

**OP-2**  
**EXTREME LIGHTWEIGHT SYSTEM ICS/EGS**  
**SET-UP AND PRE-DIVE INSPECTION WITH KMDSI HELMETS, BAND**  
**MASKS, AND FULL FACE MASKS**

06/13/11

**NOTE:** 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.

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

**NOTE:** Start this OP with the Umbilical and EGS 1<sup>st</sup> Stage Regulator disconnected.

Date:
Helmet/Mask Serial #:
Associated Equipment Serial #(s):
Technician (print name):

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06/13/11

STEP	PROCEDURES	INITIALS
<b>SECTION 1</b>		
<b>1.1 Inspect the ICS and EGS system</b>	<b>Diver/Tender- Check the following (a):</b>	
	<p>a. Visually inspect the EGS Cylinder for obvious signs of damage. Ensure the Cylinder retaining bands are secure to the Cylinder. Inspect the Cylinder Valve mating surface for signs of damage and contamination, ensure the O-ring is in place and has a smooth appearance.</p> <p>Red ____ Green ____ Yellow ____</p>	
<b>1.2 Inspect the Harness Assembly</b>	<b>Diver/Tender – Check the following (a):</b>	
	<p>a. Inspect the harness Assembly for signs of excessive wear and damage. Ensure the D-rings and sliders are in place. Check to ensure the Intermediate Compensating System (ICS) Manifold/Cylinder Assembly is secure to the Harness Assembly.</p> <p>Red ____ Green ____ Yellow ____</p>	
<b>1.3. Remove protective cap from EGS Valve</b>	<b>Diver/Tender- Check the following (a):</b>	
	<p>a. Remove the protective Cap from the ICS Emergency Valve, inspect for signs of damage, contamination, check for smooth operation by rotating the Valve fully open. Leave open.</p> <p>Red ____ Green ____ Yellow ____</p>	

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06/13/11

STEP	PROCEDURES	INITIALS
<b>1.4 ICS One-way Valve</b>	<b>Diver/Tender- Check the following (a – c):</b>	
	<p>a. Remove the protective Cap from the ICS Umbilical Connection Fitting.</p> <p>Red _____ Green _____ Yellow _____</p>	
	<p>b. Using your lips, try drawing air through the ICS Umbilical fitting. No air should be drawn through. Next, try blowing into the fitting. Air should flow easily into the Manifold and exit the Emergency Valve. If the air can be drawn through the fitting, the one-way Valve will need to be rebuilt or replaced. If air cannot be blown through and pass freely out the Emergency Valve, the one-way Valve will need to be overhauled or replaced.</p> <p>Red _____ Green _____ Yellow _____</p>	
	<p>c. Upon successful test, shut the ICS EGS Valve by rotating clockwise and cap .</p> <p>Red _____ Green _____ Yellow _____</p>	
<b>1.5. Inspect the EGS</b>	<b>Diver/Tender- Check the following (a):</b>	
	<p>a. Visually inspect the EGS First Stage Regulator for obvious signs of damage and contamination, ensure the Regulator is equipped with a Bleed Relief Valve installed in a low pressure port. Attach the Regulator to the EGS Cylinder.</p> <p>Red _____ Green _____ Yellow _____</p>	

