

United States Coast Guard



COMMERCIAL DIVING ADDENDUM

Training Aid

Training Aid CDA
Rev. August 2016

Use of Commercial Diving Addendum Training Aid:

This is a condensed version of the CDA Performance and Qualification Standard (PQS) workbook. This Training Aid is intended to be used by Coast Guard Marine Inspector trainees during inspections which involve commercial diving operations. This Training Aid provides a quick reference for all the steps necessary to complete specific tasks listed in the CDA Job Aid.

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CDA-DO03 - Witness surface-supplied mixed gas diving operation

.01	Verify decompression chamber, closed bell or diving stage is ready	46 CFR 197.434(a)
.02	Verify bell used for dives deeper than 220 feet of saltwater (fsw)	46 CFR 197.434(b)
.03	Verify closed bell is utilized for dives at depths greater than 300 fsw	46 CFR 197.434(c)
.04	Verify separate dive team member tends diver	46 CFR 197.434(d)
.05	Verify presence of standby diver for non-saturation dives	46 CFR 197.434(e)
.06	Verify a diver is available in closed bell	46 CFR 197.434(f)
.07	Verify presence of a second diver stationed outside of entry point	46 CFR 197.434(h)
.08	Verify diver has all equipment	46 CFR 197.434(i)
.09	Verify diving operation has primary and secondary breathing gas	46 CFR 197.434(k) 46 CFR 197.346 46 CFR 197.434(J)
.10	Verify availability of stand-by diver for bell recovery	46 CFR 197.340 46 CFR 197.434(g)

CDA-DO04 - Witness live-boating operation

.01	Verify person in charge is performing duties	46 CFR 197.436(a)
.02	Verify diving supervisor is performing duties	46 CFR 197.436(c)
.03	Verify SCUBA not utilized	46 CFR 197.204 MSM II/C.1.E.4.b(4)
.04	Verify a boat and crew are available	46 CFR 197.402(b)(2)

Foreign Freight Vessel Examination

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Certificates and Documents (CD)

CDA-CD01 - Examine person in charge (PIC) designation

.01 Verify owner has designated a PIC 46 CFR 197.208

CDA-CD02 - Examine diving supervisor's designation

.01 Verify designation 46 CFR 197.210
.02 Verify each diving operation has a designated diving supervisor 46 CFR 197.402(a)(2)(i)

Logs and Manuals Inspection (LM)

CDA-LM01 - Examine dive operations manual

.01 Verify presence 46 CFR 197.420(a)(1)
.02 Verify availability to dive team members at dive location(s) 46 CFR 197.420(a)(2)
.03 Verify contents 46 CFR 197.420(d)
46 CFR 197.420(c)
46 CFR 197.420(b)

CDA-LM02 - Examine official logbook

.01 Verify presence 46 CFR 197.480
46 USC 11301
46 CFR 11302
.02 Verify contents 46 CFR 197.482(a)
46 CFR 197.482(b)
.03 Verify regulatory deviations logged 46 CFR 197.482(c)

CDA-LM03 - Review equipment maintenance record

.01 Verify medical kit inspection 46 CFR 197.482(d)(1)
46 CFR 197.454
.02 Verify air compressor tests 46 CFR 197.482(d)(2)
46 CFR 197.450(a)
.03 Verify oxygen service information 46 CFR 197.482(d)(5)
46 CFR 197.452
.04 Verify tests of breathing supply hoses 46 CFR 197.482(d)(6)
46 CFR 197.456
.05 Verify results of breathing gas supply system(s) inspection(s) 46 CFR 197.482(d)(7)
46 CFR 197.450(b), (c) & (d)
.06 Verify breathing mixture checks 46 CFR 197.482(d)(3)
.07 Verify tests of depth gauges and timekeeping devices 46 CFR 197.482(d)(8)
46 CFR 197.458
.08 Verify tests and inspection of each Pressure Vessel for Human Occupancy (PVHO) 46 CFR 197.482(d)(9)
46 CFR 197.462
.09 Verify tests and inspections of diving equipment 46 CFR 197.482(d)(10)
46 CFR 197.346
46 CFR 197.460
.10 Verify test of pressure piping 46 CFR 197.482(d)(11)
46 CFR 197.462
.11 Verify tests and inspections of volume tanks and cylinders 46 CFR 197.482(d)(12)
46 CFR 197.462

