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DEPARTMENT OF LABOR

Occupational Safety and Health Administration

[Docket No. OSHA-2015-0024]

Jardon and Howard Technologies, Incorporated; Application for Permanent Variance and Interim Order; Grant of Interim Order; Request for Comments

AGENCY: Occupational Safety and Health Administration (OSHA), Labor.

ACTION: Notice.

SUMMARY: In this notice, the Occupational Safety and Health Administration ("OSHA" or "the Agency") announces the application of Jardon and Howard Technologies, Incorporated ("JHT" or "the applicant") for a permanent variance from several provisions in OSHA's standards that regulate commercial diving operations. Additionally, the applicant requests an interim order based on the conditions specified in the variance application. JHT's variance request is based on the conditions that were specified in the alternate standards that OSHA granted to the National Oceanic and Atmospheric (NOAA) on September 5, 2014. OSHA announces its preliminary finding to grant the permanent variance, and also announces that it is granting the applicant's request for an interim order. OSHA invites the public to submit comments on whether to grant the applicant a permanent variance based on the conditions specified in the notice.

DATES: Submit comments, information, documents in response to this notice, and request for a hearing on or before [INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]. The interim order specified by this

notice becomes effective on [INSERT DATE OF PUBLICATION IN THE FEDERAL REGISTER], and shall remain in effect until it is modified or revoked, or until OSHA publishes a decision on the permanent variance application, whichever occurs first.

ADDRESSES: Submit comments by any of the following methods:

1. *Electronically*: Submit comments and attachments electronically at *http://www.regulations.gov*, which is the Federal eRulemaking portal. Follow the instructions online for making electronic submissions.

2. *Facsimile*: If submissions, including attachments, are not longer than 10 pages, commenters may fax them to the OSHA Docket Office at (202) 693-1648.

3. *Regular or express mail, hand delivery, or messenger (courier) service*: Submit comments, requests, and any attachments to the OSHA Docket Office, Docket No. OSHA-2015-0024, Technical Data Center, U.S. Department of Labor, 200 Constitution Avenue, NW., Room N-2625, Washington, DC 20210; telephone: (202) 693-2350 (TTY number: (877) 889-5627). Note that security procedures may result in significant delays in receiving comments and other written materials by regular mail. Contact the OSHA Docket Office for information about security procedures concerning delivery of materials by express mail, hand delivery, or messenger service. The hours of operation for the OSHA Docket Office are 10:00 a.m. – 2:30 p.m.

4. *Instructions*: All submissions must include the Agency name and the OSHA docket number (OSHA-2015-0024). OSHA places comments and other materials, including any personal information, in the public docket without revision, and these materials will be available online at *http://www.regulations.gov*. Therefore, the Agency cautions commenters about submitting statements they do not want made available to the

public, or submitting comments that contain personal information (either about themselves or others) such as Social Security numbers, birth dates, and medical data.

5. *Docket*: To read or download submissions or other material in the docket, go to *http://www.regulations.gov* or the OSHA Docket Office at the address above. All documents in the docket are listed in the *http://www.regulations.gov* index; however, some information (e.g., copyrighted material) is not publicly available to read or download through the web site. All submissions, including copyrighted material, are available for inspection at the OSHA Docket Office. Contact the OSHA Docket Office for assistance in locating docket submissions.

6. *Copies of this Federal Register notice*: Electronic copies of the Federal Register notice are available at *http://www.regulations.gov*. This Federal Register notice, as well as new releases and other relevant information, also are available at OSHA's webpage at *http://www.osha.gov*.

7. *Extension of comment period*: Submit requests for an extension of the comment period on or before [INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER] to the Office of Technical Programs and Coordination Activities, Directorate of Technical Support and Emergency Management, Occupational Safety and Health Administration, U.S. Department of Labor, 200 Constitution Avenue, NW., Room N-3655, Washington, DC 20210, or by fax to (202) 693-1644.

8. *Hearing requests*: According to 29 CFR 1905.15, hearing requests must include: (1) A short and plain statement detailing how the variance would affect the requesting party; (2) a specification of any statement or representation in the variance application that the commenter denies, and a concise summary of the evidence adduced in support of

each denial; and (3) any views or arguments on any issue of fact or law presented in the variance application.

FOR FURTHER INFORMATION CONTACT: Information regarding this notice is available from the following sources:

Press inquiries: Contact Mr. Frank Meilinger, Director, OSHA Office of Communications, U.S. Department of Labor, 200 Constitution Avenue, NW., Room N-3647, Washington, DC 20210; telephone: (202) 693-1999; email: *meilinger.francis2@dol.gov*.

General and technical information: Contact Mr. Kevin Robinson, Director, Office of Technical Programs and Coordination Activities, Directorate of Technical Support and Emergency Management, Occupational Safety and Health Administration phone: (202) 693-2110 or email: *robinson.kevin@dol.gov*.

SUPPLEMENTARY INFORMATION:

I. Notice of Application

On September 25, 2015, Jardon and Howard Technologies, Incorporated, ("JHT" or "the applicant"), submitted an application for a permanent, multi-state variance under Section 6(d) of the Occupational Safety and Health Act of 1970 ("OSH Act"; 29 U.S.C. 655) and 29 CFR 1905.11 ("Variances and other relief under section 6(d)"), from provisions of OSHA's commercial diving operations (CDO) standard that regulate the use of inflatable flotation devices and decompression chambers (Exhibit OSHA-2015-0024-0001, Request for Variance). JHT's application also requested an interim order pending OSHA's decision on the variance application. JHT's corporate offices are located at 2710 Discovery Drive, Suite 600, Orlando, FL 32826, and JHT also identified

two field office locations as places of employment involved in its variance application: (1) NOAA/NOS Center for Coastal Fisheries and Habitat Research, 101 Pivers Island Road, Beaufort, North Carolina, 28516; and (2) NOAA CCFHBR Laboratory, 219 Fort Johnson Road, Charleston, South Carolina, 29412. After receiving JHT's variance application, OSHA sent two rounds of follow-up questions to JHT, on October 13, 2015 and June 27, 2016**,** to which JHT responded on November 16, 2015 and July 27, 2016, respectively (*see* Exhibits OSHA-2015-0024-0002, OSHA-2015-0024-0004**,** OSHA-2015-0024-0003**,** and OSHA-2015-0024-0005).

Specifically, the applicant seeks a permanent variance and interim order from the provisions of OSHA's CDO standard that require:

(1) a buoyancy compensator to have an inflation source separate from the breathing gas supply when used for SCUBA diving (29 CFR 1910.430(d)(3));

(2) use of an inflatable flotation device capable of maintaining the diver at the surface in a face-up position, having a manually activated inflation source independent of the breathing supply, an oral inflation device, and an exhaust valve (29 CFR 1910.430(d)(4));

(3) the employer to instruct the diver to remain awake and in the vicinity of the decompression chamber which is at the dive location for at least one hour after the dive (including decompression or treatment as appropriate) for any dive outside the no-decompression limits, deeper than 100 feet of sea water (fsw), or using mixed gas as a breathing mixture (29 CFR 1910.423(b)(2));

(4) the employer to make available at the dive location a decompression chamber capable of recompressing the diver at the surface to a minimum of 165 fsw (6 ATA) (29 CFR 1910.423(c)(1))[1];

(5) the employer to make available within 5 minutes of the dive location a dual-lock, multiplace decompression chamber (29 CFR 1910.423(c)(3)); and

(6) that self-contained underwater breathing apparatus (SCUBA) diving not be conducted at depths deeper than 100 fsw or outside the no-decompression limits unless a decompression chamber is ready for use (29 CFR 1910.424(b)(2)).

JHT is a contractor for the U.S. Department of Commerce, National Oceanic and Atmospheric Administration (NOAA), a federal government agency that conducts and promotes undersea research using a variety of modes, including diving operations. On September 5, 2014, OSHA granted NOAA alternate standards[2] regulating its use of inflatable flotation devices and decompression chambers during NOAA diving operations (Exhibit OSHA-2015-0024-0003, OSHA's Comments and Decisions to NOAA's Request for an Alternate Standard on Diving) ("NOAA Alternate Diving Standards"). To account for the technological advances and design improvements that have been made to buoyancy compensatory devices (BCDs) since OSHA first published its CDO standard in 1977 (*see* 42 Fed. Reg. 37662 (July 22, 1977)), the NOAA Alternate Diving Standards permit NOAA to use modern BCDs during diving operations that deviate from the

[1] The full text of 29 CFR 1910.423(c)(1)(i)-(iii) reads: "A decompression chamber capable of recompressing the diver at the surface to a minimum of 165 fsw (6 ATA) shall be available at the dive location for: (i) Surface-supplied air diving to depths deeper than 100 fsw and shallower than 220 fsw; (ii) Mixed gas diving shallower than 300 fsw; (iii) Diving outside the no-decompression limits shallower than 300 fsw."

