



Commercial Diving CoW Technical Standard

Version	Date	Approver
1.0	March 31, 2024	JO EHS

Introduction

Commercial Diving requirements are designed to prevent injuries to personnel, property damage, or adverse environmental impact due to diving operations. Joint Operations company projects and worksites require compliance with this Standard for Joint Operations personnel and all Contractor personnel engaged in planning and executing diving operations.

All diving contractors are to provide a safe work system to carry out the required diving scope and follow all applicable national and international legal requirements. Where the criteria of this Standard differ from local regulation, the more stringent requirements shall apply. Unless otherwise specified in this Standard as exceptions or clarifications, diving operations shall comply with IOGP 411 recommended practices for diving operations. IOGP 411 states that the current guidance issued by the International Marine Contractors Association (IMCA) is integral to Offshore Diving operations.

The Association of Diving Contractors International (ADCI) guidelines shall be used for inshore, inland, and Ship Husbandry Diving in absence of local equivalent competency standards. For diving operations, Inshore/Inland is defined as inside territorial waters (normally within 12 miles or 19.25 kilometers from shore), including docks, harbors, canals, culverts, rivers, estuaries, lakes, reservoirs, dams, flooded tunnels, and tanks.

Note: Terms and Definitions found in this document are from IMCA D057 (ADCI-IOGP-IMCA) Diving Terms located in [CoW Diving Repository](#). Roles and Responsibilities are contained in IMCA International Code of Practice for Offshore Diving.

Requirements

The following sections provide minimum requirements for Commercial Diving as well as supporting guidance to clarify the intent of those requirements.

- Requirements of this Standard **shall** be met.

Approved Diving Modes

The following diving modes are approved for use for general diving operations.

- Surface Supplied Air
- SCUBA Replacement - Portable Surface Supplied Air
- Surface Supplied NITROX (Enriched air)
- Saturation Diving

Prohibited Diving Modes

The following diving modes are prohibited.

- Hookah diving
- Breath-hold diving

Restricted Diving Operations

- Enterprise Diving Advisory Team (EDAT) or JO Approval is required for the following diving operations.
- Please note, approval forms and guidance documents listed in the table below can be found in the [Guidance Repository](#).

Restricted Dive Mode	Approval Requirement	Approval Forms and Guidance
Surface Supplied Mixed Gas Diving	JO Approval	<ul style="list-style-type: none"> • Surface Supplied Mixed Gas (HeO₂) Diving Approval Form • Guidance: IMCA D030
CoW Live-Boat Diving	Diving EDAT approval	<ul style="list-style-type: none"> • CoW Live-Boat Diving Approval Form • CoW Live-Boating Operational Requirements and Guidance Document
Dry Habitat Diving	Diving EDAT approval	<ul style="list-style-type: none"> • CoW Habitat Diving Approval Form
Atmospheric Diving Suit (ADS)	Diving EDAT approval	<ul style="list-style-type: none"> • CoW Atmospheric Diving Suit –ADS approval Form
SCUBA Diving Restricted to the Exception of: Regulatory mandate, scientific verification, or biological remediation.	Diving EDAT approval	<ul style="list-style-type: none"> • CoW SCUBA Diving

Restricted Diving Tasks or Equipment

- Please note, approval forms and guidance documents listed in the table below can be found in the [Guidance Repository](#).

Restricted Tasks or Equipment	Approval Requirement	Approval Forms and Guidance
Underwater burning/ welding/ grinding	JO approval	<ul style="list-style-type: none"> CoW Underwater Burning or Welding Approval Form for oxy arc burning guidelines
Explosives/ Unexploded ordinance	Diving EDAT approval	<ul style="list-style-type: none"> CoW Process for Approval to use Explosives During Diving Operations or if Unexploded Ordinance is Found CoW Explosives / Unexploded Ordinance During Diving Operations Approval Form.
Penetration Diving	JO approval	<ul style="list-style-type: none"> CoW Penetration Diving Approval Form
Jetting on Live Pipelines	JO approval	<ul style="list-style-type: none"> CoW Jetting on Live Pipelines Approval Form.
Deep Ditch / Excavating	JO approval	<ul style="list-style-type: none"> ADCI Consensus Standard 6.4 Deep Ditch and CoW Deep Ditch – Excavation Approval Form.
Pipeline Cutting /Hot tapping	JO approval	<ul style="list-style-type: none"> CoW Guidance JO Process for Approval to perform Subsea Pipeline Cutting-Hot Tapping and CoW Pipeline Cutting – Hot Tapping Approval Form
Diving Band Masks	JO approval	<ul style="list-style-type: none"> CoW Guidance on Exception Approval Process for Diving Band Masks Instead of Diving Helmets and CoW exception for diver band mask approval form.
Ships Husbandry / Underwater Inspection in Lieu of Dry-Docking UWILD	Diving EDAT approval	<ul style="list-style-type: none"> CoW Ships Husbandry/ UWILD approval form

