

EXTREME LIGHTWEIGHT DIVING SYSTEM
RAPID DEPLOYMENT CONSOLE
(XLDS RDC-3 AND RDC-2)



OPERATING PROCEDURES

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Revised August 21, 2019

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Definitions of Signal Words Used in this User's Guide

DANGER

This word indicates an imminently hazardous situation, which if not avoided, will result in death or serious injury.

WARNING

This word indicates a potentially hazardous situation, which if not avoided, could result in death or serious injury.

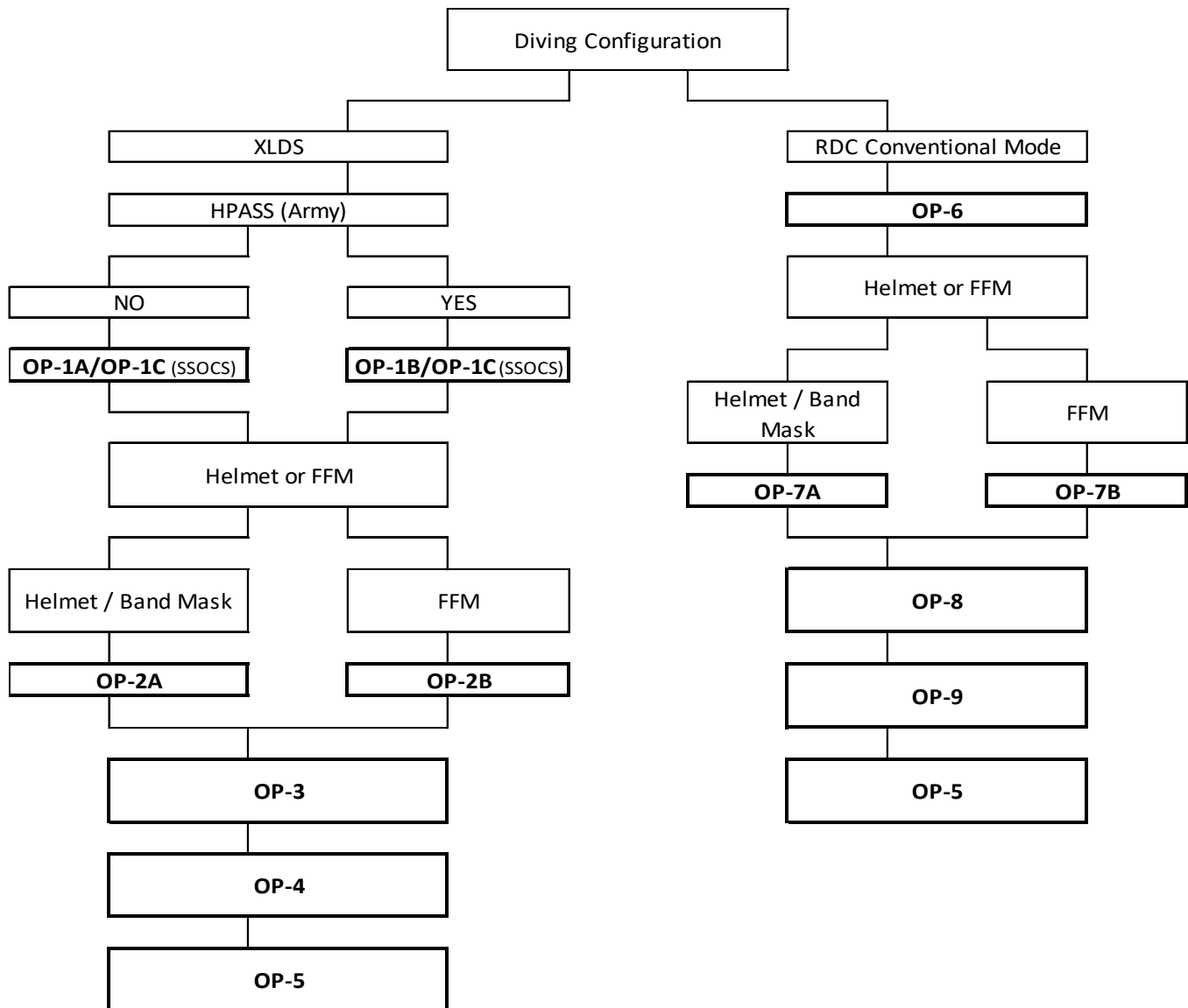
CAUTION

This word indicates a potentially hazardous situation, which if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

NOTICE

This word indicates a special attention or required action for basic operation.

SECTION FIVE: XLDS Diving Configuration Diagram



SECTION FIVE: OP-1A / XLDS Set-Up and Pre-Dive Inspection

NOTICE

OP-1A should be used when using the RDC-2 or RDC-3 with most HP air sources. For specific instructions on set-up using the HPASS (twin steel 130s), use OP-1B.

NOTICE

OP-1A can be used for either the RDC-2 or RDC-3. For the RDC-2, steps applying to Yellow or Yellow Diver are N/A. OP-1A should be performed prior to system use. In this procedure, the operator cycles all Valves to ensure proper operation and initial system configuration prior to bringing up gas supplies from the HP source to ensure that all Valves operate smoothly. The procedure leaves the RDC lined up for diving.

NOTICE

The standard RDC-3 and RDC-2 Systems have two Yokes per diver circuit for attachment to two single or double SCUBA Cylinders. If other types of Cylinders and connections are being used, ensure the connections contain a Bleed Valve so that Cylinder changing can be accomplished without gas interruption. Ensure all fittings have a proper pressure rating for the Cylinders being used and have an orifice size no smaller than of 0.112".

SECTION FIVE: OP-1A / XLDS Set-Up and Pre-Dive Inspection

STEP	LOCATION	PROCEDURE	INITIALS		
			RED DIVER	GREEN DIVER	YELLOW DIVER
SECTION 1					
XLDS PRE-DIVE SET-UP AND INSPECTION					
INSPECT HP GAS SUPPLY					
CAUTION					
Each diver must have at least two cylinders (one cylinder for each yoke or DIN) attached prior to commencement of diving. Only one cylinder should be on line at a time with the other cylinder in standby.					
CAUTION					
Failure to inspect reserve cylinders may result in an inadequate gas supply while dives are in progress.					
1	All HP Supply Cylinders and EGS Cylinders	Visually inspect the exterior each cylinder, including any reserve cylinders and EGS cylinders, for obvious signs of damage.			
2	All HP Supply Cylinders and EGS Cylinders	Inspect each cylinder valve for signs of damage or contamination and <ol style="list-style-type: none"> 1. (for A-Yoke connections) to ensure the O-Ring is in place and presents a smooth appearance. 2. (for DIN connections) to ensure connection threads are clean and undamaged and the sealing face presents a clean and smooth appearance. 			
3	All HP Supply Cylinders and EGS Cylinders	Gauge each cylinder to ensure it is fully charged.			
4	All HP Supply Cylinders and EGS Cylinders	Note cylinder sizes and pressures to ensure that they meet or exceed mission requirements.			
NOTICE					
At a minimum, EGS cylinders must contain sufficient air to bring the diver to his first decompression stop or the surface for no- decompression dives.					
INSPECT THE RDC					
5	RDC	Open the Console lid and lock in place. Inspect the overall condition of the Console.			
CAUTION					
HP regulators should be adjusted using the force of two fingers only. Valve handwheels should spin smoothly and easily.					

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SECTION FIVE: OP-1A / XLDS Set-Up and Pre-Dive Inspection

STEP	LOCATION	PROCEDURE	INITIALS		
			RED DIVER	GREEN DIVER	YELLOW DIVER
6	RDC HP Regulators	Back off HP regulators AR-1R, AR-2G and AR-3Y by turning handwheels CCW until no resistance is felt and the handwheel spins freely. Rotate the handwheel back CW until the first sign of resistance is felt.			
7	Umbilical Supply Valves	Check umbilical supply valves ALP-1R, ALP-2G and ALP-3Y for smooth operation by fully opening, then closing. Verify SHUT.			
8	Cross Connect Valves	Check valves XC-1 and XC-2 for smooth operation by fully opening, then closing. Verify SHUT.	XC-1		XC-2
CAUTION					
Pneumofathometer valves should be snugged using two fingers only. Do not over-tighten valves. Over-tightening multi-turn valves could result in valve seat and/or stem damage, resulting in reduced capability and leakage.					
9	Pneumofathometer Supply Valves	Check pneumo supply valves ALP-4, ALP-5 and ALP-6 for smooth operation by opening one turn, then closing. Verify SHUT.			
10	Pneumofathometer Gauges	Verify Pneumo gauges read 0 FSW. Adjust if necessary (gauges are altitude and temperature sensitive).			
REMOVE RDC DUST CAPS AND PLUGS					
11	RDC	Remove dust caps from each of the umbilical supply outlets.			
12	RDC	Remove dust caps from each of the HP inlets.			
13	RDC	Inspect HP supply inlet fittings for damage and to ensure the O-ring is in place and presents a smooth appearance.			
INSPECT HP SUPPLY WHIPS					
14	HP Whips	Inspect each HP supply whip hose for signs of kinks, dents and fraying.			
15	HP Whips	Inspect Yokes for signs of damage. OPEN each bleed valve at least one full turn, checking for smooth operation, then SHUT.			

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STEP	LOCATION	PROCEDURE	INITIALS		
			RED DIVER	GREEN DIVER	YELLOW DIVER
CAUTION					
The isolation valves on the HP whip assemblies are soft seat valves that operate without the need for heavy tightening. Over tightening these valves could damage the seat or stem, resulting in reduced capability.					
16	HP Whips	OPEN each isolation valve at least one full turn, checking for smooth operation, then close until snug. Verify SHUT.			
17	HP Whips	Remove dust caps from hoses. Inspect fittings for signs of damage.			
CONNECT THE HP SUPPLY					
NOTICE					
The O-ring sealed fittings that connect the HP air supply to the RDC are designed to provide an air-tight seal with minimal tightening of the fitting. Fittings should be installed hand-tight and then lightly snugged using the effort of two fingers on a wrench (no more than a ¼ turn past hand-tight).					
18	RDC	Attach HP supply whips to the HP supply inlet for each diver.			
19	HP Whips	Connect a fully charged cylinder(s) to each HP supply whip inlet (two Cylinders per whip assembly).			
INSPECT AND CONNECT LIGHTWEIGHT UMBILICALS					
20	Umbilicals	Inspect divers' umbilicals for signs of damage or excessive wear, paying particular attention to end fittings, leader hoses and attachment points.			
21	RDC	Attach a lightweight ¼" umbilical to each diver's ALP supply outlet.			
22	RDC	Connect each diver's pneumo hose to the corresponding pneumo supply outlet.			
23	RDC	Attach the umbilical strain relief for each umbilical to the console handle; secure the console to an immovable object if possible.			
24	RDC	Install communications box in the lid of the RDC (optional).			
25	RDC	Attach divers' communication plugs to the communications box being used.			

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SECTION FIVE: OP-1A / XLDS Set-Up and Pre-Dive Inspection

STEP	LOCATION	PROCEDURE	INITIALS		
			RED DIVER	GREEN DIVER	YELLOW DIVER
INSPECT THE EGS					
26	EGS	Visually inspect each EGS regulator, whip and pressure gauge for signs of damage or contamination.			
INSPECT THE HARNESS ASSEMBLY					
27	Diver's Harness	Inspect the harness assembly for signs of excessive wear and damage. Ensure the D-Rings, chest-strap sliders (if equipped) and ICS/umbilical routing straps are in place.			
28	Diver's Harness	Check to ensure the ICS is installed on the harness assembly.			
29	Diver's Harness	Install EGS cylinder if not already present.			
30	Diver's Harness or weight belt	Install appropriate weights in the weight pouches or on weight belt (for comfort, an additional 3lbs should be placed on the diver's left side to balance out the ICS)			
31	Buoyancy Compensator	Inspect buoyancy compensator (if used) for signs of excessive wear and damage.			
32	Buoyancy Compensator	Manually inflate BC and check for leaks. Deflate using dump valves. Ensure oral inflation and dump valves operate freely and smoothly.			
33	Buoyancy Compensator	Inspect power inflator hose for nicks, cuts, abrasions, kinks and deformities.			
34	Buoyancy Compensator	Connect power inflator hose to ICS manifold block and BC.			
35	Dry Suit	Inspect & connect dry suit power inflator hose (if used) to ICS manifold block.			
INSPECT THE ICS					
36	ICS	Inspect the ICS for signs of damage and contamination.			
37	ICS	Verify connection of the accumulator bottle to the ICS manifold.			