[2] An alternate standard is the federal agency equivalent to a variance, and federal agency heads may seek and obtain alternate standards from OSHA pursuant to 29 CFR 1960.17.

configuration requirements in OSHA's CDO standard, but provide equal or greater safeguards to the diver. The NOAA Alternate Diving Standards also provide NOAA with modified requirements regarding the use of decompression chambers, including expanding the depth limit for SCUBA dives within the no-decompression limits[3] (from 100 to 130 feet of sea water (fsw)), and modifying decompression chamber availability requirements for certain no-decompression dives up to 130 fsw in depth.

JHT's divers who conduct diving operations for NOAA typically dive from NOAA-operated "uninspected vessels" in U.S. navigable waters; such diving operations fall under OSHA's jurisdiction.[4] When conducting dives for NOAA, JHT divers are obliged to follow all of the requirements of the NOAA Diving Program (NDP), which include the NOAA Alternate Diving Standards. JHT therefore seeks the interim order and permanent variance from the provisions of OSHA's CDO standard based on the conditions that apply to NOAA divers under the NOAA Alternate Diving Standards, thus permitting JHT's divers to dive under the same standards as their NOAA-employed colleagues.

The applicant contends that the proposed variance conditions outlined in its application provide its workers with a place of employment that is at least as safe and healthful as they would obtain under the existing provisions of OSHA's CDO standard. The applicant certifies that it provided affected workers with a copy of the variance

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[3] The definitions provided in Subpart T, 29 CFR 1910.402, define "no-decompression limits" as "the depth-time limits of the 'no-decompression limits and repetitive dive group designation table for no-decompression air dives', U.S. Navy Diving Manual, or equivalent limits which the employer can demonstrate to be equally effective."

[4] For more information on OSHA's enforcement authority over uninspected vessels on U.S. navigable waters, see OSHA Directive Number: CPL-02-01-047, "OSHA Authority over Vessels and Facilities on or Adjacent to U.S. Navigable Waters and the Outer Continental Shelf (OCS)" [Dated: 02/22/2010], available at: *https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=DIRECTIVES&p_id=4254* .

application. In addition, the applicant informed its workers and their representatives of their right to petition the Assistant Secretary of Labor for Occupational Safety and Health for a hearing on the variance application. The applicant also certified that it is not contesting any citations involving the standards that are the subject of this application.

II. NOAA's Alternate Diving Standards and JHT's Variance Application

A. Background.

In June 2011, NOAA submitted an application to OSHA proposing a total of 12 alternate standards to 29 CFR 1910, Subpart T, and included with its application extensive introductory, background, and explanatory information in support of the application (see Exhibit OSHA-2015-0024-0006, Proposed Alternate Diving Standards for the National Oceanic and Atmospheric Administration). After fully considering NOAA's application and its responses to OSHA's follow up questions (see Exhibit OSHA-2015-0024-0007, Responses from the NOAA Diving Program to OSHA Regarding Requested Alternate Standards for Commercial Diving Operations), OSHA decided to grant some, but not all, of the alternate standards that NOAA proposed (see Exhibit OSHA-2015-0024-0008). JHT now seeks an interim order and permanent variance based on six of the alternate standards that OSHA granted to NOAA in the NOAA Alternate Diving Standards. Because JHT's application proposes to adopt the same conditions under which OSHA granted the alternate standards to NOAA, JHT's application included as an attachment the introductory, background, and explanatory material that NOAA previously submitted to OSHA with its initial application.

NOAA explained in its application materials that it conducts dives under two major programs: the NOAA Diving Program (NDP) and the National Undersea Research

Program (NURP). The NDP primarily supports intramural (within the agency) research programs conducted by personnel within NOAA's major line offices, while NURP primarily supports extramural (outside the agency) research programs conducted by scientists from various academic and marine institutions. The NDP is responsible for overseeing all NOAA and contractor (including JHT) diving personnel, equipment, and activities, and ensuring that dives performed by NOAA and its contractor divers are completed safely and efficiently. The NDP, the NOAA Diving Control and Safety Board, and the NOAA Diving Medical Review Board all work together to ensure that qualified personnel and certified systems are available to safely meet NOAA's undersea research objectives.

NOAA's application also explained that it provides a robust training program to NDP divers, including contractor divers. NOAA stated that the primary training program used to prepare NOAA and contractor divers to perform work is NOAA's three-week, 140-hour "Working Diver" course, which trains divers to perform a wide range of skills utilizing a variety of power and hand tools and specialized equipment. All NOAA divers and contractors are also required to: (1) have annual refresher training in oxygen administration (academic and practical components); (2) stay current in CPR/AED and First Aid training; (3) maintain proficiency in diving by making at least three dives per quarter; (4) complete an annual swim test; (5) have their life support gear serviced annually by a certified technician; (6) complete an annual skills test to demonstrate their ability to safely operate underwater; and (7) complete annual rescue drills to demonstrate their ability to surface, extricate, treat and evacuate the victim of a diving accident.

NOAA's application further stated that it has developed many advances in diving equipment and procedures that are now widely recognized and accepted as industry best practices. NOAA publishes many of these advances in the "NOAA Diving Manual: Diving for Science and Technology," which serves as a reference manual for all NDP divers. NOAA also maintains two additional manuals (the "NOAA Scientific Diving Standards and Safety Manual" and the "NOAA Working Diving Standards and Safety Manual") that provide in-depth operational guidance for all dives, and include the standards, policies, regulations, requirements, and responsibilities for all aspects of NOAA's diving operations.

Additionally, NOAA stated that OSHA's CDO standard, which was first published in 1977, does not account for many of the advancements that have been made in diving technology and safety. For that reason, NOAA sought alternate standards that would permit the NDP to conduct diving operations using equipment and procedures that reflected modern diving advancements. NOAA also stated that OSHA's regulations are not always consistent with other related federal diving regulations, such as 46 CFR 197, Subpart B, which provides safety and health standards for commercial diving operations conducted from vessels and facilities under the jurisdiction of the U.S. Coast Guard.

As a NOAA contractor, JHT asserts that its divers are required to strictly follow the requirements of the NDP, which include following the conditions of the NOAA Alternate Diving Standards. But, even though NOAA-employed and JHT-employed divers work side-by-side during NDP operations, contractor divers (such those employed by JHT) are not authorized to dive under the NOAA Alternate Diving

Standards. JHT states that its divers undergo exactly the same training as NOAA employees who are also part of the NDP, and that there are no differences between NOAA and JHT divers regarding medical clearance procedures and standards, training materials, equipment used, equipment maintenance, and diving procedures used (see Ex. OSHA-2015-0024-0003, p. 1). JHT stated that the majority of the dives that JHT performs under the NDP are "scientific dives" that are exempted from OSHA's CDO standard,[5] but JHT divers also assist NOAA employees with diving operations that are not exempt under OSHA's CDO standard. Accordingly, when JHT conducts dives for NOAA under the NDP that would be subject to OSHA's CDO standard, JHT seeks permission from OSHA to dive under the same standards regulating the use of inflatable flotation devices and decompression changes that apply to NOAA-employed NDP divers, pursuant to the NOAA Alternate Diving Standards.

B. *Requested Variance from Paragraphs (d)(3) and (d)(4) of 29 CFR 1910.430, Requirements for Inflatable Flotation Devices.*

OSHA's standards regulating the buoyancy control of inflatable flotation devices include requirements that: (1) when used for SCUBA diving, a buoyancy compensator shall have an inflation source separate from the breathing gas supply (29 CFR 1910.430(d)(3)); and (2) an inflatable flotation device capable of maintaining the diver at the surface in a face-up position, having a manually activated inflation source independent of the breathing supply, an oral inflation device, and an exhaust valve shall be used for SCUBA diving (29 CFR 1910.430(d)(4)).