<p>1.</p> <p>Requirement:</p> <p>Guidance:</p>	<p>The JO diving SME shall approve all diving projects using the CoW JO Diving Project Approval Form.</p> <p>a. If a JO does not have a diving SME recognized by the Enterprise Diving Advisory Team, then approval shall be requested from the Enterprise Diving Advisory Team (EDAT).</p> <p>Refer to Appendix A, Diving Recommended Practice Flowchart, for additional guidance on diving recommended practice.</p> <p>Refer to Appendix C, Diving SME and JO Project Manager Guidance Flow Chart</p>
<p>2.</p> <p>Requirement</p> <p>Guidance:</p>	<p>Marine Safety Reliability and Efficiency (MSRE) approval is required for any vessel or barge that will be used to conduct diving operations.</p> <p>The JO/Project shall contact the designated MSRE Process Authority to commence marine assurance activities on any vessel or barge from which diving operations will be conducted.</p> <p>The designated MSRE Process Authority or delegate will conduct marine assurance activities as follows:</p> <ul style="list-style-type: none"> • Assess Vessel/barge suitability for the proposed diving scope of work in conjunction with the JO/Project Diving SME. • Conduct enhanced DP Assurance if applicable. • Assess compliance with the Joint Operations Marine Standard for Non-Tankers. • Once compliance is proven, provide MSRE endorsement/approval for the vessel/barge.
<p>3.</p> <p>Requirement:</p> <p>Guidance:</p>	<p>a. A minimum of one Joint Operations Diving Worksite Representative (DSR) shall be onsite during diving operations.</p> <p>b. Two DSRs are required for planned 24-hr diving operations.</p> <p>See COW Diving Site Representative Exception document for Downstream, Midstream or near shore surface air diving operations that may not have the ability to acquire a Dive Site Representative for the project.</p> <p>The exception document is not intended for Mixed Gas, Nitrox or Saturation diving operations.</p>
<p>4.</p> <p>Requirement:</p>	<p>a. The COW Diving permit and diving start work checks are required for all diving operations.</p> <p>b. JO Modification of the COW Dive Permit must be approved by the Diving EDAT</p>

	<p>Guidance: See COW Commercial Diving Permit and Start Work Checks in repository.</p>
<p>5.</p>	<p>Requirement: A diving site-specific emergency response plan (based on the work being performed) must be documented to address responses to possible emergencies, including but not limited to:</p> <ul style="list-style-type: none"> a. Diver recovery/Rescue Plan b. Explosion c. Equipment failure (e.g., loss of communication, loss of breathing gas, loss of bell, etc.). d. Adverse environmental conditions. e. Illness and/or injury. f. Depth excursion outside of dive plan g. Loss of Dynamic Position h. Loss of emergency lighting i. First aid requirements j. Location of nearest decompressions facility k. Location of nearest medical facilities. l. Medical providers m. Evacuation plan n. Drill protocols
<p>6.</p>	<p>Requirement: The dive project management team shall document in the hazard analysis the conditions which require termination of a dive. In addition, the following conditions always require termination of a dive:</p> <ul style="list-style-type: none"> a. Any failure of a dedicated component of the diving system (“dedicated” means that the system cannot operate safely without the component) b. Loss or potential loss (red or yellow status) of Dynamic Positioning (DP) due to equipment failure, sea conditions, or thruster capacity. c. Exceedance of underwater current limitations. Current limitations shall be set to the IMCA D067- Underwater Currents on Divers Performance d. Sighting of Hazardous Marine Life (for example, Manta Ray) e. Occurrence of an Incident or near miss. f. Concurrent unplanned activities that might interfere with diving operations. g. Diver request to terminate dive (for example, unable to clear ears)