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SECTION FIVE: OP-1A / XLDS Set-Up and Pre-Dive Inspection

STEP	LOCATION	PROCEDURE	INITIALS		
			RED DIVER	GREEN DIVER	YELLOW DIVER
38	ICS	Remove the protective cap from the ICS EGS manifold valve and inspect for signs of water intrusion such as corrosion, or evidence of water.			
39	ICS	Check the EGS manifold valve for smooth operation by fully opening the valve. Leave OPEN until completion of step 42.			
TEST THE ICS ONE-WAY VALVE					
40	ICS	Remove the protective cap (or interface hose) from the ICS umbilical connection fitting.			
41	ICS	Using your lips, try drawing air through the ICS umbilical inlet fitting. No air should be drawn through. Next, try blowing into the fitting. Air should flow easily into the manifold and exit the EGS valve.			
42	ICS	SHUT the ICS EGS valve and replace the cap.			
END SECTION 1. CONTINUE TO SECTION 2.					

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SECTION FIVE: OP-1A / XLDS Set-Up and Pre-Dive Inspection

STEP	LOCATION	PROCEDURE	INITIALS		
			RED DIVER	GREEN DIVER	YELLOW DIVER
SECTION 2					
PRESSURIZING THE CONTROL CONSOLE					
CONFIGURE THE HP AIR SUPPLY					
1	HP air supply	Slowly OPEN each cylinder valve.			
2	HP whips	Slowly OPEN isolation valves HP-2R, HP-2G AND HP-2Y to enable secondary HP air supply to the console.			
3	RDC	Record secondary HP air supply pressure: RED _____ GREEN _____ YELLOW _____			
4	HP whips	SHUT secondary supply valves HP-2R, HP-2G AND HP-2Y.			
5	HP whips	Slowly OPEN isolation valves HP-1R, HP-1G and HP-1Y to enable primary HP air supply to the console.			
6	HP whips	Hang "IN-USE" tags on open isolation valves.			
NOTICE					
"IN-USE" tags should always be hung from open HP whip isolation valves. When switching air sources, ensure tags are moved.					
7	RDC	Record primary HP air supply pressure: RED _____ GREEN _____ YELLOW _____			
LOAD HP REGULATORS FOR USE WITH 1/4" UMBILICALS					
8	RDC	Slowly load air supply regulators AR-1R, AR-2G and AR-3Y by rotating the regulator handwheel CW until the LP gauge reads 350-375psi.			

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SECTION FIVE: OP-1A / XLDS Set-Up and Pre-Dive Inspection

STEP	LOCATION	PROCEDURE	INITIALS		
			RED DIVER	GREEN DIVER	YELLOW DIVER
9	RDC	Record LP pressures: RED _____ GREEN _____ YELLOW _____			
BLOW DOWN UMBILICALS					
10	Diver's Umbilical	Remove dust caps from umbilical outlets.			
11	RDC	Point the free end of each diver's umbilical in a safe direction. Slowly OPEN approximately 1/2 turn, the corresponding umbilical supply valve, ALP-1R, ALP-2G or ALP-3Y, to allow strong flow of gas through the umbilical for 5-10 seconds, then SHUT.			
12	Diver's Harness	Attach umbilical shackles to each diver's harness (screw pin at the top and spinnaker at the left hip) and route the umbilical through the retaining bands. Mouse the screw pin shackle. Do not connect umbilical air fittings at this time.			
END OF PROCEDURE					

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SECTION FIVE: OP-1B XLDS with HPASS Set-Up and Pre-Dive Inspection (Army)

NOTICE

OP-1B can be used for either the RDC-2 or RDC-3. For the RDC-2, steps applying to Yellow or Yellow Diver are N/A. OP-1B should be performed prior to system use. In this procedure, the operator cycles all Valves to ensure proper operation and initial system configuration prior to bringing up gas supplies from the HP source to ensure that all Valves operate smoothly. The procedure leaves the XLDS lined up for diving.

NOTICE

OP-1B should only be used to set up the XLDS when using the High Pressure Air Supply System (HPASS) consisting of six twin 130 ft³ cylinders. Use OP-1A when setting up the XLDS with any other air source.

SECTION FIVE: OP-1B XLDS with HPASS Set-Up and Pre-Dive Inspection (Army)

STEP	LOCATION	PROCEDURE	INITIALS		
			RED DIVER	GREEN DIVER	YELLOW DIVER
SECTION 1					
XLDS PRE-DIVE SET-UP AND INSPECTION					
INSPECT HP GAS SUPPLY					
CAUTION					
Each diver must have at least two cylinders (one cylinder for each yoke or DIN) attached prior to commencement of diving. Only one cylinder should be on line at a time with the other cylinder in standby.					
CAUTION					
Failure to inspect reserve cylinders may result in an inadequate gas supply while dives are in progress.					
1	All HP Supply Cylinders and EGS Cylinders	Visually inspect the exterior each cylinder, including any reserve cylinders and EGS cylinders, for obvious signs of damage.			
2	All HP Supply Cylinders and EGS Cylinders	Inspect each cylinder valve for signs of damage or contamination and <ol style="list-style-type: none"> 1. (for A-Yoke connections) to ensure the O-Ring is in place and presents a smooth appearance. 2. (for DIN connections) to ensure connection threads are clean and undamaged and the sealing face presents a clean and smooth appearance. 			
NOTICE					
HPASS cylinder manifolds have the option of using either DIN or A-Yoke connections. Either configuration may be used.					
3	HPASS Cylinders	(optional) Install cylinder DIN adapter: Using a ¼" Allen wrench, remove the A-Yoke adapters in both cylinder manifold valves and install DIN adapters.			
4	HPASS Cylinders	Install Cylinder Gauge: Attach cylinder gauge to the one manifold valve on each cylinder set.			
NOTICE					
The HPASS cylinders utilize an isolation manifold; each DIN/yoke attachment port can be opened or closed individually. The center valve is normally used to isolate the cylinders from each other. During SSD operations, the center valve should always be open.					
5	HPASS Cylinders	OPEN the manifold isolation valve on each cylinder set.			

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SECTION FIVE: OP-1B XLDS with HPASS Set-Up and Pre-Dive Inspection (Army)

STEP	LOCATION	PROCEDURE	INITIALS		
			RED DIVER	GREEN DIVER	YELLOW DIVER
6	All HP Supply Cylinders and EGS Cylinders	Gauge each cylinder or cylinder set to ensure it is fully charged.			
7	All HP Supply Cylinders and EGS Cylinders	Note cylinder sizes and pressures to ensure that they meet or exceed mission requirements.			
NOTICE					
At a minimum, EGS cylinders must contain sufficient air to bring the diver to his first decompression stop or to the surface for no-decompression dives.					
INSPECT THE RDC					
8	RDC	Open the console lid and lock in place. Inspect the overall condition of the console.			
CAUTION					
HP regulators should be adjusted using the force of one finger only. Valve handwheels should spin smoothly and easily.					
9	RDC HP Regulators	Back off HP regulators AR-1R, AR-2G and AR-3Y by turning handwheels CCW until no resistance is felt and the handwheel spins freely. Rotate the handwheel back CW until the first sign of resistance is felt.			
10	Umbilical supply Valves	Check umbilical supply valves ALP-1R, ALP-2G and ALP-3Y for smooth operation by fully opening, then closing. Verify SHUT.			
11	Cross Connect Valves	Check valves XC-1 and XC-2 for smooth operation by fully opening, then closing. Verify SHUT.	XC-1		XC-2
CAUTION					
Pneumofathometer valves should be snugged using two fingers only. Do not over-tighten valves. Over-tightening multi-turn valves could result in valve seat and/or stem damage, resulting in reduced capability and leakage.					
12	Pneumofathometer Supply Valves	Check pneumo supply valves ALP-4, ALP-5 and ALP-6 for smooth operation by opening one turn, then closing. Verify SHUT.			
13	Pneumofathometer Gauges	Verify Pneumo gauges read 0 FSW. Adjust if necessary (gauges are altitude and temperature sensitive).			

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SECTION FIVE: OP-1B XLDS with HPASS Set-Up and Pre-Dive Inspection (Army)

STEP	LOCATION	PROCEDURE	INITIALS		
			RED DIVER	GREEN DIVER	YELLOW DIVER
REMOVE RDC DUST CAPS AND PLUGS					
14	RDC	Remove dust caps from each of the umbilical supply outlets.			
15	RDC	Remove dust caps from each of the HP inlets.			
16	RDC	Inspect HP supply inlet fittings for damage and to ensure the O-ring is in place and presents a smooth appearance.			
INSPECT HP SUPPLY WHIPS					
17	HP Whips	Inspect each HP supply whip hose for signs of kinks, dents and fraying.			
18	HP Whips	Inspect Yokes for signs of damage. OPEN each bleed valve at least one full turn, checking for smooth operation, then SHUT			
CAUTION					
The isolation valves on the HP whip assemblies are soft seat valves that operate without the need for heavy tightening. Over tightening these valves could damage the seat or stem, resulting in reduced capability.					
19	HP Whips	OPEN each isolation valve at least one full turn, checking for smooth operation, then close until snug. Verify SHUT.			
20	HP Whips	Remove dust caps from hoses. Inspect fittings for signs of damage.			
CONNECT THE HP SUPPLY					
NOTICE					
The O-ring sealed fittings that connect the HP air supply to the RDC are designed to provide an air-tight seal with minimal tightening of the fitting. Fittings should be installed hand-tight and then lightly snugged using the effort of two fingers on a wrench (no more than a ¼ turn past hand-tight).					
21	RDC	Attach HP supply whips to the HP supply inlet for each diver.			
22	HP Whips	Connect a fully charged cylinder to each HP supply whip inlet (two cylinders per whip assembly).			
INSPECT AND CONNECT LIGHTWEIGHT UMBILICALS					
23	Umbilicals	Inspect divers' umbilicals for signs of damage or excessive wear, paying particular attention to end fittings, leader hoses and attachment points.			

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SECTION FIVE: OP-1B XLDS with HPASS Set-Up and Pre-Dive Inspection (Army)

STEP	LOCATION	PROCEDURE	INITIALS		
			RED DIVER	GREEN DIVER	YELLOW DIVER
24	RDC	Attach a lightweight ¼" umbilical to each diver's umbilical supply outlet.			
25	RDC	Connect each diver's pneumo hose to the corresponding pneumo supply outlet QD. Rotate detent to lock in place.			
26	RDC	Attach the umbilical strain relief for each umbilical to the console handle; secure the console to an immovable object if possible.			
27	RDC	Install communications box in the lid of the RDC (optional).			
28	RDC	Attach divers' communication plugs to the communications box being used.			
INSPECT THE EGS					
29	EGS	Visually inspect each EGS regulator, whip and pressure gauge for signs of damage or contamination.			
INSPECT THE HARNESS ASSEMBLY					
30	Diver's Harness	Inspect the harness assembly for signs of excessive wear and damage. Ensure the D-Rings, chest-strap sliders (if equipped) and ICS/umbilical routing straps are in place.			
31	Diver's Harness	Check to ensure the ICS is installed on the harness assembly.			
32	Diver's Harness	Install EGS cylinder if not already present.			
33	Diver's Harness or weight belt	Install appropriate weights in the weight pouches or on weight belt (for comfort, an additional 3lbs should be placed on the diver's left side to balance out the ICS)			
34	Buoyancy Compensator	Inspect buoyancy compensator (if used) for signs of excessive wear and damage.			
35	Buoyancy Compensator	Manually inflate BC and check for leaks. Deflate using dump valves. Ensure oral inflation and dump valves operate freely and smoothly.			