[5] Section 1910.401(a)(2)(iv) of the CDO standard provides the exemption for scientific diving from the CDO standard's coverage, and Appendix B to the CDO standard provides guidelines for identifying the scientific diving programs that are exempt.

Following the terms of the NOAA Alternate Diving Standards, JHT's variance application seeks permission to use modern buoyancy compensator devices (BCDs) that deviate from the requirements in 1910.430(d)(3) and (d)(4) that such devices have an inflation source that is "separate from" or "independent of" the diver's breathing gas. NOAA's application for the alternate standards explained that the overwhelming majority of commercial-off-the-shelf (COTS) BCDs are designed to use the diver's breathing gas for inflation, making it difficult to comply with OSHA's requirement for a BCD to have an independent inflation source. According to NOAA, older systems that utilize separate, non-breathing gas inflation sources – particularly, carbon-dioxide cartridges – pose potential safety problems for the diver, including potential cartridge failure, and accidental activation, leading to an unexpected and potentially dangerous over-inflation of the BCD, which could cause a rapid and uncontrolled ascent of the diver to the surface. NOAA's application stated that industry recognition of these inherent safety problems prompted manufacturers to discontinue production of systems relying on such inflation sources. NOAA also explained that using a diver's emergency air supply to inflate the BCD is potentially problematic, as connecting the BCD to an auxiliary cylinder would impede a diver who is "ditching" components of a SCUBA unit during an emergency, and would also create additional points of potential equipment failure and entanglement. JHT echoed NOAA's concerns regarding the use of BCDs that are inflated by a source other than the diver's breathing gas (see Ex. OSHA-2015-0024-0003, p. 9).

The training that NOAA provides to its divers and contractors, including JHT, mitigates the risk of using breathing gas to inflate BCDs. NDP divers are trained to

continually monitor their gas supplies and return to the surface with no less than 500 psi in their SCUBA cylinders, and NOAA stated that this practice, which has been used for more than 30 years, has proven to be an effective method for managing a diver's breathing gas. NDP divers are also trained in techniques to manually inflate their BCDs, both underwater and at the surface, to control their buoyancy. NOAA also explained that the amount of gas needed to inflate a BCD is minimal compared to the amount of breathing gas that is available in a standard SCUBA cylinder, and that most BCDs can be fully inflated with a volume of gas equivalent to that consumed in three or fewer breaths, and therefore asserted that taking such small amounts of gas from the SCUBA cylinder would have minimal effect on the duration of a dive.

Under the alternate conditions that OSHA granted NOAA in the NOAA Alternate Diving Standards, which JHT adopts as the proposed conditions for the variance, NDP divers may use BCDs that are inflated by the breathing gas supply so long as all divers carry an independent reserve cylinder of breathing gas with a separate regulator, which allows divers to orally inflate their BCDs using gas from their reserve gas supplies even if their primary breathing gas supply is depleted. When granting the NOAA Alternate Diving Standards, OSHA explained that this requirement is consistent with 29 CFR 1910.424(c)(4), which requires SCUBA divers to carry a reserve breathing-gas supply. As OSHA stated in the preamble to the CDO standard final rule (42 Fed. Reg. 37650, 37633), "[a reserve] supply is essential to the safety of the SCUBA diver," and employers must take precautions to "assure that the air reserve will not be depleted inadvertently during the dive." OSHA ultimately concluded that NOAA's proposed alternate standard provides equivalent safety protection to divers as

1910.430(d)(3) so long as the diver carries a reserve breathing gas supply, does not connect the reserve breathing gas to the BCD's inflation source, and uses the BCD in accordance with the manufacturer's instructions.

Further, OSHA noted in the NOAA Alternate Diving Standards that 1910.430(d)(4)'s requirement that SCUBA divers use a BCD with a manually activated inflation source (e.g., via a carbon-dioxide cartridge) in addition to an oral inflation device is intended to allow the diver to quickly inflate the BCD in an emergency, but technological improvements in manual BCD power inflators now allow for rapid inflation of BCDs with breathing gas, but with less safety risk (e.g., over-inflation) than using carbon-dioxide cartridges. Using these manual BCD power inflators to inflate a BCD with breathing gas therefore provides protection to a diver that is equivalent to the standard, and obviates the need for 1910.430(d)(4)'s requirement that the BCD's inflation source be independent of the breathing supply. In addition, OSHA stated that NOAA's policy that, except when line-tended, divers never dive alone and always have topside support, expedites the rescue of divers who must make emergency ascents to the surface, thereby reducing their risk of drowning should an inflatable flotation device malfunction.

Additionally, JHT's proposed variance conditions would follow the NOAA Alternate Diving Standards by replacing 1910.430(d)(4)'s requirement that BCDs used for SCUBA dives be capable of maintaining the diver at the surface in a "face-up position" with a requirement that the BCD be capable of maintaining the diver at the surface in a "positively buoyant state." NOAA's application materials explained that the majority of COTS BCDs available today are not designed to maintain unconscious divers in a face-up position on the surface, as systems capable of meeting that

requirement have inherent safety-related problems that lead most manufacturers to abandon them in favor of more modern systems.

Specifically, NOAA asserted that the only BCD able to maintain a diver in a face-up position at the surface was the "horse-collar" style BCD, which has been widely replaced by jacket-style BCDs (also known as stabilizing, or stab, jackets) or back-mounted systems, both of which have greater operational and safety features compared to the older style. NOAA explained that newer BCDs have more lift, fewer straps (reducing entanglement hazards, particularly when ditching the BCD in an emergency, or when used in conjunction with a weight harness), require fewer steps to don, will not choke divers when fully inflated on the surface, and most significantly, do not impede operation of chest-mounted drysuit inflation valves. Additionally, NOAA explained that the inability of stab-jacket or back-mounted BCDs to maintain a diver in a face-up position is off-set by NOAA's requirement that divers always dive in buddy pairs (or be line-tended), and receive training in the proper technique for inflating their buddy's BCD while keeping their buddy's head face-up during rescues. Accordingly, NOAA stated that the chance of a stricken diver drowning while wearing a BCD that does not provide for face-up flotation is very remote. JHT added that horse-collar BCDs were not originally designed for emergency buoyancy ascents, and many are thus not equipped with the over-pressure relief valves that are essential for safe emergency ascents.

When granting the NOAA Alternate Diving Standards, OSHA noted that the preamble to the CDO final rule explained that "[t]he provision for an inflatable flotation device for SCUBA diving [was] given design specifications because an improperly designed device can be a greater safety hazard than aid" (42 Fed. Reg. 37650, 37666).

BCDs were not commercially available when the CDO standard was published, and OSHA therefore articulated minimum design standards for inflatable flotation devices in the final rule. OSHA agreed in the NOAA Alternate Diving Standards that the flotation design of contemporary BCDs is superior to the equipment that was in use when OSHA published the CDO standard in 1977, and explained that modern BCDs are equipped to maintain a diver at the surface in a positively buoyant state, even if they do not "prop up" the diver's head. OSHA thus granted NOAA's proposed alternative standard on the condition that NOAA continues its policy of requiring that SCUBA divers not dive alone unless they are line-tended, and providing topside support to those divers.

OSHA determined that those conditions would provide NOAA's divers with protection equivalent to the CDO standard, and JHT's proposed variance includes the very same conditions under which OSHA approved the NOAA's Alternate Diving Standards for NOAA-employed NDP divers. As stated above, there are no differences in the training requirements, medical clearance procedures and standards, equipment use and maintenance requirements, or diving procedures that apply to NOAA-employed and JHT-employed divers who conduct diving operations for the NDP. Additionally, OSHA believes that diver safety is best promoted where diving safety rules are clear and consistently applicable to all divers at a worksite. Accordingly, OSHA accepts JHT's proposal to adopt the conditions from the NOAA Alternate Diving Standards as the basis for its requested variance from the inflatable flotation device requirements in 1910.430(d)(3) and (d)(4), and has preliminarily decided to grant the interim order and permanent variance to JHT on those same conditions.