7.	Requirement:	The diving team shall document the safeguards for using hand-held power tools and equipment during diving operations in the Job Safety Analysis (JSA).
8.	Requirement:	<ul style="list-style-type: none"> a. Documentation associated with dives shall adhere to the record retention requirements detailed in the Control of Work SHEERS Process. b. Utilize the Diving Safety Management Plan to capture known risks for routine tasks. The Diving Site Rep shall work with the contractor to verify mitigations were addressed.
9.	Requirement: Guidance:	Personnel assigned responsibilities in diving operations shall hold recognized diving and or supervisor certifications from diving associations such as IMCA or ADCI. (A complete list of recognized certifications is in IMCA Briefing-1394 Diver and Diving Supervisor Certification.) <ul style="list-style-type: none"> • Diver and Supervisor certifications should be aligned with Appendix A: Diving Recommended Practice Flowchart • Additional certifications may be needed such as welding, DOT, NDT or regionally required work permits. • Diver and Supervisors qualifications and experience should be reviewed to assure competence for the expected project work.
10.	Requirement: Guidance:	Team size shall be evaluated in a formal risk assessment. There shall be enough competent and, where appropriate, qualified personnel for the diving system's operation and to support the diving team. <ul style="list-style-type: none"> a. This assessment may determine the need for additional support personnel and other management or associated technical support personnel, for example, project engineers or maintenance technicians. <p>See IOGP 411 Appendix for diving mode.</p>
11.	Requirement:	The minimum number of divers required for diving operations shall include, but is not limited to, the following: <ul style="list-style-type: none"> a. Dedicated dive supervisor on site <ul style="list-style-type: none"> i. The dedicated Dive Supervisor shall be a non-diving supervisor. ii. The Diving Supervisor shall be competent for the task and be in possession of a letter of appointment from the diving contractor.

	<ul style="list-style-type: none"> iii. The exception to the non-diving supervisor: Diving Supervisors are permitted to dive if the crew consists of more than one competent Diving Supervisor holding letters of appointment from the diving contractor and documented up-to-date hyperbaric physicals. b. Working diver c. Stand-by diver d. Tender for working diver. e. Tender for stand-by diver f. When decompression chambers are required (IOGP 411), there shall be at least two crew members that can provide documentation of competency for chamber operation.
<p>12. Requirement:</p> <p>Guidance:</p>	<p>Diving mode depth limitations are as follows:</p> <ul style="list-style-type: none"> a. Surface-supplied air diving is only allowed in shallow water at depths less than or equal to 50 meters (164 feet). Follow IMCA D14 / IOGP 411 bottom time limits. b. Surface-supplied NITROX diving (enriched air diving) is only efficacious at water depths less than or equal to 32-33 meters or approximately (102-106 feet) not to exceed a PPO2 percentage of 1.4 Bar as per IMCA D048 and IOGP 411 Appendix c. Surface-supplied mixed-gas diving (e.g., HELIOX) is allowed at water depths less than or equal to 75 meters (246 feet) <ul style="list-style-type: none"> i. Due to the fatality potential if the diver does not complete all water stops, mixed gas diving shall be risk assessed with an approval process. See IOGP 411 Appendix d. Saturation diving is only allowed at depths less than 300 meters (1,000 feet). <p>Surface Air Diving: Exceedance of the IMCA D014 / IOGP 411 bottom time limits is not considered a Joint Operations recordable incident; however, it is an incident by United Kingdom HSE diving standards. There is no reason to pad the IMCA / IOGP recommended bottom time limits as they are not a dive table, only a recommended bottom time limit. (Meaning you can decompress on a deeper table if it does not exceed an "O" designation while still meeting the IMCA D014/ IOGP 411 bottom time limits.)</p> <p>Surface Supplied Nitrox Diving: 102'-106' diving limits are not arbitrary depths. Depending on the contractor's tables, they are the last efficacious depths using 32% O₂. This is achievable with</p>

a safety factor of using a common gas percentage below 34% O₂ without crossing the 1.4 Bar PPO₂ limit and still being able to drop two tables EAD (Equivalent Air Depth). (Example on one table 102' becomes an EAD of 83.2', which is a 90' Air table versus a 110' air table without using Nitrox. The same for another table using 32% O₂ where 106' becomes 85' EAD. This is a gain of 20 minutes bottom time.)

