operations- Jay Welsh with BSEE to present platform inspection requirements --- annual, post Storm, etc.
- Anchor Winches, maintenance and cable –need presenter
- Merchant Mariner credentials – need Presenter
- Tech presentation- endless “smart” sling
- Risk Assessment process
- **Dr. Sanders – Medical Terminology 101 – May- Houston Meeting**
- **Proserv – Decommissioning equipment/ Advancements for diver safety**

DSWG Faces Regulatory Challenges



Regulatory challenges we face moving forward:

- Portable Accommodations Modules (PAMS)
- Significant Sand Resource Areas (SSRAs)
- USCG CFR for Diving – not updated since 1978
- USCG – Merchant Mariner qualification requirements

DSWG Faces Industry Challenges



Challenges we face moving forward:

- The Big Crew Change
- Changes in Work Group Membership
- Changes in Shelf Operators with Diving Work and Exit of the Majors
- Economic Environment- How to sustain profitability
- Changes in Contractors and Strategies
- Aging Fleet - Vessels and Equipment
- Potential for Erosion in Safety Standards to cut costs

DSWG Faces Industry Challenges

The *Big Crew Change*

- Many of our experienced employees are retiring
- Lay-offs were widespread to keep companies alive
- We loose their competency and knowledge
- New, eager young people are entering our workforce
- How do we properly train and ensure the competency of these new workers
- Risk Identification / Mitigation can be taught, but *Risk Tolerance* must be learned through experience

An Industry upturn or Emergency response could flood the market with inexperienced workers.

DSWG Faces Industry Challenges



Aging Assets - Vessels and Equipment

- How do we return to work Safely when the time comes?



DSWG Faces Industry Challenges



The Changing Shelf - Exit of the Majors and entrance of Independents

- how will it affect DIVING Safety ?
- how can we get the independents involved in the DSWG ?



2007



2019

Gulf of Mexico (Shallow/Intermediate Water Depths)

2019 DSWG Meeting Schedule



Month	Day	Meeting Type	Location	Hosts
January	16-Jan	General Membership	Houston	Epic (Marriot)
February	6-Feb	DSWG Event – UI'19	New Orleans	UI '19
February	8-Feb	Executive Board	Houma	Chet Morrison
March	13-Mar	General Membership	New Orleans	Shell
April	17-Apr	Executive Board	Lafayette	PCS/Kane
May	15-May	General Membership	Houston	Proserv
June	19-Jun	Executive Board	Houston	Exxon
July	17-Jul	General Membership	Lafayette	Aqueos
August	21-Aug	Executive Board	NOLA	Shell
September	18-Sep	General Membership	Houston	Oceaneering
October	16-Oct	Executive Board	Houston	Arena
November	20-Nov	General Membership	New Orleans	Shell
December	11-Dec	Executive Board	Broussard	Aqueos

Questions ??

[HTTP://USGOMDSWG.COM](http://USGOMDSWG.COM)