C. *Requested Variance from Paragraphs (b)(2), (c)(1), (c)(3) of 29 CFR 1910.423, and (b)(2) of 29 CFR 1910.424, Requirements for Decompression Chambers.*[6]

OSHA's standards regulating the availability and use of decompression chambers require that: (1) 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 decompression chamber which is at the dive location for at least one hour after the dive (including decompression or treatment as appropriate) (1910.423(b)(2)); (2) for mixed gas diving shallower than 300 fsw, or diving outside the no-decompression limits shallower than 300 fsw, a decompression chamber capable of recompressing the diver at the surface to a minimum of 165 fsw (6 ATA) shall be available at the dive location, and must be dual-lock, multiplace, and accessible within 5 minutes of the dive location (1910.423(c)(1) and (c)(3)(i)-(iii)); and (3) SCUBA dives shall not be conducted at depths deeper than 100 fsw or outside the no-decompression limits unless a decompression chamber is ready for use (1910.424(b)(2)).

Adopting the conditions of the NOAA Alternate Diving Standards, JHT's application proposes conditions that would allow it deviate from these decompression chamber availability and capability requirements in OSHA's CDO standard. As OSHA explained when it granted the NOAA Alternate Diving Standards, the purpose of having a decompression chamber available and ready for use at a dive site is to treat decompression sickness (DCS) and arterial gas embolism (AGE). DCS may occur from breathing air or mixed gases at diving depths and durations that require decompression,

[6] A decompression chamber is "a pressure vessel for human occupancy such as a surface decompression chamber, closed bell, or deep diving system used to decompress divers and to treat decompression sickness" (29 CFR 1910.402).

while AGE may result from over-pressurizing the lungs, usually following a rapid ascent to the surface during a dive without proper exhalation. In the event that DCS or AGE develops, a decompression chamber, oxygen or treatment gas mixtures, and treatment tables and instructions must be readily available to treat these conditions effectively. Decompression chambers provide the most effective therapy – recompression – for DCS and AGE.

First, JHT's proposed variance would adopt the conditions of the NOAA Alternate Diving Standards that permit NOAA to deviate from the requirement of 1910.423(b)(2) that the employer instruct all divers who dive deeper than 100 fsw remain awake and in the vicinity of a decompression chamber for one hour after the dive, and the requirement of 1910.424(b)(2) that SCUBA diving not be conducted at depths deeper than 100 fsw or outside the no-decompression limits unless a decompression chamber is "ready for use." In other words, Sections 1910.423(b)(2) and 1910.424(b)(2) require that any diver who conducts a dive deeper than 100 fsw or outside the no-decompression limits to remain alert and near a decompression chamber for at least one hour to ensure immediate treatment should DCS or AGE develop. Addressing the 100 fsw limit in the preamble to the CDO rule, OSHA stated:

> By adding a depth limit to the decompression chamber requirement, the standard sets a specified depth at which all diving operations will require a chamber, eliminating the safety hazard inherent in operations which are planned below that depth …. OSHA believes that this provision will result in recompression capability being available for the great majority of diving situations where the probability of its being needed is greatest.

42 Fed. Reg. at 37662.

In its application, NOAA sought permission to conduct SCUBA dives within the no-decompression limit up to 130 fsw (rather than 100 fsw) without triggering the

decompression chamber requirements in 1910.423(b)(2) and 1910.424(b)(2) . In support, NOAA cited statistics published by the U.S. Navy (USN) indicating that no-decompression dives to 130 fsw actually pose a lower risk of DCS to divers than no-decompression dives to 100 fsw, and also cited the extremely low DCS incident rate that NOAA has observed in no-decompression SCUBA dives that it has conducted between 101 and 130 fsw since 2000.

When granting NOAA alternate standards to 1910.423(b)(2) and 1910.424(b)(2), OSHA explained that the CDO standard sets the 100 fsw limit based on the increased risk of developing DCS and AGE on dives deeper than 100 fsw. However, OSHA explained that the Agency amended the CDO standard in 2004 to permit employers of recreational diving instructors and diving guides to comply with an alternative set of decompression chamber requirements (*see* 69 Fed. Reg. 7351 (February 17, 2004)).[7] Under the conditions articulated in Appendix C to Subpart T, eligible employers are not required to provide a decompression chamber at the dive site when engaged in SCUBA diving to 130 fsw while breathing a nitrox gas mixture within the no-decompression limits.

OSHA explained in the NOAA Alternate Diving Standards that it created this exemption for recreational diving instructors and diving guides because the Agency determined that the elevated levels of oxygen in nitrox breathing-gas mixtures reduced the incidence of DCS compared to breathing air at the same depths, and therefore found that the risk of DCS was minimal. This determination justified OSHA's use in Appendix C of the equivalent-air-depth (EAD) formula from NOAA's 2001 Diving Manual to

[7] Appendix C incorporated into the CDO standard essentially the same terms as those used in a variance that OSHA granted to Dixie Divers, Inc., a diving school that employed several recreational diving instructors, in 1999 (*see* 64 Fed. Reg. 71242, December 20, 1999).

calculate the no-decompression limits that should apply to a dive depending on the nitrogen partial pressures in the gas. As explained in the preamble to the Appendix C final rule (69 Fed Reg. 7351, 7356), the EAD formula assumes that equivalent nitrogen partial pressures and dive durations will result in similar DCS risk to dives performed with air, and OSHA concluded that the "EAD formula can accurately estimate the DCS risk associated with nitrox breathing-gas mixtures based on equivalent nitrogen partial pressures and dive durations used in air diving."

After considering the statistics and information regarding NDP operations that NOAA submitted, OSHA concluded that NOAA's proposed alternate standards would provide equivalent protection to the CDO standard when NDP divers use air or nitrox breathing-gas mixtures with SCUBA, so long as NOAA complies with the no-decompression provisions of Appendix C of 29 CFR 1910, Subpart T (i.e., Condition 5, "Use of No-Decompression Limits").[8] Also, when using nitrox breathing-gas mixtures with SCUBA at depths up to 130 fsw, NOAA must ensure that the partial pressure of oxygen does not exceed 1.40 ATA or 40 percent by volume (whichever exposes the diver to less oxygen),[9] in keeping with the requirements of Appendix C. JHT's proposed

[8] Condition 5 of Appendix C requires:

(a) For diving conducted while using nitrox breathing-gas mixtures, the employer must ensure that each diver remains within the no-decompression limits specified for single and repetitive air diving and published in the 2001 NOAA Diving Manual or the report entitled "Development and Validation of No-Stop Decompression Procedures for Recreational Diving: The DSAT Recreational Dive Planner," published in 1994 by Hamilton Research Ltd. (known commonly as the "1994 DSAT No-Decompression Tables").

(b) An employer may permit a diver to use a dive-decompression computer designed to regulate decompression when the dive- decompression computer uses the no-decompression limits specified in paragraph 5(a) of this appendix, and provides output that reliably represents those limits.

[9] As OSHA explained in the NOAA Alternate Diving Standards, a key purpose of OSHA's diving standards is to prevent oxygen toxicity (hypoxia), and the maximum acceptable partial pressure of oxygen when SCUBA diving is 1.40 ATA or 40 percent by volume, whichever exposes the diver to less oxygen. ATA, as used here, is the partial pressure of a constituent gas in the total pressure of a breathing gas.

variance would adopt these same conditions under which OSHA granted the alternate standards to 1910.423(b)(2) and 1910.424(b)(2) to NOAA for NDP dives in which JHT divers participate. OSHA believes that in order to maximize diving safety, it is imperative that, when diving for the NDP, the diving practices of JHT-employed divers be identical to those of NOAA-employed divers.

Additionally, JHT's application would adopt the conditions of the NOAA Alternate Diving Standards that permit NOAA to deviate from the decompression chamber availability and capability requirements in 1910.423(c)(1) (that employers have a 6 ATA chamber at the dive location) and 1910.423(c)(3) (that the chamber be dual-lock, multiplace, and located within five minutes of the dive location). In its original application to the Agency, NOAA proposed alternate standards that would have permitted it to use a 2.8 ATA, mono-lock chamber available within two (2) hours of the dive location for all working dives conducted deeper than 130 fsw or outside the no-decompression limits. NOAA explained that complying with 1910.423(c)(1) and (c)(3) requires employers to use a large enough boat to carry and transport a large and powerful decompression chamber to the dive site, but most NDP dives are conducted from small boats, which are launched from larger ships or land-based facilities. Accordingly, NOAA sought permission to use light-weight, portable decompression systems, which it referred to as "hyperlite chambers," to transport injured divers from dive sites to larger chambers located elsewhere. Additionally, NOAA sought to make the hyperlite chamber available within two hours, rather than within five minutes, of the dive location for dives conducted deeper than 130 fsw or outside the no-decompression limits.