Surface-supplied mixed-gas diving (e.g., HELIOX) IOGP 411 Appendix: "Surface Supplied Mixed Gas Diving can lead to a Serious injury or Fatality should the diver not complete the prescribed in-water decompression due to an emergency such as Manta Ray entanglement of umbilical, extreme current (Solitons), equipment failure or loss of station, etc. Divers should carefully consider alternatives before accepting this technique."

Saturation Diving: This type of diving allows a diver to spend unlimited time at depths before decompressing. Divers (4 to 9, sometimes more) live topside in a pressurized environment and travel back and forth to the underwater work site via a pressurized diving bell. Because the chamber they live in, and the diving bell that transfers them back and forth to the work site are pressurized, this eliminates the need for decompression until the project is complete and the divers are de-pressurized. Saturation diving can be performed at depths as shallow as 100 feet and as deep as over 1000 feet. No regulations specify the depths at which saturation diving can be performed.

While saturation diving is the most expensive type of diving, it also offers the most amount of in-water time (8 to 10 hours per shift) of any of the diving modes. Saturation divers breathe a mixture of helium and oxygen. Divers must fully decompress before leaving the saturation system, which could take three (3) or more days. However, saturation diving is a safer mode of diving than surface-supplied mixed gas diving. Saturation diving is deemed safer due to (i) the ability to control the diver's depth with the diving bell and (ii) the ability to recover an injured diver to the bell and subsequently transfer the diver to the topside pressurized living quarters for further medical treatment.