CDA-DE17 - Inspect diver's equipment

.01 Verify presence/condition of heavyweight diving outfit equipment 46 CFR 197.346(b)
46 CFR 197.346(c)
.02 Verify presence/condition of lightweight diving outfit equipment 46 CFR 197.346(d)
.03 Verify requirements for primary breathing gas supply 46 CFR 197.346(e)
46 CFR 197.346(f)
.04 Verify requirements for reserve breathing gas supply 46 CFR 197.346(f)
46 CFR 197.346(g)

Diving Operations

CDA-DO01 - Witness SCUBA diving operation

.01 Verify diver not outside no-decompression limits 46 CFR 197.430(a)(1)
46 CFR 197.430(a)(2)
.02 Verify equipment for currents 46 CFR 197.430(a)(3)
.03 Verify presence of standby diver 46 CFR 197.430(c)
.04 Verify presence of line tender 46 CFR 197.430(d)
.05 Verify presence of second diver 46 CFR 197.430(e)
.06 Verify boat availability for diver pick-up 46 CFR 197.430(f)
.07 Verify diver properly equipped 46 CFR 197.430(b)
46 CFR 197.346
.08 Verify boat and crew are available 46 CFR 197.402(c)
.09 Verify SCUBA diving is not a live-boating operation MSM II/C.1.E.4.b(4)

CDA-DO02 - Witness surface-supplied air diving operation

.01 Verify diving depths 46 CFR 197.432(a)
.02 Verify primary breathing gas supply 46 CFR 197.432(b)
.03 Verify each diver continuously tended 46 CFR 197.432(c)
.04 Verify presence of second diver 46 CFR 197.432(d)
.05 Verify operations deeper than 130 fsw or outside non-decompression limits meet additional requirements 46 CFR 197.432(e)
.06 Verify diver properly equipped 46 CFR 197.432(f)
46 CFR 197.346

CDA-DE13 - Inspect compressed gas cylinders

- .01** Verify cylinders 46 CFR 197.338(e)
MSM II/C.1.E.3.g
- .02** Verify storage, protection and safeguarding 46 CFR 197.338(a)
46 CFR 197.338(b)
46 CFR 197.338(c)
46 CFR 197.338(d)
- .03** Verify tests after repairs, modifications or alterations

CDA-DE14 - Inspect breathing gas supply

- .01** Verify primary breathing gas supply 46 CFR 197.340(a)
46 CFR 197.314(c)(3)
- .02** Verify secondary breathing gas supply 46 CFR 197.340(b)
- .03** Verify diver-carried reserve breathing gas supply 46 CFR 197.340(c)
- .04** Verify oxygen properties of breathing mixtures 46 CFR 197.340(f)
- .05** Verify nitrogen properties of breathing mixtures 46 CFR 197.340(g)
- .06** Verify helium properties of breathing mixtures 46 CFR 197.340(h)
- .07** Verify compressed air properties for breathing mixtures 46 CFR 197.340(i)
- .08** Verify breathing gas is checked prior to commencement of all diving operations 46 CFR 197.340(c)

CDA-DE15 - Verify SCUBA air supply

- .01** Verify primary air supply 46 CFR 197.340(d)
- .02** Verify diver-carried reserve 46 CFR 197.340(e)
- .03** Verify air supply is checked prior to commencement of all diving operations 46 CFR 197.340(d)
46 CFR 197.340(e)

CDA-DE16 - Inspect diver's equipment

- .01** Verify self-contained equipment 46 CFR 197.346(a)(1)
- .02** Verify inflatable flotation device 46 CFR 197.346(a)(3)
- .03** Verify operation of weight belt quick release 46 CFR 197.346(a)(4)
- .04** Verify operation of diving wristwatch 46 CFR 197.346(a)(7)
- .05** Verify operation of depth gage 46 CFR 197.346(a)(8)
46 CFR 197.458(a) & (b)
46 CFR 197.458(d)
- .06** Verify face mask 46 CFR 197.346(a)(2)
- .07** Verify knife 46 CFR 197.346(a)(5)
- .08** Verify swim fins or shoes 46 CFR 197.346(a)(6)