OSHA did not grant NOAA the alternate standards based on these proposed conditions, but rather granted revised alternate standards in order to ensure that NOAA divers would receive equivalent protection to the CDO standard. Regarding the chamber *capability* requirements, OSHA found that mono-lock chambers provide limited hyperbaric treatment options (for example, administration of oxygen) to a diver, and explained that the preamble to the original CDO final rule discusses and justifies Subpart T's capability requirements for decompression chambers, including the requirements that the chamber have 6 ATA capability and be dual-lock (i.e., have two compartments) and multiplace (i.e., have a main lock large enough to accommodate and decompress two individuals) (see 42 Fed. Reg. 37650, 37661-63). Accordingly, OSHA stated that mono-lock chambers may be an option for transporting divers to bigger chambers, but it does not provide divers with protection that is equivalent to the CDO standard's requirements, and OSHA therefore did not approve NOAA's proposed chamber-capability alternative.

Regarding the proposed chamber-*availability* alternative, OSHA noted that the preamble to the CDO final rule explained that having the decompression chamber near the dive site was originally considered necessary "because the surface decompression tables are commonly designed to be used with equipment that meets this criterion" (42 Fed. Reg. 37650, 37662). However, OSHA reexamined 1910.423(c)(3)'s five-minute availability requirement when it developed Appendix C to Subpart T. In Appendix C, OSHA found that, for no-decompression dives at 130 fsw or less, a four-hour travel delay to a 6-ATA decompression chamber is acceptable when the employer meets specified conditions, including: verifying before starting diving operations the availability of a treatment facility, qualified healthcare professionals, and a rescue service; ensuring that

suitable transportation to the decompression chamber is available at the dive site during diving operations; ensuring at least two attendants qualified in first-aid and administering oxygen treatment are available for treatment during diving operations; and that these attendants administer medical-grade oxygen to the injured diver during transportation to the treatment facility. OSHA came to this conclusion because, as explained in the preamble to the Appendix C final rule, "a four-hour delay is unlikely to impair treatment outcomes for [DCS], and that [AGE] is rare among recreational divers and can be prevented with proper training and experience" (69 Fed. Reg. 7351, 7359-60).

After considering the information that NOAA submitted regarding the NDP's diving operations, OSHA determined that, for no-decompression dives using air or nitrox that are 130 fsw or less, a four-hour travel delay to a 6 ATA chamber provides NDP divers with protection equivalent to the CDO standard, so long as NOAA meets the medical-treatment provisions of Appendix C to the CDO rule (i.e., Condition 8, "Treating Diving-Related Medical Emergencies"). OSHA thus granted the NOAA Alternate Diving Standards under these conditions, and JHT now seeks to conduct NDP dives according to the same conditions.

Based on its technical review of the JHT's application, the NOAA Alternate Diving Standards, and related supporting material, OSHA preliminarily finds that the proposed conditions would also provide JHT divers with protection equivalent to the CDO standard; there are no differences in the training requirements, medical clearance procedures and standards, equipment use and maintenance requirements, or diving procedures that apply to NOAA-employed and JHT-employed divers who dive under the NDP, and diver safety is best promoted where diving safety rules are clear and

consistently applicable to all divers at a worksite. In fact, OSHA believes that in order to maximize diving safety, it is imperative that, when diving for the NDP, the diving practices of JHT-employed divers be identical to those of NOAA-employed divers. Accordingly, OSHA has preliminarily decided to grant the interim order and permanent variance to JHT on those same conditions.

D. *Multi-State Variance*

As previously stated in this notice, JHT seeks a permanent variance from several provisions of OSHA's CDO standard in order to carry out NDP diving projects conducted from NOAA vessels in accordance with the conditions of the NOAA Alternate Diving Standards. JHT's land-based operations, which are responsible for managing and administering these diving projects, are located at: (1) NOAA CCEHBR Laboratory, 219 Fort Johnson Road, Charleston, South Carolina, 29412; and (2) NOAA/NOS Center for Coastal Fisheries and Habitat Research, 101 Pivers Island Road, Beaufort, North Carolina, 28516. JHT conducts diving operations with NOAA with essentially no geographical limitations, and have conducted diving operations in various navigable waters within OSHA's geographical authority, including the navigable waters of the Virginia, North Carolina, South Carolina, Georgia and Florida, the Florida Keys, the Gulf of Mexico, the Caribbean (e.g., U.S. Virgin Islands and Puerto Rico) and the Pacific (e.g., Hawaii, Guam, Palau, Marianas and American Samoa).

Twenty-eight state safety and health plans have been approved by OSHA under section 18 of the OSH Act.[10] The scope and application section of the CDO standard, 29

[10]Six State Plans (Connecticut, Illinois, Maine, New Jersey, New York, and the Virgin Islands) limit their occupational safety and health authority to state and local employers only. State Plans that exercise their occupational safety and health authority over both public- and private-sector employers are: Alaska,

CFR 1910.401, explains that OSHA has jurisdiction over commercial diving operations when the dive location is within OSHA's geographical authority, and when such operations are not covered by the U.S. Coast Guard. As explained in OSHA's Directive regarding its enforcement of Subpart T ("CDO Directive"),[11] OSHA's CDO standard covers private-sector employers in federal enforcement states, and employers who dive in association with maritime standards (i.e., shipyard employment, longshoring, and marine terminals) when these operations are not covered by a State with an OSHA-approved State Plan. States with approved State Plans enforce the diving standard: (1) when commercial diving operations are being conducted by private-sector employees not engaged in shipyard employment or marine terminal activities (e.g., equipment repair, sewer maintenance, or construction); (2) in maritime operations (i.e., shipyard employment and marine terminals) as provided by their plans in California, Minnesota, Vermont, and Washington; and (3) with regard to state and local government employees. The location of the dive determines which entity has authority over the dive conditions.

Under 29 CFR 1902.8(c), an employer may apply to Federal OSHA for a variance where a state standard is identical to a federal standard addressed to the same hazard, and the variance would be applicable to employment or places of employment in more than one state, including at least one state with an approved plan. Of the twenty-eight State Plans, only California, Michigan, Oregon, and Washington have promulgated their own

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Arizona, California, Hawaii, Indiana, Iowa, Kentucky, Maryland, Michigan, Minnesota, Nevada, New Mexico, North Carolina, Oregon, Puerto Rico, South Carolina, Tennessee, Utah, Vermont, Virginia, Washington, and Wyoming.

[11] *See* OSHA Directive Number: CPL-02-00-151, "29 CFR Part 1910, Subpart T – Commercial Diving Operations" [Dated: 06/13/2011], available at: *http://www.osha.gov/OshDoc/Directive_pdf/CPL_02-00-151.pdf*.

state diving standards; Arizona has adopted 29 C.F.R. 1910, Subpart T with the exception of one provision that is not germane to this application,[12] and all other State Plans have fully adopted 29 CFR Part 1910, Subpart T by reference. Both Michigan's and Oregon's diving standards also adopt 29 CFR Part 1910, Subpart T by reference, although Oregon's diving standards include additional State-specific rules.[13] Washington's diving standards do not adopt 29 CFR Part 1910, Subpart T by reference, but include rules that are identical to each of the federal requirements at issue in JHT's application (see Washington Administrative Code, Chapter 296-37, §§ 510-595). California's diving operations standards contain two rules that are substantively identical to two of the OSHA standards at issue in JHT's application (*see* California Code of Regulations, Title 8, Subchapter 7, Group 26 §§ 6062(b)(1) and (3)((A)-(C)) (substantively identical to 29 CFR 1910.423(c)(1) and (c)(3)). Exhibit OSHA-2015-0024-0009 provides a side-by-side comparison of the Washington and California standards that are identical in substance and requirements to the federal OSHA standards at issue in this variance application.

JHT certified in its application that it has not filed an application for a permanent variance on the same material facts with a State Plan program. JHT's variance application fits the parameters of 29 CFR 1902.8, and Federal OSHA's action on this application will be deemed prospectively an authoritative interpretation of JHT's compliance obligations regarding the applicable state standards in the places of

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[12] *See* 20 A.A.C. 5 § R20-5-602.01 (adopting OSHA's CDO Standard with the exception of 29 C.F.R. 1910.401(a)(2)(ii)), available at: *http://apps.azsos.gov/public_services/Title_20/20-05.pdf*

[13] *See* Michigan's Occupational Health Standards, Part 504, § R 325.50303, "Adoption by reference of federal standard," available at: *http://www.michigan.gov/documents/lara/lara_miosha_OH_504_417497_7.pdf*; Oregon Admin. Rule 437-002-0340, "Adoption by Reference," available at: *http://osha.oregon.gov/OSHARules/div2/div2T.pdf#page=7*

employment covered by the application. As part of the permanent variance process, OSHA's Directorate of Cooperative and State Programs will notify all State Plans that are potentially affected by JHT's variance application, and the states will have the opportunity to comment.