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SECTION FIVE: OP-1B XLDS with HPASS Set-Up and Pre-Dive Inspection (Army)

STEP	LOCATION	PROCEDURE	INITIALS		
			RED DIVER	GREEN DIVER	YELLOW DIVER
36	Buoyancy Compensator	Inspect power inflator hose for nicks, cuts, abrasions, kinks and deformities.			
37	Buoyancy Compensator	Connect power inflator hose to ICS manifold block and BC.			
38	Dry Suit	Insert and connect dry suit power inflator hose (if used) to ICS manifold block.			
INSPECT THE ICS					
39	ICS	Inspect the ICS for signs of damage and contamination.			
40	ICS	Verify connection of the accumulator bottle to the manifold.			
41	ICS	Remove the protective cap from the ICS EGS manifold valve and inspect for signs of water intrusion.			
42	ICS	Check the ICS EGS manifold valve for smooth operation by fully opening the valve. Leave OPEN until completion of step 45.			
TEST THE ICS ONE-WAY VALVE					
43	ICS	Remove the protective cap (or interface hose) from the ICS umbilical connection fitting.			
44	ICS	Using your lips, try drawing air through the ICS umbilical inlet fitting. No air should be drawn through. Next, try blowing into the fitting. Air should flow easily into the manifold and exit the ESG valve.			
45	ICS	SHUT the ICS EGS valve by rotating clockwise and replace the cap.			
END SECTION 1. CONTINUE TO SECTION 2					

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SECTION FIVE: OP-1B XLDS with HPASS Set-Up and Pre-Dive Inspection (Army)

STEP	LOCATION	PROCEDURE	INITIALS		
			RED DIVER	GREEN DIVER	YELLOW DIVER
SECTION 2					
PRESSURIZING THE CONTROL CONSOLE					
CONFIGURE THE HP AIR SUPPLY					
1	HPASS Cylinders	Slowly OPEN all cylinder valves.			
2	HPASS Cylinders	Verify each cylinder manifold isolation valve is OPEN.			
3	HPASS Cylinders	Record cylinder pressures as read on each cylinder pressure gauge.			
3 a.	HPASS Cylinders	RED Primary _____ Secondary _____			
3 b.	HPASS Cylinders	GREEN Primary _____ Secondary _____			
3 c.	HPASS Cylinders	YELLOW Primary _____ Secondary _____			
4	HP whips	Slowly OPEN isolation valves HP-2R, HP-2G AND HP-2Y to enable secondary HP air supply to the console.			
5	RDC	Record secondary HP air supply pressure. Pressures should match those in steps 3a-3c. RED _____ GREEN _____ YELLOW _____			
6	HP whips	SHUT secondary supply valves HP-2R, HP-2G AND HP-2Y.			

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SECTION FIVE: OP-1B XLDS with HPASS Set-Up and Pre-Dive Inspection (Army)

STEP	LOCATION	PROCEDURE	INITIALS		
			RED DIVER	GREEN DIVER	YELLOW DIVER
7	HP whips	Slowly OPEN isolation valves HP-1R, HP-1G and HP-1Y to enable primary HP air supply to the console.			
8	HP whips	Hang "IN-USE" tags on open isolation valves.			
NOTICE					
"IN-USE" tags should always be hung from open HP whip isolation valves. When switching air sources, ensure tags are moved.					
9	RDC	Record primary HP air supply pressure. Pressures should match those in steps 3a-3c. RED _____ GREEN _____ YELLOW _____			
LOAD HP REGULATORS FOR USE WITH 1/4" UMBILICALS					
10	RDC	Slowly load air supply regulators AR-1R, AR-2G and AR-3Y by rotating the regulator handwheel CW until the LP gauge reads 350-375psi.			
11	RDC	Record LP pressures: RED _____ GREEN _____ YELLOW _____			
BLOW DOWN UMBILICALS					
12	Diver's Umbilical	Remove dust caps from umbilical outlets.			
13	RDC	Point the free end of each diver's umbilical in a safe direction. Slowly OPEN approximately 1/2 turn , the corresponding umbilical supply valve, ALP-1R, ALP-2G or ALP-3Y, to allow strong flow of gas through the umbilical for 10 seconds, then SHUT.			

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Document XLDS OP-1B

Revised August 12, 2019

SECTION FIVE: OP-1C XLDS using Surface Supplied Oxygen Control System (SSOCS) Set Up / Pre-Dive & Inspection

NOTICE

OP-1C should only be used when using the RDC-2 or RDC-3 in conjunction with the SSOCS to allow for in-water-O₂ decompression.

CAUTION

Before starting this procedure, ensure the supply regulators are backed off counter clockwise until the knobs spin freely and the divers' pneumofathometer supply valves are shut.

NOTICE

OP-1C is written for the RDC-3 with SSOCS to support air diving and in-water-O₂ decompression for two divers and a standby diver. For the RDC-2, or to set up the RDC-3 for only one diver and standby, follow instructions as normal, setting up the diver on red and standby on green; disregard references to yellow. OP-1C should be performed prior to system use. In this procedure, the operator cycles all valves to ensure proper operation and initial system configuration prior to bringing up gas supplies from the HP source to ensure that all valves operate smoothly. The procedure leaves the RDC and SSOCS lined up for air diving.

NOTICE

The standard RDC-3 and RDC-2 Systems have two Yokes per diver circuit for attachment to two single or double SCUBA Cylinders. If other types of cylinders and connections are being used, ensure the connections contain a Bleed Valve so that cylinder changing can be accomplished without gas interruption. Ensure all fittings have a proper pressure rating for the cylinders being used and have an orifice size no smaller than of 0.112".

NOTICE

The SSOCS System has two CGA fittings for attachment to two standard oxygen K-bottles. If other types of cylinders and connections are being used, ensure the connections contain a bleed valve so that cylinder changing can be accomplished without gas interruption. Ensure all fittings have a proper pressure rating for the cylinders being used.

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Document XLDS OP-1C

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SECTION FIVE: OP-1C XLDS using Surface Supplied Oxygen Control System (SSOCS) Set Up / Pre-Dive & Inspection

STEP	LOCATION	PROCEDURE	INITIALS		
			RED DIVER	GREEN DIVER	YELLOW DIVER
SECTION 1					
XLDS PRE-DIVE SET-UP AND INSPECTION					
INSPECT HP AIR SUPPLY					
CAUTION					
Each diver must have at least two cylinders (one cylinder for each yoke or DIN) attached prior to commencement of diving. Only one cylinder should be on line at a time with the other cylinder in standby.					
CAUTION					
Failure to inspect reserve cylinders may result in an inadequate gas supply while dives are in progress.					
1	All HP Air Supply Cylinders and EGS Cylinders	Visually inspect the exterior each cylinder, including any reserve cylinders and EGS cylinders, for obvious signs of damage.			
2	All HP Air Supply Cylinders and EGS Cylinders	Inspect each cylinder valve for signs of damage or contamination and 1. (for A-Yoke connections) to ensure the O-Ring is in place and presents a smooth appearance. 2. (for DIN connections) to ensure connection threads are clean and undamaged and the sealing face presents a clean and smooth appearance.			
3	All HP Air Supply Cylinders and EGS Cylinders	Gauge each cylinder to ensure it is fully charged.			
4	All HP Air Supply Cylinders and EGS Cylinders	Note cylinder sizes and pressures to ensure that they meet or exceed mission requirements.			
NOTICE					
At a minimum, EGS cylinders must contain sufficient air to bring the diver to his first decompression stop or the surface for no- decompression dives.					
INSPECT HP OXYGEN SUPPLY					
CAUTION					
The SSOCS must have at least two oxygen cylinders attached prior to commencement of diving. Only one cylinder should be on line at a time with the other cylinder in standby. Additional reserve cylinders should be readily available.					
CAUTION					
Failure to inspect reserve cylinders may result in an inadequate gas supply while dives are in progress.					

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SECTION FIVE: OP-1C XLDS using Surface Supplied Oxygen Control System (SSOCS) Set Up / Pre-Dive & Inspection

STEP	LOCATION	PROCEDURE	INITIALS		
			RED DIVER	GREEN DIVER	YELLOW DIVER
DANGER					
Failure to properly inspect oxygen service parts, including cylinder valves, can result in fire or explosion. Great care should be used to ensure that oxygen system parts remain free of oil, debris and other contaminants.					
5	All HP Oxygen Cylinders	Visually inspect the exterior each oxygen cylinder, including any reserve cylinders, for obvious signs of damage.			
6	All HP Oxygen Cylinders	Inspect each oxygen cylinder valve for signs of damage/contamination. Momentarily crack open each oxygen valve to blow any particles out of the connection fitting.			
7	All HP Oxygen Cylinders	Gauge each oxygen cylinder to be used.			
8	All HP Oxygen Cylinders	Note cylinder sizes and pressures to ensure that they meet or exceed mission requirements.			
INSPECT THE RDC					
9	RDC	Open the Console lid and lock in place. Inspect the overall condition of the Console.			
CAUTION					
HP regulators should be adjusted using the force of one finger only. Valve handwheels should spin smoothly and easily.					
10	RDC HP Regulators	Back off HP regulators AR-1R, AR-2G and AR-3Y by turning handwheels CCW until no resistance is felt and the handwheel spins freely. Rotate the handwheel back CW until the first sign of resistance is felt.			
11	Umbilical Supply Valves	Check umbilical supply valves ALP-1R, ALP-2G and ALP-3Y for smooth operation by fully opening, then closing. Verify SHUT.			
12	Cross Connect Valves	Check valves XC-1 and XC-2 for smooth operation by fully opening, then closing. Verify SHUT.	XC-1		XC-2
CAUTION					
Pneumofathometer valves should be snugged using two fingers only. Do not over-tighten valves. Over-tightening multi-turn valves could result in valve seat and/or stem damage, resulting in reduced capability and leakage.					

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STEP	LOCATION	PROCEDURE	INITIALS		
			RED DIVER	GREEN DIVER	YELLOW DIVER
13	Pneumofathometer Supply Valves	Check pneumo supply valves ALP-4, ALP-5 and ALP-6 for smooth operation by opening one turn, then closing. Verify SHUT.			
14	Pneumofathometer Gauges	Verify Pneumo gauges read 0 FSW. Adjust if necessary (gauges are altitude and temperature sensitive).			
REMOVE RDC DUST CAPS AND PLUGS					
15	RDC	Remove dust caps from each of the umbilica I supply outlets.			
16	RDC	Remove dust caps from each of the HP inlets.			
17	RDC	Inspect HP supply inlet fittings for damage and to ensure the O-ring is in place and presents a smooth appearance.			
INSPECT HP AIR SUPPLY WHIPS					
18	HP Whips	Inspect each HP supply whip hose for signs of kinks, dents and fraying.			
19	HP Whips	Inspect Yokes for signs of damage. OPEN each bleed valve at least one full turn, checking for smooth operation, then SHUT.			
CAUTION					
The isolation valves on the HP whip assemblies are soft seat valves that operate without the need for heavy tightening. Over tightening these valves could damage the seat or stem, resulting in reduced capability.					
20	HP Whips	OPEN each isolation valve at least one full turn, checking for smooth operation, then close until snug. Verify SHUT.			
21	HP Whips	Remove dust caps from hoses. Inspect fittings for signs of damage.			
CONNECT THE HP SUPPLY					
NOTICE					
The O-ring sealed fittings that connect the HP air supply to the RDC are designed to provide an air-tight seal with minimal tightening of the fitting. Fittings should be installed hand-tight and then lightly snugged using the effort of two fingers on a wrench (no more than a ¼ turn past hand-tight).					

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SECTION FIVE: OP-1C XLDS using Surface Supplied Oxygen Control System (SSOCS) Set Up / Pre-Dive & Inspection

STEP	LOCATION	PROCEDURE	INITIALS		
			RED DIVER	GREEN DIVER	YELLOW DIVER
22	RDC	Attach HP supply whips to the HP supply inlet for each diver.			
23	HP Whips	Connect a fully charged cylinder to each HP supply whip inlet (two Cylinders per whip assembly).			
INSPECT THE SSOCS MANIFOLD					
24	SSOCS Manifold	Open the SSOCS case and remove all hoses and accessories. Inspect all Gauges and Valves for obvious signs of damage.			
25	SSOCS HP Oxygen Supply Isolation Valve	OPEN HP oxygen supply isolation valve OHPV-3 at least one full turn, checking for smooth operation, then close until snug. Verify SHUT.			
26	SSOCS HP Oxygen Regulator	Back off HP oxygen regulator OPR-1 by turning the handwheel CCW until no resistance is felt and the handwheel spins freely. Rotate the handwheel back CW until the first sign of resistance is felt.			
27	SSOCS HP Oxygen Bleed Valve	Check oxygen bleed valve OLB-1 for smooth operation by opening at least a ¼ turn, then closing. Verify SHUT			
28	SSOCS Umbilical Oxygen Supply Valves	Check umbilical oxygen supply valves OLP-1R, OLP-2G and OLP-3Y for smooth operation by opening at least a ¼ turn, then closing. Verify SHUT.			
29	SSOCS Interface Whips	Inspect interface whips for signs of damage or deterioration, remove dust caps and inspect fittings for signs of damage or contamination.			
30	SSOCS Interface Whips	Attach interface whips to each diver's umbilical air inlet on the <u>SSOCS</u> if not already installed.			
31	RDC	Attach SSOCS interface whips to the RDC umbilical supply outlet for each diver.			