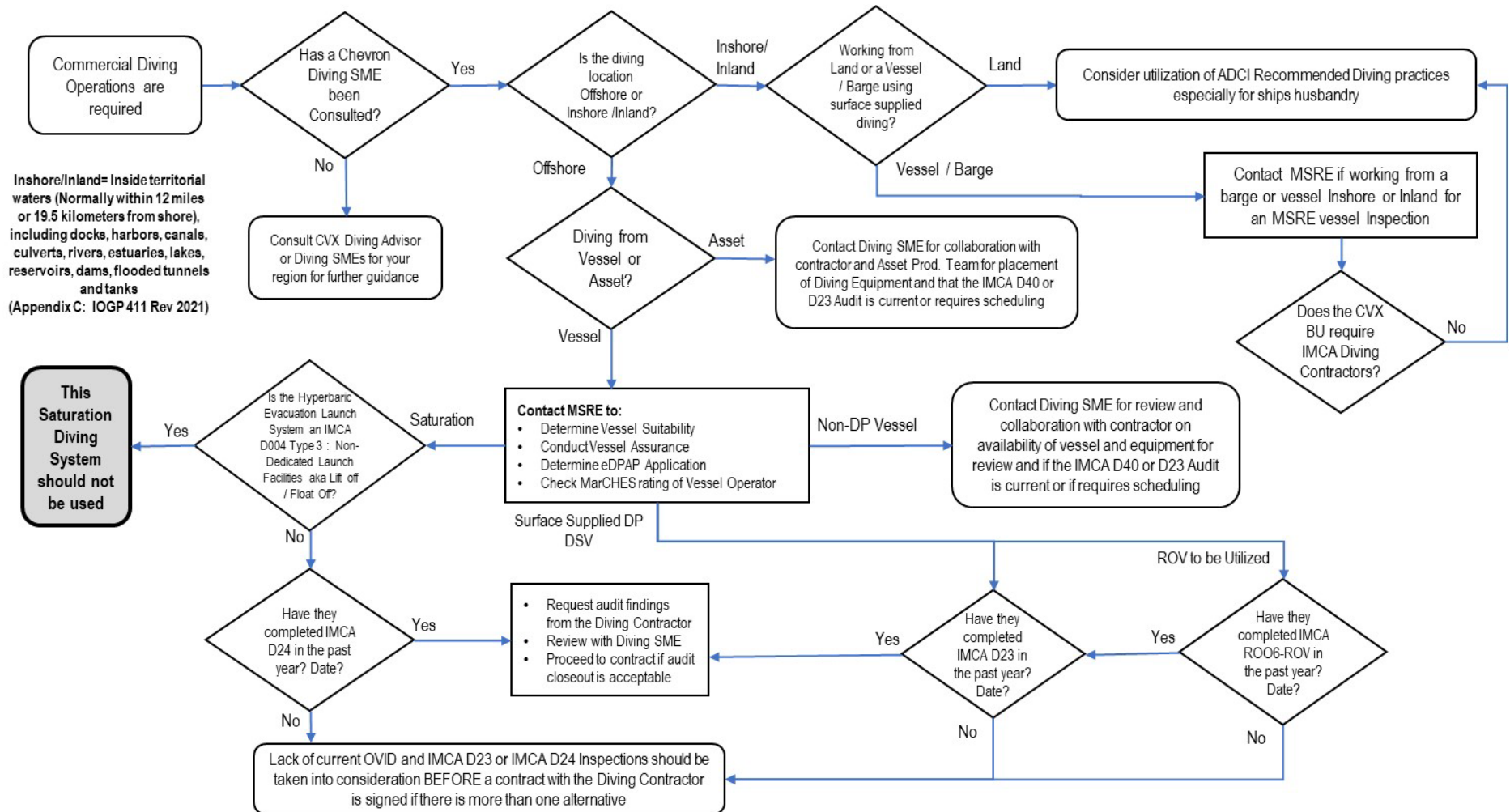
<p>13.</p>	<p>Requirement: A written simultaneous operations plan (SimOps) shall be required when diving operations are concurrent with other activities, including but not limited to the following:</p> <ul style="list-style-type: none"> a. Crane operations (where crane operations are not associated with diver tasks) b. Scaffold work over water or over dive boat c. Vessel operations within exclusion zone (e.g., closest point of approach) of dive boat or offshore structure, as applicable d. Pipeline activities (e.g., depressurization) e. Caisson pump operations (e.g., fire water pump) f. Remotely operated vehicles g. Diving within an anchor pattern
<p>14.</p>	<p>Requirement: All diving equipment shall comply with legislative requirements and industry standards, including but not limited to the following equipment:</p> <ul style="list-style-type: none"> a. Breathing gas quality - tested every 6 months. b. Compressed gas cylinders, manifolds, gas analyzers, and other gas blending equipment <ul style="list-style-type: none"> i. An oxygen sensor with Hi/Low alarm is the minimum required analyzer for surface air diving. c. Gauges and timekeeping devices d. Air compressors e. Air hoses / Umbilicals f. Thermal and/or hazard protection suits g. Helmets (including communications systems) <ul style="list-style-type: none"> i. Helmets shall have an annual certification. ii. Band masks are restricted and require JO approval. h. Weights and harnesses <ul style="list-style-type: none"> i. Harnesses shall be full body with leg straps. i. Hyperbaric chamber <ul style="list-style-type: none"> i. For the proximity of a hyperbaric chamber, refer to IOGP 411 Appendix C Inshore/Inland Diving Table 1. Note: For depths less than 10 meters, the Diving contractor shall identify the nearest suitable operational two-person, two-compartment chamber. Under no circumstances shall this be located more than 2 hours from the dive site, including mobilization time.