III. Description of the Conditions Specified by the Interim Order and the Application for a Permanent Variance

This section describes the alternative means of compliance with the provisions of 29 CFR 1910.430(d)(3), 1910.430(d)(4), 1910.423(b)(2), 1910.423(c)(1), 1910.423(c)(3), and 1910.424(b)(2), and provides additional detail regarding the proposed conditions that form the basis of JHT's application for an interim order and permanent variance. As indicated earlier in this notice, JHT is seeks the interim order and permanent variance based on proposed conditions derived from the conditions of the alternate standards that OSHA granted to NOAA on September 5, 2014 (Exhibit OSHA-2015-0024-0003, OSHA's Comments and Decisions to NOAA's Request for an Alternate Standard on Diving)("NOAA Alternate Diving Standards"). After reviewing all available information, including JHT's variance application, NOAA's application for the alternate diving standards, and OSHA's analysis and subsequent granting of the NOAA Alternate Diving Standards, OSHA has added additional conditions to this proposal from those adopted from the NOAA Alternate Diving Standard, which the Agency believes are necessary to ensure the safety of JHT's divers who conduct dives under the NOAA

Diving Program (NDP). The below-described conditions form the basis of the interim order and the requested permanent variance.[14]

Proposed Condition A: Scope

The interim order / proposed permanent variance will / would apply only to JHT commercial diving operations that are conducted for NOAA as part of the NDP from a NOAA vessel. Additionally, coverage is / would be limited to the work situations specified under the "Scope and application" section of Subpart T, Commercial Diving Operations (1910.401(a)), and will / would not apply to commercial diving operations that are already exempted under 1910.401(a)(2).[15] Accordingly the scope specifies that the interim order / proposed variance will / would only apply when the dive location is an uninspected vessel operated by NOAA, within OSHA's geographical authority, and when such operations are not covered by the U.S. Coast Guard. When implementing the conditions of the interim order / proposed permanent variance, JHT will / would have to comply fully with all safety and health provisions that are applicable to commercial diving operations as specified by 29 CFR 1910, Subpart T, except for the requirements specified by 29 CFR 1910.430(d)(3), 1910.430(d)(4), 1910.423(b)(2), 1910.423(c)(1), 1910.423(c)(3), and 1910.424(b)(2).

[14] In these conditions, the present tense form of the verb (e.g., "*must*") pertains to the interim order, while the future conditional form of the verb (e.g., "*would*") pertains to the application for a permanent variance (designated as "permanent variance").

[15] Section 1910.401(a)(2) provides that the CDO standard does not apply to any dive (i) performed solely for instructional purposes, using open-circuit, compressed-air SCUBA and conducted within the no-decompression limits; (ii) performed solely for search, rescue, or related public safety purposes by or under the control of a governmental agency; (iii) governed by 45 CFR Part 46 (Protection of Human Subjects, U.S. Department of Health and Human Services) or equivalent rules or regulations established by another federal agency, which regulate research, development, or related purposes involving human subjects; or (iv) fitting the standard's definition of "scientific diving."

The interim order only applies to JHT's employees when they conduct diving operations under the NDP, as would the permanent variance should OSHA decide to grant it.

Proposed Condition B: List of Abbreviations

In proposed condition B, OSHA defines a number of abbreviations used in the interim order / proposed permanent variance. OSHA believes that defining these abbreviations serves to clarify and standardize their usage, thereby enhancing the applicant's and its employees' understanding of the conditions specified by the interim order / proposed permanent variance.

Proposed Condition C: Requirements for Inflatable Flotation Devices

This proposed condition will / would require that, when using a buoyancy compensator device (BCD) for SCUBA diving, JHT will / would ensure that: the device is used in accordance with the manufacturer's instructions; is capable of being inflated orally and via the diver's primary breathing gas supply; and, all divers carry an independent reserve cylinder of breathing gas with a separate regulator that could be used for BCD inflation in an emergency. It will / would also require that, when SCUBA diving, JHT will / would ensure divers use an inflatable flotation device that is: capable of maintaining the diver at the surface in a positively buoyant state; and, has a manually activated inflation source, an oral inflation device, and an exhaust valve. Also, when SCUBA diving, JHT will / would ensure divers are never permitted to dive alone unless they are line-tended and provided with topside support.

Based upon the technical review of the proposed alternate conditions described above (*see* section II.B.), OSHA preliminarily determined that these conditions will /

would provide JHT's divers with protection equivalent to the provisions in the CDO standard that regulate inflatable flotation devices. OSHA approved these same conditions for NOAA-employed NDP divers when it granted the NOAA Alternate Diving Standards on September 5, 2014, and because there are no differences in training requirements, medical clearance procedures, equipment use and maintenance requirements, and diving procedures for NOAA-employed and JHT-employed divers under the NDP, OSHA grants JHT's request for an interim order, and proposes to grant JHT's request for a permanent variance, using the conditions of the NOAA Alternate Diving Standards, in combination with the additional conditions specified in this notice.

Proposed Condition D: Requirements for Decompression Chambers

This proposed condition will / would require that, for any dive that is outside the no-decompression limits or deeper than 130 fsw or using mixed gas with a percentage of oxygen less than air as a breathing mixture, JHT will / would instruct the diver to remain awake and in the vicinity of the decompression chamber which is at the dive location for at least one hour after the dive (including decompression or treatment as appropriate). Additionally, for any dive using air or a nitrox breathing-gas mixture within the no-decompression limits that is deeper than 100 fsw but no deeper than 130 fsw, JHT will / would make available within four hours of the dive location a dual-lock and multi-place decompression chamber capable of recompressing the diver at the surface to a minimum of 165 fsw (6 ATA). JHT will / would also be required to meet the medical-treatment provisions of Appendix C to the CDO rule (i.e.., Condition 8, "Treating Diving-Related Medical Emergencies"), and will / would be prohibited from conducting SCUBA diving using air or nitrox breathing-gas mixture at depths deeper than 100 fsw but no deeper

than 130 fsw, or outside the no-decompression limits, unless a 6 ATA decompression chamber is ready for use (diving operations performed for instructional purposes in accordance with § 1910.401(a)(2)(i) are exempt). When using a nitrox breathing-gas mixture, JHT will / would be required to meet the no-decompression provisions of Appendix C to the CDO rule (i.e., Condition 5, "Use of No-Decompression Limits") and ensure that the partial pressure of oxygen in breathing-gas mixtures does not exceed 1.40 ATA or 40% by volume, whichever exposes the diver to less oxygen.

Based upon the technical review of the proposed alternate conditions regarding its use of decompression chambers (see section II.C.), OSHA preliminarily determined the specified conditions will / would provide JHT's divers with protection equivalent to the CDO standard. OSHA approved these same conditions for NOAA-employed NDP divers when it granted the NOAA Alternate Diving Standards on September 5, 2014, and because there are no differences in training requirements, medical clearance procedures, equipment use and maintenance requirements, and required diving procedures for NOAA-employed and JHT-employed divers under the NDP, OSHA grants JHT's request for an interim order, and proposes to grant the requested permanent variance, using the conditions of the NOAA Alternate Diving Standards in combination with the additional conditions specified in this notice.

Proposed Condition E: Worker Qualification and Training

OSHA added this proposed condition, which will / would require JHT to develop and implement an effective qualification and training program for its affected divers that, at a minimum, meets the requirements set forth in 29 CFR 1910.410 qualifications of a dive team. The proposed condition specifies that as members of the NDP, JHT's affected

divers must / would be required to successfully complete the three-week, 140-hour "Working Diver" course that trains NOAA and contractor divers to perform a wide range of skills utilizing a variety of power and hand tools and specialized equipment. The proposed condition also specifies that JHT's diver must / would be required to complete NDP's diver training requirements, which include: (1) instruction in the conditions of the proposed variance; (2) annual refresher training in oxygen administration (academic and practical components); (3) instruction in maintaining current CPR/AED and First Aid certification; (4) maintaining proficiency in diving by making at least three (3) dives per quarter; (5) completing and passing an annual swim test; (6) completing and passing an annual skills test to demonstrate the diver's ability to safely operate underwater; (7) successfully completing one or more annual rescue drills to demonstrate the diver's ability to surface, extricate, treat and evacuate the victim of a diving accident; and (8) instruction in properly verifying that the diver's life support gear was serviced annually by a certified technician.