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STEP	LOCATION	PROCEDURE	INITIALS		
			RED DIVER	GREEN DIVER	YELLOW DIVER
INSPECT HP OXYGEN SUPPLY WHIP					
32	HP Oxygen Supply Whip	Inspect HP oxygen supply whip hoses for signs of kinks, dents and fraying.			
CAUTION					
The isolation valves on the HP whip assemblies are soft seat valves that operate without the need for heavy tightening. Over tightening these valves could damage the seat or stem, resulting in reduced capability.					
33	HP Oxygen Supply Whip	OPEN each isolation valve at least one full turn, checking for smooth operation, then close until snug. Verify SHUT.			
34	HP Oxygen Supply Whip	Remove dust caps from hoses. Inspect all fittings for signs of damage, debris or contamination. OPEN each bleed valve at least one full turn, checking for smooth operation, then SHUT.			
CONNECT THE HP OXYGEN SUPPLY					
NOTICE					
O-ring sealed fittings are designed to provide an air-tight seal with minimal tightening of the fitting. Fittings should be installed hand-tight and then lightly snugged using the effort of two fingers on a wrench (no more than a ¼ turn past hand-tight).					
35	SSOCS Manifold	Attach HP oxygen supply whip to the HP oxygen supply inlet.			
36	HP Oxygen Supply Whip	Connect an oxygen cylinder to each HP oxygen supply whip inlet.			
INSPECT AND CONNECT LIGHTWEIGHT UMBILICALS					
37	Umbilicals	Remove protective caps and inspect divers' umbilicals for signs of damage or excessive wear, paying particular attention to end fittings, leader hoses and attachment points.			
38	SSOCS Manifold	Remove dust caps from umbilical supply outlet fittings and inspect for signs of damage. Attach a lightweight ¼" umbilical to each diver's SSOCS umbilical supply outlet.			

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STEP	LOCATION	PROCEDURE	INITIALS		
			RED DIVER	GREEN DIVER	YELLOW DIVER
39	RDC	Connect each diver's pneumo hose to the corresponding pneumo supply outlet.			
40	RDC	Attach the umbilical strain relief for each umbilical to an immovable object if possible.			
41	RDC	Install communications box in the lid of the RDC (optional).			
42	RDC	Attach divers' communication plugs to the communications box being used.			
INSPECT THE EGS					
43	EGS	Visually inspect each EGS regulator, whip and pressure gauge for signs of damage or contamination.			
INSPECT THE HARNESS ASSEMBLY					
44	Diver's Harness	Inspect the harness assembly for signs of excessive wear and damage. Ensure the D-Rings, chest-strap sliders (if equipped) and ICS/umbilical routing straps are in place.			
45	Diver's Harness	Check to ensure the ICS is properly installed on the harness assembly.			
46	Diver's Harness	Install EGS cylinder if not already present.			
47	Diver's Harness or weight belt	Install appropriate weights in the weight pouches or on weight belt (for comfort, an additional 3lbs should be placed on the diver's left side to balance out the ICS)			
48	Buoyancy Compensator	Inspect buoyancy compensator (if used) for signs of excessive wear and damage.			
49	Buoyancy Compensator	Manually inflate BC and check for leaks. Deflate using dump valves. Ensure oral inflation and dump valves operate freely and smoothly.			

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STEP	LOCATION	PROCEDURE	INITIALS		
			RED DIVER	GREEN DIVER	YELLOW DIVER
50	Buoyancy Compensator	Inspect power inflator hose for nicks, cuts, abrasions, kinks and deformities.			
51	Buoyancy Compensator	Connect power inflator hose to ICS manifold block and BC.			
52	Dry Suit	Inspect and connect dry suit power inflator hose (if used) to ICS manifold block.			
INSPECT THE ICS					
53	ICS	Inspect the ICS for signs of damage and contamination.			
54	ICS	Verify connection of the accumulator bottle to the manifold.			
55	ICS	Remove the protective cap from the ICS EGS manifold valve and inspect for signs of water intrusion.			
56	ICS	Check the EGS manifold valve for smooth operation by fully opening the valve. Leave OPEN until completion of step 57.			
TEST THE ICS ONE-WAY VALVE					
57	ICS	Remove the protective cap (or interface hose) from the ICS umbilical connection fitting.			
58	ICS	Using your lips, try drawing air through the ICS umbilical inlet fitting. No air should be drawn through. Next, try blowing into the fitting. Air should flow easily into the manifold and exit the EGS valve.			
59	ICS	SHUT the ICS EGS valve and replace the cap.			
END SECTION 1. CONTINUE TO SECTION 2					

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STEP	LOCATION	PROCEDURE	INITIALS		
			RED DIVER	GREEN DIVER	YELLOW DIVER
SECTION 2					
PRESSURIZING THE CONTROL CONSOLE					
CONFIGURE THE HP AIR SUPPLY					
1	HP air supply	Slowly OPEN each cylinder valve.			
2	HP whips	Slowly OPEN isolation valves HP-2R, HP-2G AND HP-2Y to enable secondary HP air supply to the console.			
3	RDC	Record secondary HP air supply pressure: RED _____ GREEN _____ YELLOW _____			
4	HP whips	SHUT secondary supply valves HP-2R, HP-2G AND HP-2Y.			
5	HP whips	Slowly OPEN isolation valves HP-1R, HP-1G and HP-1Y to enable primary HP air supply to the console.			
6	HP whips	Hang "IN-USE" tags on open isolation valves.			
NOTICE					
"IN-USE" tags should always be hung from open HP whip isolation valves. When switching air sources, ensure tags are moved.					
7	RDC	Record primary HP air supply pressure: RED _____ GREEN _____ YELLOW _____			
LOAD HP REGULATORS FOR USE WITH 1/4" UMBILICALS					
8	RDC	Slowly load air supply regulators AR-1R, AR-2G and AR-3Y by rotating the regulator handwheel CW until the LP gauge reads 350-375psi.			

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STEP	LOCATION	PROCEDURE	INITIALS		
			RED DIVER	GREEN DIVER	YELLOW DIVER
9	RDC	Record LP pressures: RED _____ GREEN _____ YELLOW _____			
BLOW DOWN UMBILICALS					
10	Diver's Umbilical	Remove dust caps from umbilical outlets.			
11	RDC	Point the free end of each diver's umbilical in a safe direction and slowly OPEN the corresponding umbilical supply valve, ALP-1R, ALP-2G, and ALP-3Y. Allow gas to flow through the umbilical for 3-5 seconds, then SHUT.			
12	Diver's Harness	Attach umbilical shackles to each diver's harness (screw pin at the top and spinnaker at the left hip) and route the umbilical through the retaining bands. Mouse the screw pin shackle. Do not connect umbilical air fittings at this time.			
CONFIGURE THE SSOCS					
13	HP Oxygen Supply	Slowly OPEN each oxygen cylinder valve.			
14	HP Oxygen Whip	Slowly OPEN isolation valve OHP-2G.			
15	SSOCS Manifold	Slowly OPEN oxygen supply isolation valve OHPV-3.			
16	SSOCS Manifold	Read and record pressure on gauge OHPG-1. _____ PSIG			
17	HP Oxygen Whip	Slowly SHUT isolation valve OHP-2G.			
18	HP Oxygen Whip	Slowly OPEN isolation valve OHP-1G and hang "IN USE" tag.			
NOTICE					
"IN-USE" tags should always be hung from open HP whip isolation valves. When switching air sources, ensure tags are moved.					

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STEP	LOCATION	PROCEDURE	INITIALS		
			RED DIVER	GREEN DIVER	YELLOW DIVER
19	SSOCS Manifold	Read and record pressure on gauge OHPG-1. _____ PSIG			
20	SSOCS Manifold	Slowly load oxygen supply regulator OPR-1R by rotating the regulator handwheel CW until gauge OLPG-1 reads 150-175 psig.			
21	SSOCS Manifold	Verify umbilical oxygen supply by pointing red diver's umbilical in a safe direction and opening OLP-1R ¼ turn until umbilical oxygen flow is verified. CLOSE OLP-1R.			
22	SSOCS Manifold	CLOSE oxygen supply isolation valve OHPV-3.			
23	SSOCS Manifold	OPEN bleed valve OLPB-1.			
NOTICE					
The SSOCS is now in stand-by mode. Throughout diving operations, OHPV-3 should remain SHUT and OLPB-1 should remain OPEN. This is to ensure that no contamination of the diver's breathing gas occurs.					
END OF PROCEDURE					

Comments: (if any)

Operator's Printed Name	Operator's Signature	Date
-------------------------	----------------------	------

Supervisor's Printed Name	Supervisor's Signature	Date
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SECTION FIVE: OP-2A KMDSI Helmets / Band Masks Set-Up & Pre-Dive Inspection with XLDS

NOTICE

This procedure covers set-up and inspection of KMDSI helmets and Band Masks for use of the XLDS. See OP-2B for set-up using full-face masks.

NOTICE

This procedure is intended to train and instruct XLDS users in the set-up of the Diver Worn Intermediate Compensating Manifold, and Emergency Gas System for use with the RDC-2 or RDC-3. This procedure is intended for persons with specific training in the use of the XLDS system and associated equipment. This procedure, as well as other XLDS procedures in the applicable operations manual, is intended provide guidelines for the use of the XLDS to allow for safe use and to maximize overall system capability. These procedures are **not intended** to be the only training users receive. Users of this equipment are strongly recommended to receive formal training by trained and qualified persons. Users should become proficient in the use of all XLDS operating and emergency procedures.

NOTICE

Ensure all routine, scheduled and pre-dive maintenance/set-up has been performed on any helmets, Band Masks, EGS Systems, and other components to be used IAW the applicable O&M Manuals and procedures. Ensure all maintenance is recorded.

NOTICE

Start this OP with the Umbilical and EGS 1st Stage Regulator disconnected.

SECTION FIVE: OP-2A KMDSI Helmets / Band Masks Set-Up & Pre-Dive Inspection with XLDS

STEP	LOCATION	PROCEDURE	INITIALS		
			RED DIVER	GREEN DIVER	YELLOW DIVER
PRE-REQUISITE CHECKS					
1	RDC	Ensure that OP-1 A, B or C has been completed.			
2	Helmet or Band Mask	Note the helmet or Band Mask SN used by each diver.			
3	Helmet or Band Mask	Ensure that all required maintenance has been completed on each helmet or Band Mask before continuing.			
HELMET SET-UP AND INSPECTION					
NOTICE					
KMDSI helmets and Band Masks use a special 3/8" I.D. Helmet Whip. It has a 1/2"-20 male straight thread on the end that attaches to the ICS regulator, and a 9/16" O2 flare where it attaches to the Umbilical Adapter on the Helmet Side Block.					
NOTICE					
When using KMDSI Helmets or Band Masks, the EGS valve on the ICS is not used. The valve should remain shut and capped during diving operations.					
4	Helmet or Band Mask	Check EGS supply valve for smooth operation; OPEN then SHUT.			
5	Helmet or Band Mask	Check operation of the helmet steady flow valve for smooth operation, OPEN one to two turns then SHUT.			
6	Helmet or Band Mask	Check for proper/smooth operation of the regulator adjustment knob (Dial-A-Breath). Rotate the knob clockwise all the way in, then back it out a 3-4 turns while checking for smooth operation.			
7	EGS	Attach the EGS regulator to the EGS cylinder.			
8	EGS	Connect the EGS supply whip assembly to the emergency supply valve on the side block, with the cylinder turned OFF.			
9	EGS	Slowly OPEN the EGS <u>cylinder</u> valve.			
10	Helmet or Band Mask	OPEN the side block EGS valve.			
11	Helmet or Band Mask	Back out on the regulator adjustment knob until a slight free flow develops then turn in until the free flow stops.			
12	Helmet or Band Mask	Momentarily push in on the purge button and ensure a strong flow of gas.			