	<p>Guidance: Carbon monoxide sensors should be provided when diesel driven compressors are used.</p>
<p>15. Requirement:</p>	<p>All dives shall have the means to support diver ingress and egress from water to vessel/destination that comply with legislative requirement and industry standards, and that include:</p> <ul style="list-style-type: none"> a. Launch and recovery of Diver and Stand-by Diver shall be risk assessed and documented. <ul style="list-style-type: none"> i. Ladders shall not be the primary means of exit from the water if the deck is more than 2 meters above the water surface. <ul style="list-style-type: none"> 1. When used, ladders shall extend at least 2 meters below the water and have sufficient handholds above water to allow the diver to step easily onto the deck. ii. A two-person dive stages shall be used as a minimum for all diving when the deck is greater than 2 meters above the water and must be equipped to IMCA requirements. iii. Lifting plant and equipment shall be certified man-riding. b. All dives shall have the means to assist/recover an injured/ unconscious diver from the water or into a diving bell. <ul style="list-style-type: none"> i. Any equipment used to remove an unconscious diver from the water shall have engineered drawings and appropriate certifications, including NDT and Load testing. ii. An injured diver recovery procedure is required as part of the Emergency Response Plan.
<p>16. Requirement:</p>	<p>Diving equipment shall be inspected before each use and the condition documented (Pre-Dive Checklist), including but not limited to the following equipment:</p> <ul style="list-style-type: none"> a. Breathing air supply system, including reserve gas supplies b. Helmets c. Masks: masks are considered restricted diving equipment d. Thermal and/or hazard protection e. Bell handling system (If applicable) f. Communication Devices

<p>17.</p>	<p>Requirement: Users shall maintain documentation on the diving equipment testing, calibration, maintenance, and certification for the service life of the diving equipment.</p> <p style="padding-left: 40px;">a. These documents shall be audited before mobilization using IMCA DESIGN guidance (Diving Equipment Systems Inspection Guidance Note) or ADCI audit criteria depending upon the location of the diving operation see Appendix A.</p> <p>Guidance: Joint Operations project managers or diving SMEs (Subject Matter Experts) should request the annual IMCA or ADCI audit verification documents (See Appendix A). The diving SME or Joint Operations project manager can extend the audit period if the equipment remains in service on the job site. However, as soon as the contractor can make the systems available near the annual class audit, they should perform verification and an annual classed system audit.</p> <p>Note: According to OSHA diving standards. "Equipment inspections and testing records (§1910.430)—the retention of documentation should include current entry or tag, or until equipment is withdrawn from service."</p> <p>Surface Air: IMCA D23 or ADCI contractor audits can be reviewed and approved by Joint Operations dive site representatives or a member of the EDAT. Saturation Diving Audits should be conducted annually by a 3rd party, except if they remain under the Joint Operations contract.</p>
<p>18.</p>	<p>Requirement: Post-Dive procedures, unless exceeded by local regulations, shall comply with OSHA § 1910.423 post-dive procedures.</p> <p style="padding-left: 40px;">a. The employer shall comply with the following requirements, which are applicable after the completion of each diving operation, unless otherwise specified:</p> <ul style="list-style-type: none"> i. Check the physical condition of the diver. ii. Instruct the diver to report any physical problems or adverse physiological effects, including symptoms of decompression sickness. iii. Advise the diver of the decompression chamber location that is ready for use. iv. Alert the diver to the potential hazards of flying after diving. <p style="padding-left: 40px;">b. For any dive outside the no-decompression limits (deeper than 100 fsw or using mixed gas as a breathing mixture) the employer shall instruct the diver to remain awake and in the vicinity of the</p>

decompression chamber, which is at the dive location, for at least one hour after the dive. The employer shall provide decompression or treatment as appropriate.

Appendix A: Diving Recommended Practice Flowchart Diving Standard and Vessel Selection Protocol



Appendix B: References

Internal References

Chevron Marine Standard Non-Tankers

External References

Association of Diving Contractors International (ADCI)

ADCI audit criteria/verification

International Association of Oil and Gas Producers (IOGP)

IOGP 411 Recommended practices for diving operations

International Marine Contractors Association (IMCA)