OSHA believes that having well-trained and qualified divers performing the required dive tasks ensures that they recognize, and respond appropriately to underwater safety and health hazards. These qualification and training requirements will / would enable affected JHT divers to cope effectively with emergencies, as well as the discomfort and physiological effects of hyperbaric exposure, thereby preventing injury, illness, and fatalities.

Proposed Condition F: Recordkeeping

OSHA also includes proposed condition F, which will / would require the applicant to maintain records of specific factors associated with each dive. The

information gathered and recorded under this provision, in concert with the information provided under proposed condition G (using OSHA 301 Incident Report form to investigate and record dive-related recordable injuries as defined by 29 CFR 1904.4, 1904.7, 1904.8 through 1904.12), will / would enable the applicant and OSHA to determine the effectiveness of the interim order and proposed permanent variance in preventing DCS and other dive-related injuries and illnesses.[16]

Proposed Condition G: Notifications

OSHA added this proposed condition to JHT's application in order to ensure that the applicant provides timely notification regarding the continued use and effectiveness of the proposed conditions in maintaining the safety and health of affected divers and preventing dive-related incidents.

Under this proposed condition, the applicant will / would be required to: (1) notify the Office of Technical Programs and Coordination Activities (OTPCA) and the Area Office closest to the dive location of any recordable injuries, illnesses, in-patient hospitalizations, amputations, loss of an eye, or fatality that occur as a result of diving operations within eight (8) hours of the incident; (2) provide OTPCA and the Area Office closest to the dive location within twenty-four (24) hours of the incident with a copy of the incident investigation report (using OSHA 301 form); (3) include on the OSHA 301 form information on the diving conditions associated with the recordable injury or illness, the root-cause determination, and preventive and corrective actions identified and

[16]*See* 29 CFR 1904, Recording and Reporting Occupational Injuries and Illnesses (*http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=9631*); recordkeeping forms and instructions *(http://www.osha.gov/recordkeeping/RKform300pkg-fillable-enabled.pdf*); and updates to OSHA's recordkeeping rule, 79 Fed Reg. 56130, September 18, 2014 (more information available at*: http://www.osha.gov/recordkeeping2014/index.html)*.

implemented; (4) provide its certification that it informed affected divers of the incident and the results of the incident investigation; (5) notify OTPCA and the Area Office closest to the dive location within fifteen (15) working days should the applicant need to revise its dive procedures to accommodate changes in its diving operations that affect its ability to comply with the conditions of the proposed permanent variance; and (6) by the fifteenth (15^{th}) of January, at the beginning of each new calendar year, provide OTPCA, and the Area and Regional Offices closest to the preceding year's dive locations, with a report summarizing the dives completed during the year just ended and evaluating the effectiveness of the variance conditions in providing a safe and healthful work environment and in preventing dive-related incidents.

It should be noted that the requirement of completing and submitting the dive-related (recordable) incident investigation report (OSHA 301 form) will / would be more restrictive than the current recordkeeping requirement of completing the OSHA 301 form within seven (7) calendar days of the incident (29 CFR 1904.29(b)(3)). This modified and more stringent incident investigation and reporting requirement will / would be restricted to dive-related (recordable) incidents only. Providing notification will / would be essential because time is a critical element in OSHA's ability to determine the continued effectiveness of the variance conditions in preventing dive-related incidents, and the applicant's identification and implementation of appropriate corrective and preventive actions.

Further, these notification requirements will / would enable the applicant, its employees, and OSHA to determine the effectiveness of the proposed permanent variance in providing the requisite level of safety to the applicant's divers, and based on this

determination, whether to revise or revoke the conditions of the proposed permanent variance. Timely notification will / would permit OSHA to take whatever action may be necessary and appropriate to prevent further injuries and illnesses. Providing notification to affected employees will / would inform them of the precautions taken by the applicant to prevent similar incidents in the future.

Additionally, this proposed condition also will / would require the applicant to notify OSHA if it ceases to do business, has a new address or location for its main office, or transfers the operations covered by the proposed permanent variance to a successor company. Further, the condition will / would specify that OSHA must approve the transfer of the interim order or proposed permanent variance to a successor company. These requirements will / would: (1) provide assurance that the successor company has knowledge of, and would comply with, the conditions specified by the interim order or proposed permanent variance; (2) allow OSHA to communicate effectively with the applicant regarding the status of the interim order or proposed permanent variance; and (3) expedite the Agency's administration and enforcement of the interim order or proposed permanent variance, thereby ensuring the continued safety of affected divers.

IV. Grant of Interim Order

In addition to a permanent variance, JHT requested an interim order, which would remain in effect until the Agency modifies or revokes the interim order, or until the Agency makes a decision on its application for a permanent variance, whichever occurs first. During this interim period, the applicant is required to comply fully with the conditions of the interim order as an alternative to complying with the inflatable

flotation device requirements of 29 CFR 1910.430(d)(3) and (4), and the decompression chamber requirements of 29 CFR 1910.423(b)(2), (c)(1), and (c)(3), and 1910.424(b)(2).

As described earlier in this notice, JHT proposes to adopt the conditions of the NOAA Alternate Diving Standards, which were granted to NOAA on September 5, 2014, as the conditions of the interim order and permanent variance. In addition to adopting the NOAA Alternate Diving Standards' conditions for deviating from the applicable inflatable flotation device and decompression chamber provisions of Subpart T, OSHA added several conditions, which the Agency believes are necessary to ensure the safety of JHT's divers who conduct commercial diving operations for NOAA under the NDP.

After comprehensively reviewing the record discussed above, the Agency preliminarily finds that when the employer complies with the conditions of the proposed variance, the working conditions of the applicant's workers would be at least as safe and healthful as if the employer complied with the working conditions specified by 29 CFR §§ 1910.430(d)(3), 1910.430(d)(4), 1910.423(b)(2), 1910.423(c)(1), 1910.423(c)(3), and 1910.424(b)(2). Accordingly, OSHA is issuing an interim order to the applicant pursuant to the provisions of 29 CFR 1910.11(c). In lieu of complying with the provisions listed of Subpart T specified above, the applicant will: (1) comply with the conditions listed below in Section V ("Specific Conditions of the Interim Order and the Application for a Permanent Variance") of this notice for as long as the interim order remains in effect; (2) comply fully with all other applicable provisions of 29 CFR part 1910; and (3) provide a copy of this Federal Register notice to all employees affected by the proposed conditions, using the same means it used to inform these employees of its application for a permanent variance. During the period starting with the publication of this notice, the

interim order shall remain in effect until the Agency publishes a final decision on the application for a permanent variance, or until the Agency modifies or revokes the interim order in accordance with 29 CFR 1905.13, whichever occurs first.

V. Specific Conditions of the Interim Order and the Application for a Permanent Variance

After comprehensively reviewing the evidence, OSHA has preliminarily determined that the proposed conditions will provide a place of employment as safe and healthful as that provided by 29 CFR 1910.430(d)(3), 1910.430(d)(4), 1910.423(b)(2), 1910.423(c)(1), 1910.423(c)(3), and 1910.424(b)(2). The following conditions apply to the interim order that OSHA is granting to JHT. In addition, these conditions specify the alternative means of compliance that OSHA proposes for JHT's requested permanent variance from the above-listed provisions of Subpart T of 29 CFR Part 1910. The conditions will / would apply to all of JHT's commercial diving operations conducted from NOAA vessels under the NOAA Diving Program (NDP). These conditions include:

A. *Scope*

1. This interim order / permanent variance applies / would apply only to JHT's commercial diving operations conducted for NOAA under the NDP from a NOAA vessel.

2. The interim order / permanent variance only applies / would apply to JHT diving operations that are covered under Subpart T of 29 CFR Part 1910 (see 29 CFR 1910.401(a)). Accordingly, the variance will / would only apply when the dive location is an uninspected vessel within OSHA's geographical authority, as defined by 29 U.S.C. 653(a), and when such operations are not covered by the U.S. Coast Guard.