CDA-LM04 - Review diving supervisor's report

- .01** Verify presence 46 CFR 197.404(a)(4)
46 CFR 197.402(a)(2)(ii)
- .02** Verify contents 46 CFR 197.402(a)(2)(ii)
46 CFR 197.402(b), (c), (d) & (e)

Diving Equipment**CDA-DE01 - Inspect air compressor system**

- .01** Verify volume tank is stamped 46 CFR 197.310(a)(1)
- .02** Verify check valve on inlet side 46 CFR 197.310(a)(1)(i)
- .03** Verify operation of pressure gage 46 CFR 197.310(a)(1)(ii)
46 CFR 54.15-5(f)
- .04** Verify operation of relief valve 46 CFR 197.310(a)(1)(iii)
46 CFR 61.10-5(i)
46 CFR 54.15-5, 15-10(a) & (g)
- .05** Verify operation of drain valve 46 CFR 197.310(a)(1)(iv)
- .06** Verify location of intakes 46 CFR 197.310(b)
- .07** Witness operation of efficient filtration system 46 CFR 197.310(c)
- .08** Witness proper operation of slow-opening shut-off valve 46 CFR 197.310(d)
46 CFR 56.20
- .09** Verify installation of machinery covers and guards 46 CFR 58.01-20

CDA-DE02 - Inspect breathing supply hoses

- .01** Verify maximum working pressure 46 CFR 197.312(a)(1)
- .02** Verify burst pressure 46 CFR 197.312(a)(2)
- .03** Verify connectors 46 CFR 197.312(a)(3)
- .04** Verify kink resistant 46 CFR 197.312(a)(4)
- .05** Verify umbilical markings 46 CFR 197.312(b)
- .06** Verify status of hose ends not in use 46 CFR 197.456(a)(4)

CDA-DE03 - Inspect first aid and treatment equipment

- .01** Verify medical kit is approved 46 CFR 197.314(a)(1)
- .02** Verify medical kit contents 46 CFR 197.314(a)(1)
46 CFR 197.314(a)(2)
46 CFR 197.314(a)(3)
- .03** Verify capability to remove an injured diver from water 46 CFR 197.314(a)(4)
- .04** Verify two-way communications system 46 CFR 197.314(b)
- .05** Verify decompression chamber 46 CFR 197.314(c)(1)
- .06** Verify decompression and treatment table 46 CFR 197.314(c)(2)
- .07** Verify adequate supply of breathing gases 46 CFR 197.314(c)(3)
- .08** Verify medical kit suitable for decompression chamber 46 CFR 197.314(c)(4)
- .09** Verify capability to assist an injured diver into decompression chamber 46 CFR 197.314(c)(5)

CDA-DE04 - Inspect gages and timekeeping devices

- .01 Verify depth gage 46 CFR 197.318(a)
Dive Operations Manual
- .02 Verify timekeeping device 46 CFR 197.318(b)
Dive Operations Manual

CDA-DE05 - Inspect diving ladder and stage

- .01 Inspect diving ladder 46 CFR 197.320(a)
- .02 Inspect diving stage 46 CFR 197.320(b)

CDA-DE06 - Inspect surface supplied helmets and masks

- .01 Verify operation of non-return valve 46 CFR 197.322(a)(1)
- .02 Verify operation of exhaust valve 46 CFR 197.322(a)(2)
- .03 Verify operation of two-way 46 CFR 197.322(a)(3)
communications
- .04 Verify mask's or helmet's ventilator 46 CFR 197.322(b)

CDA-DE07 - Inspect diver's safety harness

- .01 Verify positive buckling device 46 CFR 197.324(a)
- .02 Verify attachment point for umbilical life 46 CFR 197.324(b)
line

CDA-DE08 - Inspect Pressure Vessel for Human Occupancy (PVHO)