SECTION FIVE: OP-2A KMDSI Helmets / Band Masks Set-Up & Pre-Dive Inspection with XLDS

STEP	LOCATION	PROCEDURE	INITIALS		
			RED DIVER	GREEN DIVER	YELLOW DIVER
13	Helmet or Band Mask	Shut the side block EGS valve.			
14	EGS	Record EGS pressure: RED _____ GREEN _____ YELLOW _____			
15	ICS	Connect the helmet interface whip to the ICS manifold block outlet. (if not already installed)			
16	Helmet or Band Mask	Connect the helmet interface whip to the umbilical inlet of each side block.			
17	ICS	Attach umbilicals to each ICS inlet/one-way valve; ensure umbilical is routed properly and shackles are secure.			
18	Helmet or Band Mask	Connect umbilical communications to the helmet and reinforce the connection with electrical tape.			
19	RDC	Perform a communications check with all divers.			
20	RDC	Open umbilical supply valves ALP-1R, ALP-2G and ALP-3Y.			
21	Helmet or Band Mask	Verify umbilical air supply by opening each diver's steady flow valve for two to three seconds and listening for a strong, consistent flow of gas.			
END OF PROCEDURE					

SECTION FIVE: OP-2B

Full Face Mask Set-Up & Pre-Dive Inspection with XLDS

NOTICE

This procedure covers set-up and inspection of full-face masks for use of the XLDS. See OP-2A for set-up using KMDSI helmets and Band Masks.

NOTICE

This procedure is intended to train and instruct XLDS users in the set-up of the Diver Worn Intermediate Compensating Manifold, and Emergency Gas System for use with the RDC-2 or RDC-3. This procedure is intended for persons with specific training in the use of the XLDS system and associated equipment. This procedure, as well as other XLDS procedures in the applicable operations manual, is intended provide guidelines for the use of the XLDS to allow for safe use and to maximize overall system capability. These procedures are **not intended** to be the only training users receive. Users of this equipment are strongly recommended to receive formal training by trained and qualified persons. Users should become proficient in the use of all XLDS operating and emergency procedures.

NOTICE

Ensure all routine, scheduled and pre-dive maintenance/set-up has been performed on any helmets, Band Masks, EGS Systems, and other components to be used IAW the applicable O&M Manuals and procedures. Ensure all maintenance is recorded.

NOTICE

Start this OP with the Umbilical and EGS 1st Stage Regulator disconnected.

SECTION FIVE: OP-2B

Full Face Mask Set-Up & Pre-Dive Inspection with XLDS

STEP	LOCATION	PROCEDURE	INITIALS		
			RED DIVER	GREEN DIVER	YELLOW DIVER
PREREQUISITE CHECKS					
1	RDC	Ensure that OP-1 A, B or C has been completed.			
2	FFM	Note the FFM SN used by each diver.			
3	FFM	Ensure that all required maintenance has been completed on each FFM before continuing.			
FULL FACE MASK SET-UP AND INSPECTION					
NOTICE					
The M-48 and EXO Masks use a 38" ICS to mask whip. It has ½"-20 male straight threads on the end that attaches to the ICS, and a standard SCUBA swivel-fitting where it attaches to the Mask demand regulator.					
NOTICE					
AGA Masks use a special 52" long ICS to mask whip. It has ½"-20 male straight threads on the end that attaches to the ICS, and a standard AGA swivel fitting where it attaches to the mask demand regulator.					
NOTICE					
The EGS Interface Hose is the same assembly used for the KMDSI helmets, but because there is no side block, the hose attaches directly to the EGS valve on the ICS regulator. In an emergency, air can be supplied from the EGS cylinder to the mask via the emergency valve on the ICS regulator.					
4	EGS	Attach the EGS regulator to the EGS cylinder.			
5	ICS	Attach the EGS whip to the EGS valve on the ICS regulator.			
6	ICS	Install the appropriate FFM interface hose on the ICS.			
7	FFM	Attach the FFM interface hose to the FFM.			
8	EGS	Slowly OPEN the EGS <u>cylinder</u> valve.			
9	ICS	OPEN the ICS EGS valve.			
10	FFM	Check the FFM for proper function.			
11	ICS	SHUT the ICS EGS valve.			
12	EGS	Record EGS pressure: RED _____ GREEN _____ YELLOW _____			

SECTION FIVE: OP-2B

Full Face Mask Set-Up & Pre-Dive Inspection with XLDS

STEP	LOCATION	PROCEDURE	INITIALS		
			RED DIVER	GREEN DIVER	YELLOW DIVER
13	ICS	Attach umbilical to the ICS inlet/one-way valve; ensure umbilical is routed properly and shackles are secure.			
14	FFM	Connect umbilical communications to the FFM and reinforce the connection with electrical tape.			
15	FFM	Perform a communications check with all divers.			
16	RDC	Open umbilical supply valves ALP-1R, ALP-2G and ALP-3Y.			
17	FFM	Verify umbilical air supply by depressing the purge button for two to three seconds and listening for a strong, consistent flow of gas.			
END OF PROCEDURE					

Comments: (if any)

Operator's Printed Name	Operator's Signature	Date
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Supervisor's Printed Name	Supervisor's Signature	Date
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SECTION FIVE: OP-3 XLDS DIVING OPERATIONS

NOTICE

This OP is intended to serve as a reference to assist new and inexperienced operators. These procedures, as well as all system Emergency Procedures, should be committed to memory by system operators.

NOTICE

Ensure all routine, scheduled and pre-dive maintenance/set-up has been performed to the Helmets, Masks, EGS System and components IAW the applicable O&M Manuals and procedures. Ensure all maintenance is recorded.

WARNING

For SSOCS Use: Should any situation occur, i.e.; oxygen toxicity symptom / or any reason to secure oxygen to any diver, it is recommended that ALL DIVERS must be immediately switched back to the primary diver air supply system and the oxygen system isolated by securing (shutting) valve OLPV-1R, (Red Diver), OLPV-2G (Green Diver) and OLPV-3Y (Yellow Diver) OHPV-3.and the regulator bleed OLBV-1 vent opened.

SECTION FIVE: OP-3 XLDS DIVING OPERATIONS

STEP	LOCATION	PROCEDURE	INITIALS		
			RED DIVER	GREEN DIVER	YELLOW DIVER
SYSTEM OPERATION DURING DIVES					
1	RDC	Ensure that OP-2 A, B or C has been completed			
2	RDC	Prior to deploying divers, verify that each diver's regulator is set to 350-375 psig			
3	RDC	At the direction of the diving supervisor, send air to each diver by fully opening ALP-1, ALP-2 and ALP-3			
4	RDC	During decent, occasionally purge the divers' pneumofathometers (pneumo) by momentarily opening (no more than a ¼ turn) and closing each diver's pneumo supply valve to purge water from the pneumo hose			
5	RDC	During the dive, the console operator should monitor each diver's LP supply pressure to ensure that it is set to 350+25 psig			
6	RDC	During the dive, the console operator should monitor each diver's HP supply pressure.			
7	RDC	HP air supply cylinders should be shifted/changed when supply pressure drops below 500 psig			
DANGER					
Allowing a diver's HP supply to drop below 375 psig will result in insufficient air flow to the diver. To avoid potentially life-threatening conditions, the HP air source must be shifted or changed before the supply drops below 375 psig.					
8	RDC	The console operator should note the maximum depth attained by each diver during the dive			
9	RDC	During ascent, the pneumo valves should be left shut			
OPTIONAL DECOMPRESSION PROCEDURES USING THE SSOCS					
SHIFTING DIVERS TO OXYGEN USING THE SSOCS					
NOTICE					
When divers approaching first in water oxygen stop. Supervisor will give the command "stand-by to shift to oxygen". Console operator will perform the following steps:					
9-A	RDC/SSOCS	Close OLBV-1			
9-B	RDC/SSOCS	Open OHPV-3 fully. Verify oxygen pressure is between 150-175 psig OLPG-1. If not, adjust as necessary			
NOTICE					
Upon divers reaching first in water oxygen stop. Supervisor gives the command shift Divers oxygen.					
9-C	RDC/SSOCS	Close ALP-1R umbilical supply valve			

SECTION FIVE: OP-3 XLDS DIVING OPERATIONS

STEP	LOCATION	PROCEDURE	INITIALS		
			RED DIVER	GREEN DIVER	YELLOW DIVER
9-D	RDC/SSOCS	Open DLP-1R			
9-E	RDC/SSOCS	Red Diver ventilates for 30 seconds. Red Diver is now decompressing on oxygen.			
9-F	RDC/SSOCS	Close ALP-1G umbilical supply valve			
9-G	RDC/SSOCS	Open OLP-1G			
9-H	RDC/SSOCS	Green Diver ventilates for 30 seconds. Green Diver is now decompressing on oxygen			
9-I	RDC/SSOCS	Close ALP-1Y umbilical supply valve			
9-J	RDC/SSOCS	Open OLP-1Y			
9-K	RDC/SSOCS	Yellow Diver ventilates for 30 seconds. Yellow Diver is now decompressing on oxygen			
NOTICE					
After decompression is complete and Divers are out of the water, SSOCS should be put back in stand-by mode, for continued diving. Shifting RDC/SSOCS back to air.					
9-L	SSOCS	CLOSE oxygen supply isolation valve OHPV-3			
9-M	SSOCS	OPEN bleed valve OLPB-1.			
9-N	RDC	OPEN corresponding umbilical supply valve ALP-1R , ALP-2G , ALP-3Y			
BETWEEN AND AFTER DIVES					
NOTICE					
After the Divers are out of the water and have removed their helmet or FFM, the umbilical air supply should be shut in order to avoid unplanned air loss. Never close a diver's umbilical air supply while the diver is still in the water or wearing a FFM or helmet.					
10	RDC	Secure umbilical supply valves by closing ALP-1, ALP-2 and ALP-3			
END OF PROCEDURE					

Comments: (if any)

Operator's Printed Name	Operator's Signature	Date
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Supervisor's Printed Name	Supervisor's Signature	Date
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SECTION FIVE: OP-4 XLDS POST-DIVE / SHUT-DOWN & INSPECTION

NOTICE

OP-4 can be used for either the RDC-2 or RDC-3. For the RDC-2, steps applying to Yellow or Yellow Diver are N/A. Certain steps of this procedure do not apply to a specific diver's air circuit. These steps may be initialed as completed using the "Red Diver" block.

NOTICE

There are several different configurations of the XLDS in use at this time. While the major components remain the same, minor details, such as fitting wrenching size, may vary based on date of manufacture. Additional variances may be present in custom configurations. This OP represents the best possible information for the current configuration at the time of publication. Users should apply common sense and good engineering practices when adapting this procedure to their system. If any doubt arises on how to apply this procedure to your system, contact Dive Lab, Inc. for clarification at 850-235-2715.

SECTION FIVE: OP-4 XLDS POST-DIVE / SHUT-DOWN & INSPECTION

STEP	LOCATION	PROCEDURE	INITIALS		
			RED DIVER	GREEN DIVER	YELLOW DIVER
NOTICE					
<p>Important Information Prior to Shut Down! It is not uncommon for water to enter the ICS cylinder if precautions are not taken when cleaning and rinsing after use. For this reason it is strongly recommended if possible to rinse the ICS, EGS, back pack, BC, UBS, umbilicals, helmet and mask, after completion of diving operations with the ICS and EGS systems pressurized. By keeping the system pressurized, water cannot enter the cylinder and regulator components. In addition, upon completion of diving operations (within 1 to 2 days) the ICS cylinder should be removed from the ICS regulator and visually inspected for signs of water and corrosion. If any signs of water is present the cylinder should be rinsed with fresh water then dried and inspected for signs of corrosion damage in the form of pitting and white powder/particles. If any pitting or corrosion is found replace the cylinder. Lightly lubricate the cylinder O-ring and re-install cylinder on ICS regulator.</p>					
SECURE THE HP AIR SUPPLY					
1	HP Supply Cylinders	SHUT cylinder valves on all primary and secondary HP supply cylinders.			
2	HP Whips	OPEN HP isolation valves HP-1R, HP-2R, HP-1G, HP-2G, HP-1Y, and HP-2Y.			
SECURE THE DIVER'S EGS					
3	EGS	SHUT EGS cylinder valves.			
4	EGS	OPEN EGS valve (located on the side block for helmets and Band Masks, or on the ICS manifold for FFM).			
BLEED THE SYSTEM					
NOTICE					
Turn off your comms box prior to bleeding the system.					
5	RDC	OPEN cross-connect valves XC-1 and XC-2.			
6	RDC	OPEN umbilical supply valves ALP-1, ALP-2 and ALP-3.			
7	Helmet or FFM	OPEN the diver's steady-flow valve (helmets and band masks) or by depressing the regulator purge button in order to bleed the system.			
8	Helmet or FFM	Once all air has been bled from the system and EGS (all gauges read 0 psi and no air flows from the helmet or mask), SHUT the steady-flow valve or release the regulator purge button.			