3. The interim order / permanent variance will / would not apply to commercial diving operations exempted by 29 CFR 1910.401(a)(2), including diving operations performed solely for instructional purposes, using open-circuit, compressed-air SCUBA and conducted within the no-decompression limits; diving performed solely for search, rescue, or related public safety purposes by or under the control of a governmental agency; or; diving for research, development, or related purposes involving human subjects, as governed by 45 CFR Part 46 or equivalent rules or regulations established by another federal agency; and scientific diving. To qualify for the scientific diving exemption, all of the requirements in 29 CFR 1910.401(a)(2)(iv) and Appendix B to 29 CFR Part 1910, Subpart T, must be met.

4. Except for the requirements specified by 29 CFR 1910.430(d)(3), 1910.430(d)(4), 1910.423(b)(2), 1910.423(c)(1), 1910.423(c)(3), and 1910.424(b)(2), JHT must / would be required to comply fully with all other applicable provisions of Subpart T of 29 CFR Part 1910 when conducting commercial diving operations.

5. The interim order will remain in effect until the Agency publishes a final decision on the application for a permanent variance, or until the Agency modifies or revokes the interim order in accordance with 29 CFR 1905.13, whichever occurs first.

B. *List of Abbreviations*

Abbreviations used throughout this proposed permanent variance would include the following:

ATA−Atmosphere Absolute

BCD−Buoyancy Compensator Device

CDO−Commercial Diving Operations

DCS−Decompression Sickness

fsw−feet of seawater

JHT−Jardon and Howard Technologies, Incorporated

NDP−NOAA Diving Program

OSHA−Occupational Safety and Health Administration

OTPCA− OSHA's Office of Technical Programs and Coordination Activities

p.s.i.–pounds per square inch

SCUBA−Self Contained Underwater Breathing Apparatus

C. *Requirements for Inflatable Flotation Devices*

1. When using a BCD for SCUBA diving, JHT will / would ensure that: the device is used in accordance with the manufacturer's instructions; is capable of being inflated orally and via the diver's primary breathing gas supply; and all divers carry an independent reserve cylinder of breathing gas with a separate regulator that could be used for BCD inflation in an emergency.

2. When SCUBA diving, JHT will / would ensure that divers use an inflatable flotation device that is: capable of maintaining the diver at the surface in a positively buoyant state; and have a manually activated inflation source, an oral inflation device, and an exhaust valve.

3. When SCUBA diving, JHT will / would ensure that divers are never permitted to dive alone unless they are line-tended and provided with topside support (as a minimum, topside support includes a designated person-in-charge and a standby diver).

D. *Requirements for Decompression Chambers*

1. For any dive that is outside the no-decompression limits or deeper than 130 fsw or using mixed gas with a percentage of oxygen less than air as a breathing mixture, JHT will / would instruct the diver to remain awake and in the vicinity of the decompression chamber, which is at the dive location for at least one hour after the dive (including decompression or treatment as appropriate).

2. For any dive using air or a nitrox breathing-gas mixture within the no-decompression limits that is deeper than 100 fsw but no deeper than 130 fsw, JHT will / would make available within four hours of the dive location, a decompression chamber capable of recompressing the diver at the surface to a minimum of 165 fsw (6 ATA).

3. For any dive using air or nitrox breathing-gas mixture within the no-decompression limits that is deeper than 100 fsw but no deeper than 130 fsw, JHT will / would make available a decompression chamber that is: dual-lock, multiplace, and located within four hours of the dive location.

4. JHT *will / would have to* meet the medical-treatment provisions of Appendix C to the CDO rule (*i.e*., Condition 8, "Treating Diving-Related Medical Emergencies").

5. JHT will / would be prohibited from conducting SCUBA diving using air or nitrox breathing-gas mixture at depths deeper than 100 fsw but no deeper than 130 fsw, or outside the no-decompression limits, unless a 6 ATA decompression chamber is ready for use (diving operations performed for instructional purposes in accordance with § 1910.401(a)(2)(i) are exempt).

6. When using a nitrox breathing-gas mixture, JHT will / would have to meet the no-decompression provisions of Appendix C to the CDO rule (i.e., Condition 5, "Use of

No-Decompression Limits") and ensure that the partial pressure of oxygen in breathing-gas mixtures does not exceed 1.40 ATA or 40% by volume, whichever exposes the diver to less oxygen.

E. *Worker Qualification and Training*

JHT will / would be required to:

1. Develop and implement an effective qualification and training program for its affected divers that as a minimum, meets the requirements set forth in 29 CFR 1910.410 qualifications of a dive team;

2. Ensure that each affected diver (including, but not limited to, current and newly assigned to be involved in diving operations under the NDP) successfully completes NOAA's three-week, 140-hour "Working Diver" course;

3. Ensure that the diver training program also includes the following: (a) instruction in the conditions of the proposed variance; (b) annual refresher training in oxygen administration (academic and practical components); (c) instruction in maintaining current CPR/AED and First Aid certification; (d) maintaining proficiency in diving by making at least three (3) dives per quarter; (e) completing and passing an annual swim test; (f) completing and passing an annual skills test to demonstrate the diver's ability to safely operate underwater; (g) successfully completing one or more annual rescue drills to demonstrate the diver's ability to surface, extricate, treat and evacuate the victim of a diving accident; and (h) instruction in properly verifying that the diver's life support gear was serviced annually by a certified technician;

4. Document the training in order to provide a means of tracking the training received by divers and, consequently, to prompt JHT to update that training if necessary.

F. *Recordkeeping*

JHT will / would be required to:

1. Maintain records of recordable injuries that occur as a result of diving operations conducted for NOAA under the NDP;

2. Ensure that the information gathered and recorded under this provision, in concert with the information provided under proposed condition G (using OSHA 301 Incident Report form to investigate and record dive-related recordable injuries as defined by 29 CFR 1904.4, 1904.7, 1904.8 through 1904.12), would enable the JHT and OSHA to determine the effectiveness of the proposed permanent variance in preventing DCS and other dive-related injuries and illnesses.[17]

G. *Notifications*

JHT will / would be required to:

1. Notify the OTPCA and the Area Office closest to the dive location of any recordable injuries, illnesses, in-patient hospitalizations, amputations, loss of an eye, or fatality that occur as a result of diving operations within eight (8) hours of the incident;

2. Provide OTPCA and the Area Office closest to the dive location within twenty-four (24) hours of the incident with a copy of the incident investigation report (using OSHA 301 form);

3. Include on the OSHA 301 form information on the diving conditions associated with the recordable injury or illness, the root-cause determination, and preventive and corrective actions identified and implemented;

[17] *See* footnote 16.

4. Provide its certification that it informed affected divers of the incident and the results of the incident investigation;

5. Notify OTPCA and the Area Office closest to the dive location within fifteen (15) working days should the applicant need to revise its dive procedures to accommodate changes in its diving operations that affect its ability to comply with the conditions of the proposed permanent variance;

6. Obtain OSHA's written approval prior to implementing the revision in its dive procedures to accommodate changes in its diving operations that affect its ability to comply with the conditions in the proposed permanent variance;

7. By the fifteenth (15th) of January, at the beginning of each new calendar year, provide OTPCA, and the Area and Regional Offices closest to the preceding year's dive locations, with a report summarizing the dives completed during the year just ended and evaluating the effectiveness of the variance conditions in providing a safe and healthful work environment and in preventing dive-related incidents;

8. Notify OSHA if it ceases to do business, has a new address or location for its main office, or transfers the operations covered by the proposed permanent variance to a successor company; and

9. Ensure that OSHA would approve the transfer of the interim order or permanent variance to a successor company.

OSHA will publish a copy of this notice in the Federal Register.

Authority and Signature

Thomas M. Galassi, Acting Deputy Assistant Secretary of Labor for Occupational Safety and Health, 200 Constitution Avenue, N.W., Washington, DC 20210, authorized the preparation of this notice. Accordingly, the Agency is issuing this notice pursuant to 29 U.S.C. 655(d), Secretary of Labor's Order No. 1-2012 (77 FR 3912, Jan. 25, 2012), and 29 CFR 1905.11.

Signed at Washington, DC, on July 19, 2017.

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Thomas M. Galassi,
Acting Deputy Assistant Secretary of Labor for Occupational Safety and Health

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