- .01 Verify approval and stamp 46 CFR 197.328(a)
ASME PVHO-1
MSM II/C.1.E.3.a - f
- .02 Verify location of valves 46 CFR 197.328(d)(1)
46 CFR 197.328(d)(2)
- .03 Verify operation of pressure relief device 46 CFR 197.328(d)(3)
ASME PVHO-1/1.8
- .04 Verify operation of built-in breathing 46 CFR 197.328(d)(4)
system
- .05 Verify operation of two-way 46 CFR 197.328(d)(5)
communications 46 CFR 197.328(d)(6)
- .06 Verify operation of pressure gage(s) 46 CFR 197.328(d)(7)
- .07 Verify viewports 46 CFR 197.328(d)(8)
46 CFR 197.328(d)(9)
- .08 Verify sufficient illumination 46 CFR 197.328(d)(10)
- .09 Verify sources of combustible materials & 46 CFR 197.328(d)(11)
ignition are minimalized
- .10 Verify protective device on inlet side of 46 CFR 197.328(d)(12)
exhaust lines
- .11 Verify fire extinguishing capability 46 CFR 197.328(d)(13)
- .12 Verify means of maintaining oxygen 46 CFR 197.328(d)(14)
content
- .13 Verify means of maintaining carbon 46 CFR 197.328(d)(15)
dioxide content
- .14 Verify operation of breathing and pressure 46 CFR 197.328(d)(16)
supply control overrides
- .15 Verify operation of speech unscrambler 46 CFR 197.328(d)(17)
- .16 Examine all modifications or alterations & 46 CFR 197.328(d)(19)
confirm required tests conducted/logged ASME-PVHO-1

CDA-DE09 - Inspect Pressure Vessel for Human Occupancy (PVHO) - Closed Bell

- .01 Verify meets all PVHO requirements 46 CFR 197.330(a)
46 CFR 197.328
- .02 Verify underwater breathing apparatus(s) 46 CFR 197.330(a)(1)
- .03 Verify umbilical 46 CFR 197.330(a)(2)
- .04 Verify lifting equipment attached 46 CFR 197.330(a)(3)
- .05 Verify operation of emergency locating 46 CFR 197.330(a)(6)
device
- .06 Verify capability to remove an injured diver 46 CFR 197.330(a)(7)
- .07 Verify life support capabilities 46 CFR 197.330(a)(8)
- .08 Verify capability of attachment to another 46 CFR 197.330(b)
PVHO

CDA-DE10 - Inspect Pressure Vessel for Human Occupancy (PVHO) - Decompression Chamber

- .01 Verify meets all PVHO requirements 46 CFR 197.332(a)
46 CFR 197.328
- .02 Verify internal dimensions and capability 46 CFR 197.332(b)
46 CFR 197.332(c)
- .03 Verify operation of man-way locking 46 CFR 197.332(d)
devices
- .04 Verify internal lighting 46 CFR 197.332(e)
- .05 Verify number of bunks 46 CFR 197.332(f)
- .06 Verify visibility of bunks from exterior 46 CFR 197.332(g)
- .07 Verify minimum pressure capabilities 46 CFR 197.332(h)
- .08 Verify minimum pressurization rate 46 CFR 197.332(i)
- .09 Verify minimum decompression rate 46 CFR 197.332(j)
- .10 Verify operation of external pressure 46 CFR 197.332(k)
gage(s)
- .11 Verify operation of sound-powered 46 CFR 197.332(m)
headset or telephone

CDA-DE11 - Inspect open diving bell

- .01 Verify upper section's envelope is properly 46 CFR 197.334(a)
sized
- .02 Verify lifting equipment 46 CFR 197.334(b)
- .03 Verify umbilical 46 CFR 197.334(c)
- .04 Verify corrosion-resistant or maintained 46 CFR 197.334(d)
against injurious corrosion

CDA-DE12 - Inspect pressure piping

- .01 Verify piping system meets ANSI standard 46 CFR 197.336(a)
ANSI B31.1
- .02 Verify markings 46 CFR 197.336(b)
- .03 Verify tests after repairs, modifications or 46 CFR 197.336(c)
alterations 46 CFR 197.462(a)