SECTION FIVE: OP-4 XLDS POST-DIVE / SHUT-DOWN & INSPECTION

STEP	LOCATION	PROCEDURE	INITIALS		
			RED DIVER	GREEN DIVER	YELLOW DIVER
9	EGS	SHUT the EGS valve. (located on the side block for helmets and Band Masks, or on the ICS manifold for FFM's).			
SHUT DOWN THE CONSOLE					
10	RDC	SHUT umbilical supply valves ALP-1, ALP-2 and ALP-3.			
11	RDC	SHUT cross-connect valves XC-1 and XC-2.			
12	RDC HP regulators	Back off regulators by turning handwheels CCW until no resistance is felt and the handwheel spins freely. Rotate the handwheel CW until the first sign of resistance is felt.			
13	HP Whips	SHUT isolation valves HP-1R, HP-2R, HP-1G, HP-2G, HP-1Y, and HP-2Y.			
DISCONNECT THE HP AIR SUPPLY					
14	Cylinders	Detach primary AND secondary HP supply cylinder Yokes or DIN fittings as follows: <ol style="list-style-type: none"> 1. Crack OPEN the bleed valve. 2. Listen for signs of air leakage. 3. SHUT the bleed valve. 4. Disconnect the cylinder. 5. Replace the Yoke or DIN dust cap. 			
15	HP whips	Disconnect the HP whips (using two wrenches.)			
16	HP whips	Replace HP whip outlet dust caps.			
17	RDC	Replace console HP inlet dust caps.			
DISCONNECT THE EGS					
18	EGS	Disconnect each EGS from diver's helmet or FFM.			
19	EGS	Disconnect the EGS regulator from the EGS cylinder.			

SECTION FIVE: OP-4 XLDS POST-DIVE / SHUT-DOWN & INSPECTION

STEP	LOCATION	PROCEDURE	INITIALS		
			RED DIVER	GREEN DIVER	YELLOW DIVER
DISCONNECT HELMETS / MASKS FROM THE ICS					
NOTICE					
When using an AGA, a wrench is not required in order to disconnect the mask from the ICS interface hose. This connection uses a knurled nut which should be finger-tight.					
20	Helmet or FFM	Disconnect each helmet or mask from the ICS.			
21	Helmet or FFM	Replace umbilical inlet dust caps.			
22	Interface hose	Replace ICS interface hose dust caps. (Alternatively, the helmet interface hose may be attached to the umbilical inlet.)			
23	Helmet or FFM	Disconnect the helmet or FFM communications cable from the umbilical communications cable.			
DISCONNECT THE ICS					
24	ICS	Disconnect the ICS from the umbilical.			
25	ICS	Replace ICS umbilical inlet dust caps. (Alternatively, the helmet interface hose may be attached to the umbilical inlet.)			
26	Umbilical	Replace umbilical outlet dust caps.			
REMOVE THE UMBILICALS					
27	Diver's Harness	Release the spinnaker and screw-pin shackles from each diver's harness. Reinstall the screw-pin shackle on the umbilical for storage.			
30	Comms Box	Disconnect umbilical communication cable from the comms box. (Stow comms box if not permanently installed in lid)			
31	RDC	Disconnect umbilical pneumo hoses from the RDC pneumo outlets.			
32	RDC	Disconnect umbilicals using a back-up wrench to secure the console-side fitting in place.			
33	Umbilicals	Replace umbilical inlet fitting dust caps.			

SECTION FIVE: OP-5 XLDS POST-DIVE MAINTENANCE

NOTICE

OP-5 can be used for either the RDC-2 or RDC-3. For the RDC-2, steps applying to Yellow or Yellow Diver are N/A.

NOTICE

The XLDS storage cases provide a water-tight seal. Stowing wet equipment in latched cases for any significant period of time will likely result in the growth of mold or mildew, especially in warm climates or spaces. In order to prevent growth of mold, mildew and other fungi, equipment should be allowed to fully dry prior to storage.

SECTION FIVE: OP-5 XLDS POST-DIVE MAINTENANCE

STEP	LOCATION	PROCEDURE	INITIALS		
			RED DIVER	GREEN DIVER	YELLOW DIVER
NOTICE					
Important Information Prior to Inspection and Cleaning!					
It is not uncommon for water to enter the ICS cylinder if precautions are not taken when cleaning and rinsing after use. For this reason it is strongly recommended if possible to rinse the ICS, EGS, back pack, BC, UBS, umbilicals, helmet and mask, after completion of diving operations with the ICS and EGS systems pressurized. By keeping the system pressurized, water cannot enter the cylinder and regulator components. In addition, upon completion of diving operations (within 1 to 2 days) the ICS cylinder should be removed from the ICS regulator and visually inspected for signs of water and corrosion. If any signs of water is present the cylinder should be rinsed with fresh water then dried and inspected for signs of corrosion damage in the form of pitting and white powder/particles. If any pitting or corrosion is found replace the cylinder. Lightly lubricate the cylinder O-ring and re-install cylinder on ICS regulator.					
INSPECT AND CLEAN THE XLDS					
NOTICE					
While a cursory visual inspection should be used on all equipment, rinsed and post-dive maintenance need only be completed for equipment that was exposed to salty or contaminated water (i.e. if a standby diver was not deployed, the equipment may be considered exempt from cleaning).					
1	Comms Box	Inspect the comms box for signs of saltwater exposure and for signs of unusual wear and tear. Use a cloth moistened with fresh water to wipe the control surfaces.			
2	RDC	Inspect the RDC for damage to valves or gauges and signs of unusual wear and tear.			
3	RDC	Inspect the RDC for signs of saltwater exposure. Light spray may be wiped with a damp cloth. For any significant exposure, ensure the comms box has been removed and wash RDC with a mixture of mild dish detergent or non-ionic soap and water, then rinse with fresh water.			
4	Umbilicals	Inspect each umbilical for nicks, cuts, abrasions or signs of unusual wear and tear.			
5	Umbilicals	Wash umbilical exterior with a mixture of mild dish detergent or non-ionic soap and water, then rinse with fresh water.			
6	Diver's Harness	Inspect diver's harness for nicks, cuts, abrasions or signs of unusual wear and tear.			
7	Diver's Harness	Wash diver's harness with a mixture of mild dish detergent or non-ionic soap and water, then rinse with fresh water.			
8	Diver's Harness	Inspect EGS assembly for signs of damage or unusual wear and tear.			

SECTION FIVE: OP-5 XLDS POST-DIVE MAINTENANCE

STEP	LOCATION	PROCEDURE	INITIALS		
			RED DIVER	GREEN DIVER	YELLOW DIVER
9	Diver's Harness	Wash EGS assembly with a mixture of mild dish detergent or non-ionic soap and water, then rinse with fresh water.			
10	Diver's Harness	Inspect ICS assembly for signs of water damage or unusual wear and tear.			
11	Diver's Harness	Verify the ICS EGS manifold valve is capped and in the SHUT position.			
12	Diver's Harness	Wash ICS with a mixture of mild dish detergent or non-ionic soap and water, then rinse with fresh water.			
13	Diver's Harness	Inspect ICS assembly for signs of water intrusion.			
14	Diver's Harness	Inspect buoyancy compensator for signs of damage or unusual wear and tear.			
15	Diver's Harness	Wash buoyancy compensator (if used) with a mixture of mild dish detergent or non-ionic soap and water, then rinse fresh with water.			
16	Helmet or FFM	Wash helmet or FFM exterior with a mixture of mild dish detergent or non-ionic soap and water, then rinse with fresh water.			
17	Helmet of FFM	Complete manufacturer's post-dive maintenance procedures.			

NOTICE

In order to prevent potential mold/fungus growth, equipment should be allowed to fully dry prior to further disassembly and stowage. If equipment must be stowed wet for more than a few hours, the equipment and its container should be rewashed and allowed to fully dry at the first available opportunity.

END OF PROCEDURE

Comments: (if any)

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Operator's Printed Name	Operator's Signature	Date

Supervisor's Printed Name	Supervisor's Signature	Date

SECTION SIX: OP-6

RDC Conventional Mode / Set-Up & Pre-Dive Inspection

NOTICE

OP-6 should be used whenever setting up either the RDC-2 or RDC-3 for use as a conventional console with normal 3/8" umbilicals. If the console is to be used with the lightweight 1/4" umbilicals, either OP-1A or OP-1B must be used.

NOTICE

OP-6 can be used for either the RDC-2 or RDC-3. For the RDC-2, steps applying to Yellow or Yellow Diver are N/A. OP-6 should be performed prior to system use. In this procedure, the operator cycles all Valves to ensure proper operation and initial system configuration prior to bringing up gas supplies from the HP source to ensure that all Valves operate smoothly. The procedure leaves the RDC lined up for diving.

NOTICE

The standard RDC-3 and RDC-2 Systems have two Yokes per diver circuit for attachment to two single or double SCUBA Cylinders. If other types of Cylinders and connections are being used, ensure the connections contain a Bleed Valve so that Cylinder changing can be accomplished without gas interruption. Ensure all fittings have a proper pressure rating for the Cylinders being used, and have an orifice size no smaller than of 0.112".

SECTION SIX: OP-6

RDC Conventional Mode / Set-Up & Pre-Dive Inspection

STEP	LOCATION	PROCEDURE	INITIALS		
			RED DIVER	GREEN DIVER	YELLOW DIVER
SECTION 1					
RDC PRE-DIVE SET-UP AND INSPECTION					
INSPECT HP GAS SUPPLY					
CAUTION					
Each diver must have at least two cylinders (one cylinder for each yoke or DIN) attached prior to commencement of diving. Only one cylinder should be on line at a time with the other cylinder in standby.					
CAUTION					
Failure to inspect reserve cylinders may result in an inadequate gas supply while dives are in progress.					
1	All HP Supply Cylinders and EGS Cylinders	Visually inspect the exterior each cylinder, including any reserve cylinders and EGS cylinders, for obvious signs of damage.			
2	All HP Supply Cylinders and EGS Cylinders	Inspect each cylinder valve for signs of damage or contamination and 1. (for A-Yoke connections) to ensure the O-Ring is in place and presents a smooth appearance. 2. (for DIN connections) to ensure connection threads are clean and undamaged and the sealing face presents a clean and smooth appearance.			
3	All HP Supply Cylinders and EGS Cylinders	Gauge each cylinder to ensure it is fully charged.			
4	All HP Supply Cylinders and EGS Cylinders	Note cylinder sizes and pressures to ensure that they meet or exceed mission requirements.			
NOTICE					
At a minimum, EGS cylinders must contain sufficient air to bring the diver to his first decompression stop or the surface for no- decompression dives.					
INSPECT THE RDC					
5	RDC	Open the Console lid and lock in place. Inspect the overall condition of the Console.			
CAUTION					
HP regulators should be adjusted using the force of one finger only. Valve handwheels should spin smoothly and easily.					