IMCA D057 ADCI-IOGP-IMCA Diving Terms

IMCA D067 The Effects of Underwater Currents on Divers' Performance and Safety

IMCA Briefing-1394 Diver and Diving Supervisor Certification

IMCA D14 IMCA international code of practice for offshore diving

IMCA D048 Guidance on surface supplied diving operations using nitrox

IMCA DESIGN guidance Diving Equipment Systems Inspection Guidance Note

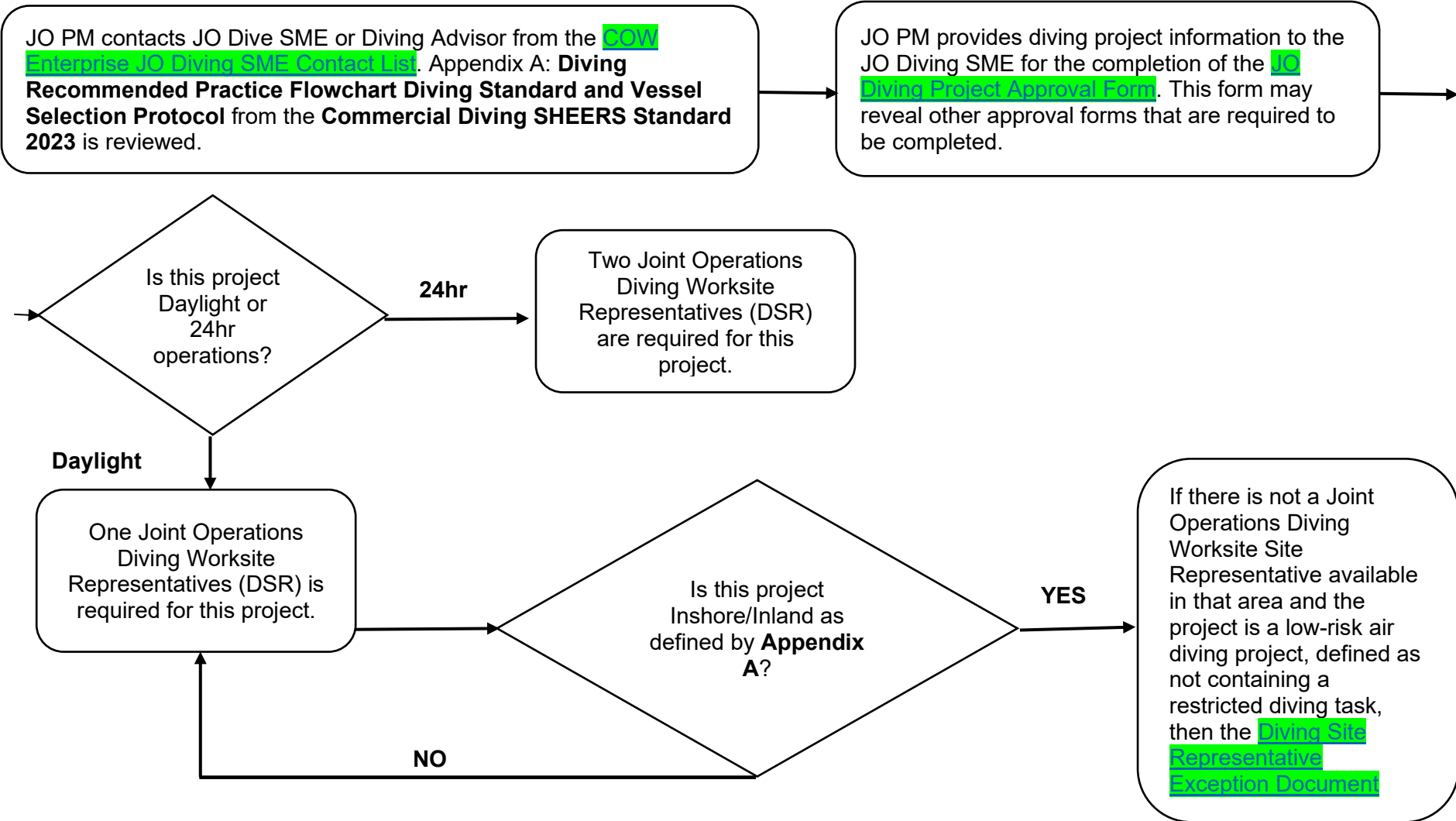
IMCA D23 Diving Equipment Systems Inspection Guidance Note (DESIGN) for surface orientated (air) diving systems

Occupational Safety & Health Administration (OSHA)

§1910.430 Equipment inspections and testing records

§1910.423 Post-dive procedures

Appendix C - Diving SME and JO Project Manager Guidance Flow Chart: COMMERCIAL DIVING SHEERS STANDARD



All documents highlighted are found in the [CoW Repository \(Examples and Tools\)](#) in the [Control of Work \(CoW\) / MSW share point site](#)