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Document XLDS OP-6
 Revised August 12, 2019

SECTION SIX: OP-6

RDC Conventional Mode / Set-Up & Pre-Dive Inspection

STEP	LOCATION	PROCEDURE	INITIALS		
			RED DIVER	GREEN DIVER	YELLOW DIVER
6	RDC HP Regulators	Back off HP regulators AR-1R, AR-2G and AR-3Y by turning handwheels CCW until no resistance is felt and the handwheel spins freely. Rotate the handwheel back CW until the first sign of resistance is felt.			
7	Umbilical supply Valves	Check umbilical supply valves ALP-1R, ALP-2G and ALP-3Y for smooth operation by fully opening, then closing. Verify SHUT.			
8	Cross Connect Valves	Check valves XC-1 and XC-2 for smooth operation by fully opening, then closing. Verify SHUT.	XC-1		XC-2
CAUTION					
Valves should be snugged using two fingers only. Do not over-tighten valves. Over-tightening multi-turn valves could result in valve seat and/or stem damage, resulting in reduced capability and leakage.					
9	Pneumofathometer Supply Valves	Check pneumo supply valves ALP-4, ALP-5 and ALP-6 for smooth operation by opening one turn, then closing. Verify SHUT.			
REMOVE RDC DUST CAPS AND PLUGS					
10	RDC	Remove dust caps from each of the umbilical supply outlets.			
11	RDC	Remove dust caps from each of the HP inlets.			
12	RDC	Inspect HP supply inlet fittings for damage and to ensure the O-ring is in place and presents a smooth appearance.			
INSPECT HP SUPPLY WHIPS					
13	HP Whips	Inspect each HP supply whip hose for signs of kinks, dents and fraying.			
14	HP Whips	Inspect Yokes for signs of damage. OPEN each bleed valve at least one full turn, checking for smooth operation, then SHUT.			

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Document XLDS OP-6
Revised August 12, 2019

SECTION SIX: OP-6

RDC Conventional Mode / Set-Up & Pre-Dive Inspection

STEP	LOCATION	PROCEDURE	INITIALS		
			RED DIVER	GREEN DIVER	YELLOW DIVER
CAUTION					
The high-pressure isolation valves on the Dive Lab HP whip system are soft seat valves that operate without the need for heavy tightening. Do not over tighten. Over tightening these valves could damage the seat or stem, resulting in reduced capability.					
15	HP Whips	OPEN each isolation valve at least one full turn, checking for smooth operation, then close until snug. Verify SHUT.			
16	HP Whips	Remove dust caps from hoses. Inspect fittings for signs of damage.			
CONNECT THE HP SUPPLY					
NOTICE					
The O-ring sealed fittings that connect the HP air supply to the RDC are designed to provide an air-tight seal with minimal tightening of the fitting. Fittings should be installed hand-tight and then lightly snugged using the effort of two fingers on a wrench (no more than a ¼ turn past hand-tight).					
17	RDC	Attach HP supply whips to the HP supply inlet for each diver.			
18	HP Whips	Connect a fully charged cylinder to each HP supply whip inlet (two Cylinders per whip).			
CONNECT UMBILICALS					
19	RDC	Attach each diver's umbilical to the corresponding ALP supply outlet.			
NOTICE					
In order to connect conventional umbilical Pneumofathometer hoses to the RDC, an adapter is needed. #4-JIC and 11/16" O ₂ adapters were supplied with most systems. Contact Dive Lab if other adapters are needed.					
20	RDC	Connect each diver's pneumo hose to the corresponding pneumo supply outlet.			
21	RDC	Attach the umbilical strain relief for each umbilical to the console handle; secure the console to an immovable object if possible.			

SECTION SIX: OP-6 RDC Conventional Mode / Set-Up & Pre-Dive Inspection

STEP	LOCATION	PROCEDURE	INITIALS		
			RED DIVER	GREEN DIVER	YELLOW DIVER
22	RDC	Attach divers' communication plugs to the communications box being used.			
INSPECT THE EGS					
23	EGS	Visually inspect each EGS regulator, whip and pressure gauge for signs of damage or contamination.			
INSPECT THE HARNESS ASSEMBLY					
24	Diver's Harness	Inspect the harness assembly for signs of excessive wear and damage.			
25	Diver's Harness	Ensure the D-Rings and chest strap are in place and in good condition.			
26	Buoyancy Compensator	Inspect buoyancy compensator (if used) for signs of excessive wear and damage.			
27	Buoyancy Compensator	Ensure oral inflation and dump valves operate freely and smoothly.			
28	Buoyancy Compensator	Inspect power inflator hose for nicks, cuts, abrasions, kinks and deformities.			
END SECTION 1. CONTINUE TO SECTION 2.					

SECTION SIX: OP-6

RDC Conventional Mode / Set-Up & Pre-Dive Inspection

STEP	LOCATION	PROCEDURE	INITIALS		
			RED DIVER	GREEN DIVER	YELLOW DIVER
SECTION 2					
PRESSURIZING THE CONTROL CONSOLE					
CONFIGURE THE HP AIR SUPPLY					
1	HP air supply	Slowly OPEN each cylinder valve.			
2	HP whips	Slowly OPEN isolation valves HP-2R, HP-2G AND HP-2Y to enable secondary HP air supply to the console.			
3	RDC	Record secondary HP air supply pressure: RED _____ GREEN _____ YELLOW _____			
4	HP whips	SHUT secondary supply valves HP-2R, HP-2G AND HP-2Y.			
5	HP whips	Slowly OPEN isolation valves HP-1R, HP-1G and HP-1Y to enable primary HP air supply to the console.			
6	HP whips	Hang "IN-USE" tags on open isolation valves.			
NOTICE					
"IN-USE" tags should always be hung from open HP whip isolation valves. When switching air sources, ensure tags are moved.					
7	RDC	Record primary HP air supply pressure: RED _____ GREEN _____ YELLOW _____			
LOAD HP REGULATORS FOR USE WITH 3/8" UMBILICALS					
8	RDC	Slowly load air supply regulators AR-1R, AR-2G and AR-3Y by rotating the regulator handwheel CW until the desired pressure is reached (between 100-250psi).			

SECTION SIX: OP-6

RDC Conventional Mode / Set-Up & Pre-Dive Inspection

STEP	LOCATION	PROCEDURE	INITIALS		
			RED DIVER	GREEN DIVER	YELLOW DIVER
9	RDC	Record LP pressures: RED _____ GREEN _____ YELLOW _____			
BLOW DOWN UMBILICALS					
10	Diver's Umbilical	Remove dust caps from umbilical outlets.			
11	RDC	Point the free end of each diver's umbilical in a safe direction and slowly OPEN the corresponding umbilical supply valve, ALP-1R, ALP-2G, and ALP-3Y. Allow gas to flow through the umbilical for approximately 5 seconds, then SHUT.			
12	Diver's Harness	Attach umbilical shackles to each diver's harness and route the umbilical through the retaining bands. Do not connect umbilical air fittings at this time.			
END OF PROCEDURE					

Comments: (if any)

Operator's Printed Name	Operator's Signature	Date
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Supervisor's Printed Name	Supervisor's Signature	Date
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SECTION SIX: OP-7A

RDC in Conventional Mode / Set-Up & Pre-Dive Inspection with KMDSI Helmets & Band Masks

NOTICE

This procedure covers set-up and inspection of KMDSI helmets and Band Masks for use of the XLDS. See OP-7B for conventional mode set-up using full-face masks.

NOTICE

This procedure is intended to train and instruct XLDS users in the set-up of the Diver Worn Intermediate Compensating Manifold, and Emergency Gas System for use with the RDC-2 or RDC-3. This procedure is intended for persons with specific training in the use of the XLDS system and associated equipment. This procedure, as well as other XLDS procedures in the applicable operations manual, is intended provide guidelines for the use of the XLDS to allow for safe use and to maximize overall system capability. These procedures are **not intended** to be the only training users receive. Users of this equipment are strongly recommended to receive formal training by trained and qualified persons. Users should become proficient in the use of all XLDS operating and emergency procedures.

NOTICE

Ensure all routine, scheduled and pre-dive maintenance/set-up has been performed on any helmets, Band Masks, EGS Systems, and other components to be used IAW the applicable O&M Manuals and procedures. Ensure all maintenance is recorded.

NOTICE

Start this OP with the Umbilical and EGS 1st Stage Regulator disconnected.

SECTION SIX: OP-7A

RDC in Conventional Mode / Set-Up & Pre-Dive Inspection with KMDSI Helmets & Band Masks

STEP	LOCATION	PROCEDURES	INITIALS		
			RED DIVER	GREEN DIVER	YELLOW DIVER
PRE-REQUISITE CHECKS					
1	RDC	Ensure that OP-6 has been completed.			
2	Helmet or Band Mask	Note the helmet or Band Mask SN used by each diver.			
3	Helmet or Band Mask	Ensure that all required maintenance has been completed on each helmet or FFM before continuing.			
HELMET SET-UP AND INSPECTION					
4	Helmet or Band Mask	Check side block EGS valve for smooth operation; OPEN then SHUT.			
5	Helmet or Band Mask	Check operation of the helmet steady flow valve for smooth operation, OPEN one to two turns then SHUT.			
6	Helmet or Band Mask	Check for proper operation of the regulator adjustment knob (Dial-A-Breath). Rotate the knob CW, then back it out CCW 3-4 turns while checking for smooth operation.			
7	EGS	Attach the EGS regulator to the EGS cylinder.			
8	EGS	Connect the EGS supply whip assembly to the side block, with the cylinder turned OFF.			
9	EGS	Slowly OPEN the EGS cylinder valve.			
10	Helmet or Band Mask	OPEN the side block EGS valve.			
11	Helmet or Band Mask	Back out on the regulator adjustment knob until a slight free flow develops then turn in until the free flow stops.			
12	Helmet or Band Mask	Momentarily push in on the purge button and ensure a strong flow of gas.			
13	Helmet or Band Mask	Shut the side block EGS valve.			
14	EGS	Record EGS supply pressure: RED _____ GREEN _____ YELLOW _____			

SECTION SIX: OP-7A

RDC in Conventional Mode / Set-Up & Pre-Dive Inspection with KMDSI Helmets & Band Masks

STEP	LOCATION	PROCEDURES	INITIALS		
			RED DIVER	GREEN DIVER	YELLOW DIVER
15	Helmet or Band Mask	Attach umbilicals to each side block inlet/one-way valve; ensure umbilical is routed properly and that shackles are secure.			
16	Helmet or Band Mask	Connect umbilical communications to the helmet and reinforce the connection with electrical tape.			
17	RDC	Perform a communications check with all divers.			
END OF PROCEDURE					

Comments: (if any)

Operator's Printed Name	Operator's Signature	Date
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Supervisor's Printed Name	Supervisor's Signature	Date
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SECTION SIX: OP-7B

Rapid Deployment Console Conventional Mode Set-Up & Pre-Dive Inspection with Full Face Masks

NOTICE

This procedure covers set-up and inspection of full-face masks for use of the XLDS. See OP-2A for set-up using KMDSI helmets and Band Masks.

NOTICE

This procedure is intended to train and instruct XLDS users in the set-up of the Diver Worn Intermediate Compensating Manifold, and Emergency Gas System for use with the RDC-2 or RDC-3. This procedure is intended for persons with specific training in the use of the XLDS system and associated equipment. This procedure, as well as other XLDS procedures in the applicable operations manual, is intended provide guidelines for the use of the XLDS to allow for safe use and to maximize overall system capability. These procedures are **not intended** to be the only training users receive. Users of this equipment are strongly recommended to receive formal training by trained and qualified persons. Users should become proficient in the use of all XLDS operating and emergency procedures.

NOTICE

Ensure all routine, scheduled and pre-dive maintenance/set-up has been performed on any helmets, Band Masks, EGS Systems, and other components to be used IAW the applicable O&M Manuals and procedures. Ensure all maintenance is recorded.

NOTICE

Start this OP with the Umbilical and EGS 1st Stage Regulator disconnected.

SECTION SIX: OP-7B

Rapid Deployment Console Conventional Mode Set-Up & Pre-Dive Inspection with Full Face Masks

STEP	LOCATION	PROCEDURE	INITIALS		
			RED DIVER	GREEN DIVER	YELLOW DIVER
PRE-REQUISITE CHECKS					
1	RDC	Ensure that OP-6 has been completed.			
2	FFM	Note the FFM SN used by each diver.			
3	FFM	Ensure that all required maintenance has been completed on each FFM before continuing.			
FULL FACE MASK SET-UP AND INSPECTION					
NOTICE					
Dive Lab recommends the use of a harness mounted EGS manifold when diving a full-face mask. This manifold allows the diver to breath from the EGS without taking the FFM off in the event of umbilical gas supply failure or interruption. It does not, however, provide a separate air source in the case of second stage regulator failure.					
4	EGS	Attach the EGS manifold block to the diver's harness.			
5	EGS	Attach the EGS regulator to the EGS cylinder.			
6	Manifold Block	Attach the EGS whip to the EGS manifold block.			
7	FFM	Attach the manifold block interface hose to the FFM.			
8	EGS	Slowly OPEN the EGS <u>cylinder</u> valve.			
9	Manifold Block	OPEN the manifold block EGS valve.			
10	FFM	Check the FFM for proper function.			
11	Manifold Block	SHUT the manifold block EGS valve.			
12	EGS	Record EGS supply pressure: RED _____ GREEN _____ YELLOW _____			
13	Manifold Block	Attach umbilical to the manifold block; ensure umbilical is routed properly and shackles are secure.			

SECTION SIX: OP-7B

Rapid Deployment Console Conventional Mode Set-Up & Pre-Dive Inspection with Full Face Masks

STEP	LOCATION	PROCEDURE	INITIALS		
			RED DIVER	GREEN DIVER	YELLOW DIVER
14	FFM	Connect umbilical communications to the FFM and reinforce the connection with electrical tape.			
15	FFM	Perform a communications check with all divers.			
END OF PROCEDURE					

Comments: (if any)

Operator's Printed Name	Operator's Signature	Date
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Supervisor's Printed Name	Supervisor's Signature	Date
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SECTION SIX: OP- 8 RDC

Conventional Mode Diving Operations

NOTICE

This OP is intended to serve as a reference to assist new and inexperienced operators. These procedures, as well as all system Emergency Procedures, should be committed to memory by system operators.

NOTICE

Ensure all routine, scheduled and pre-dive maintenance/set-up has been performed to the Helmets, Masks, EGS System and components IAW the applicable O&M Manuals and procedures. Ensure all maintenance is recorded.

SECTION SIX: OP- 8 RDC Conventional Mode Diving Operations

STEP	LOCATION	PROCEDURE	INITIALS		
			RED DIVER	GREEN DIVER	YELLOW DIVER
SYSTEM OPERATION DURING DIVES					
1	RDC	Ensure OP-7 A or B has been completed.			
2	RDC	Prior to deploying divers, ensure each diver's regulator is set to 100-150 psig.			
3	RDC	At the direction of the diving supervisor, send air to each diver by fully opening ALP-1, ALP-2 and ALP-3			
4	RDC	During decent, occasionally purge the divers' pneumofathometers (pneumo) by momentarily opening (no more than a ¼ turn) and closing each diver's pneumo supply valve to purge water from the pneumo hose.			
5	RDC	During decent, and throughout the dive, monitor the diver's depth and maintain minimum manifold pressure.			
6	RDC	During the dive, the console operator should monitor each diver's HP supply pressure.			
7	RDC	HP air supply cylinders should be shifted/changed when supply pressure drops below 500 psig.			
DANGER					
Allowing a diver's HP supply to drop below 250 psig will result in insufficient air flow to the diver. To avoid potentially life-threatening conditions, the HP air source must be shifted or changed before the supply drops below 250 psig.					
8	RDC	The console operator should note the maximum depth attained by each diver during the dive.			
9	RDC	During ascent, the pneumo valves should be left shut.			
BETWEEN AND AFTER DIVES					
NOTICE					
After the Divers are out of the water and have removed their helmet or FFM, the umbilical air supply should be shut in order to avoid unplanned air loss. Never close a diver's umbilical air supply while the diver is still in the water or wearing a FFM or helmet.					
10	RDC	Secure umbilical supply by closing ALP-1, ALP-2 and ALP-3.			
END OF PROCEDURE					

SECTION SIX: OP- 8 RDC Conventional Mode Diving Operations

Comments: (if any)

Operator's Printed Name	Operator's Signature	Date
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Supervisor's Printed Name	Supervisor's Signature	Date
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SECTION SIX: OP- 9

RDC Conventional Mode

Post-Dive / Shut Down & Inspection Procedures

NOTICE

OP-4 can be used for either the RDC-2 or RDC-3. For the RDC-2, steps applying to Yellow or Yellow Diver are N/A. Certain steps of this procedure do not apply to a specific diver's air circuit. These steps may be initialed as completed using the "Red Diver" block.

NOTICE

There are several different configurations of the XLDS in use at this time. While the major components remain the same, minor details, such as fitting wrenching size, may vary based on date of manufacture. Additional variances may be present in custom configurations. This OP represents the best possible information for the current configuration at the time of publication. Users should apply common sense and good engineering practices when adapting this procedure to their system. If any doubt arises on how to apply this procedure to your system, contact Dive Lab, Inc. for clarification at 850-235-2715.

SECTION SIX: OP- 9

RDC Conventional Mode

Post-Dive / Shut Down & Inspection Procedures

STEP	LOCATION	PROCEDURE	INITIALS		
			RED DIVER	GREEN DIVER	YELLOW DIVER
SECURE THE HP AIR SUPPLY					
1	HP Supply Cylinders	SHUT cylinder valves on all primary and secondary HP supply cylinders.			
2	HP Whips	OPEN HP isolation valves HP-1R, HP-2R, HP-1G, HP-2G, HP-1Y, and HP-2Y.			
SECURE THE DIVER'S EGS					
3	Diver's EGS	SHUT EGS cylinder valves.			
4	Diver's EGS	OPEN EGS valve (located on the side block for helmets and Band Masks, or on the ICS manifold for FFMs).			
BLEED THE SYSTEM					
5	RDC	OPEN cross-connect valves XC-1 and XC-2.			
6	RDC	OPEN umbilical supply valves ALP-1, ALP-2 and ALP-3.			
7	Diver's Helmet or FFM	OPEN the diver's steady-flow valve (helmets and band masks) or by depressing the regulator purge button in order to bleed the system.			
8	Diver's Helmet or FFM	Once all air has been bled from the system and EGS (all gauges read 0 psi and no air flows from the helmet or mask), SHUT the steady-flow valve or release the regulator purge button.			
9	Diver's EGS	SHUT the EGS valve. (located on the side block for helmets and Band Masks, or on the ICS manifold for FFMs).			
SHUT DOWN THE CONSOLE					
10	RDC	SHUT umbilical supply valves ALP-1, ALP-2 and ALP-3.			
11	RDC	SHUT cross-connect valves XC-1 and XC-2.			
CAUTION					
Valves should be snugged using two fingers only. Do not over-tighten valves. Over-tightening multi-turn valves could result in valve seat and/or stem damage, resulting in reduced capability and leakage.					
12	RDC Pneumofathometer	Crack OPEN pneumo valves ALP-4, ALP-5 and ALP-6 while watching the corresponding depth gauge to ensure each air circuit is bled, then SHUT lightly.			

SECTION SIX: OP- 9

RDC Conventional Mode

Post-Dive / Shut Down & Inspection Procedures

STEP	LOCATION	PROCEDURE	INITIALS		
			RED DIVER	GREEN DIVER	YELLOW DIVER
13	RDC HP regulators	Back off regulators by turning handwheels CCW until no resistance is felt and the handwheel spins freely. Rotate the handwheel CW until the first sign of resistance is felt.			
14	HP Whips	SHUT isolation valves HP-1R, HP-2R, HP-1G, HP-2G, HP-1Y, and HP-2Y			
DISCONNECT THE HP AIR SUPPLY					
15	Cylinders	Detach primary AND secondary HP supply cylinder Yokes or DIN fittings as follows: <ol style="list-style-type: none"> 1. Crack OPEN the bleed valve. 2. Listen for signs of air leakage. 3. SHUT the bleed valve. 4. Disconnect the cylinder. 5. Replace the Yoke or DIN dust cap. 			
16	HP whips	Disconnect the HP whips using a back-up wrench to secure the console-side fitting in place.			
17	HP whips	Replace HP whip outlet dust caps.			
18	RDC	Replace console HP inlet dust caps.			
DISCONNECT THE EGS					
19	EGS	Disconnect each EGS from diver's helmet or FFM.			
REMOVE THE UMBILICALS					
20	Helmet or FFM	Disconnect the umbilical from the side block or EGS manifold block.			
21	FFM	Disconnect the intermediate hose from the FFM and the EGS manifold block (if used).			
22	Diver's Harness	Release the spinnaker shackle attaching the diver's end of the umbilical to the harness.			
23	Diver's Harness	Unscrew the shackle at the top of the diver's harness connecting the umbilical to the harness. After the umbilical has been removed from the harness, reinstall the shackle on the umbilical.			
24	Comms Box	Disconnect umbilical communication cable from the comms box.			
25	RDC	Disconnect umbilical pneumo hoses from			

SECTION SEVEN: EP-1 Emergency Procedures

Sudden Loss of HP Air Supply to Diver Circuit Due to Damaged Topside Supply Systems or Components

Symptoms: Sound of air escaping, low pressure (<300 psig) readings.

Most probable causes: Cylinder burst disc ruptured, cylinder O-ring failure, whip failure.

Action by Topside:

1. Secure affected supply by securing HP-1 or HP- 2 and shift to the secondary air supply cylinder.
2. Have diver check umbilical, clear and prepare to abort the dive.
3. Abort the dive when diver reports ready to travel.

NOTICE

If HP air supply is no longer available to the divers' circuit, open the appropriate cross connect to provide air from other circuit.

Action by the Diver:

1. Open the EGS valve on Helmet or Band Mask side block, or the EGS valve on the ICS if a full-face mask is being employed.
2. Notify Topside, "diver is on EGS".
3. Clear umbilical, and prepare to abort the dive when instructed by topside.
4. Prepare to shut the EGS valve if directed by topside to verify that normal Supply is re-established.

SECTION SEVEN: EP-2 Emergency Procedures

Loss of Air Supply - No Warning or Sound of Venting Air

Symptoms: Diver notices difficulty breathing and or lack of air.

Possible Causes: Supply cylinder low, Umbilical supply valve shut. Umbilical severed, pinched or disconnected.

Action by the Diver:

1. Open the EGS valve on Helmet or Band Mask side block, or the EGS valve on the ICS if a full-face mask is being employed.
2. Notify Topside, "diver is on EGS".
3. Clear umbilical and prepare to abort the dive as instructed by topside.
4. Prepare to shut the EGS valve if directed by topside to verify normal supply is re-established.

Action by Topside:

1. Check HP and LP air supply pressures, and ensure an HP pressure greater than 400 psig and an LP pressure of at least 300 psig. Shift to secondary Cylinder if necessary. Have diver momentarily shut the EGS valve to verify re-established air supply.
2. If HP air is re-established, have the diver check his umbilical is clear, abort the dive as soon as the diver is ready to travel. If HP air does not pressurize the divers circuit after opening the secondary cylinder, open the appropriate cross connect valve, have the diver check his umbilical is clear and abort the dive.

SECTION SEVEN: EP-3 Emergency Procedures

Uncontrolled Loss of Air at the Control Console

Symptoms: Air venting from the manifold over pressure relief valve.

Probable cause: Reducer seat failure.

NOTICE

A major failure of the HP reducer seat will result in a free flow condition. The HP supply can be easily throttled manually using the appropriate HP-1 or HP-2 supply valves. In addition to the above action, the effected divers HP air can be secured and the appropriate cross connect can be opened to supply the diver with another divers supply during recovery.

Action by Topside:

1. Throttle HP-1 or HP-2 as appropriate to maintain a pressure to the diver between 300-400 psig.
2. Instruct diver to check the umbilical is clear and prepare to leave the bottom.
3. If the LP air pressure drops below 250 psig. Instruct Diver to go on EGS.

Action by the Diver:

1. Diver opens the EGS valve on Helmet or Band Mask side block, or the EGS valve on the ICS if a full-face mask is being employed.
2. Notify Topside, "diver is on EGS".

SECTION SEVEN: EP-4 Emergency Procedures

Entangled Umbilical

Symptoms: Diver reports umbilical hopelessly entangled.

NOTICE

Standard practice with an entangled umbilical is to deploy the standby diver with a second umbilical to attach to the effected diver.

An 80 cubic foot cylinder with 1st stage regulator relief and QD interface whip could also be used as an alternative to the second umbilical.

Action by the Diver:

1. Reports entangled and requires the assistance of standby diver.

Action by Topside:

1. Deploy standby diver with a secondary umbilical supply or quick connect EGS system with a minimum of an 80 cubic foot cylinder.
2. Standby diver shackles in retrieval line or buddy line to the effected diver.
3. Standby instructs topside to put effected diver on the diver EGS system.
4. When instructed by topside, standby diver disconnects the umbilical and reconnects the EGS and emergency cylinder to the ICS.
5. The Standby diver assists the effected diver to the surface utilizing tender support.