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06/13/11

STEP	PROCEDURES	INITIALS
<p><b>1.6. Helmet or FFM being used</b></p> <p><b>NOTE: Use the applicable sections and steps below for the type of Helmet or FFM being employed.</b></p>	<p><b>Diver/Tender- Check the following (a):</b></p>	
	<p>a. Note the model helmet or FFM being used by each Diver.</p>	
	<p>_____ Red ____ Green ____ Yellow ____</p>	
	<p>_____ Red ____ Green ____ Yellow ____</p> <p>_____ Red ____ Green ____ Yellow ____</p>	
<p><b>SECTION 2</b></p> <p><b>HELMET / FULL FACE MASK SET-UP / INSEPCTION</b></p>		
<p><b>KMDSI HELMETS and BAND MASKS</b></p>		
<p><b>NOTE: The 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. The EGS interface hose is made up of a quick connect assembly. The hose assembly is approximately 22" long and is attached on one end to the EGS first stage regulator and on the other to the EGS valve on the helmet side block. When using KMDSI Helmets or Band Masks the EGS valve on the ICS is not used but instead shut and capped.</b></p>		
<p><b>M-48 / EXO FULL FACE MASKS</b></p>		
<p><b>NOTE: The M-48 and EXO Masks use a 3/8" ICS to mask whip it has a 1/2"-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. The EGS Interface Hose is the same quick connect 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.</b></p>		

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06/13/11

STEP	PROCEDURES	INITIALS
<b>AGA FULL FACE MASK</b>		
<p><b>NOTE: The MK20 / AGA Mask use a special 52" long ICS to mask whip. It has a 1/2"-20 male straight threads on the end that attaches to the ICS, and a standard AGA swivel fitting where it attaches to the mask . The EGS Interface Hose is the same quick connect 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.</b></p>		
<p><b>NOTE: FOR HELMETS AND BAND MASKS, PERFORM STEPS 2.1 THRU 2.4</b></p> <p><b>FOR FULL FACE MASKS SKIP TO SECTION 3 AND COMPLETE STEPS</b></p>		
<b>2.1 Helmet Maintenance STEP</b>	<b>HELMETS /BAND MASKS</b>	<b>INITIALS</b>
	<p><b>Diver/Tender- Check the following:</b>            Ensure all pre-dive maintenance has been performed on the particular helmet or mask being used.</p> <p>Red _____ Green _____ Yellow_____</p>	
<b>2.2 Checking the EGS when used with Helmets and Band Masks</b>	<b>Diver/Tender- Check the following (a):</b>	
	<p>a. Check helmet/band mask side block EGS supply valve for smooth operation, open then close.</p> <p>Red _____ Green _____ Yellow_____</p>	

# OP-2

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06/13/11

<b>2.3 Checking for proper operation of the regulator adjustment knob</b>	<b>Diver/Tender- Check the following (a - c):</b>	
	a. Check operation of the helmet steady flow valve for smooth operation, open one to two turns then close.  Red _____ Green _____ Yellow _____	
	b. Connect the EGS supply whip assembly to the emergency supply valve on the side block, with the cylinder turned OFF.  Red _____ Green _____ Yellow _____	
	c. Check for proper / smooth operation of the regulator adjustment knob (Bias Device). Rotate the knob in clockwise all the way in then back it out approximately 4 turns while checking for smooth operation.  Red _____ Green _____ Yellow _____	
<b>2.4 Emergency gas system (EGS)</b>	<b>Diver/Tender- Check the following (a – f):</b>	
	a. Slowly open the EGS cylinder valve  Red _____ Green _____ Yellow _____	
	b. Open the side block EGS valve  Red _____ Green _____ Yellow _____	
	c. Back out on the regulator adjustment knob until a slight free flow develops then turn in, clockwise two to three turns.  Red _____ Green _____ Yellow _____	

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29

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06/13/11

<b>2.4 Continued</b>	<b>PROCEDURES</b>	<b>INITIALS</b>
	<p>d. Momentarily push in on the purge button and ensure a strong flow of gas.</p> <p>Red _____ Green _____ Yellow _____</p>	
	<p>e. Shut the side block EGS valve</p> <p>Red _____ Green _____ Yellow _____</p>	
	<p>f. Log EGS Cylinder pressure.</p> <p>Red _____ Green _____ Yellow _____</p>	
<b>2.5 Attach Umbilical and Main Gas whip</b>	<p><b>Diver/Tender: Check the following (a - b):</b></p>	
	<p>a. Connect the ICS to Helmet interface whip – to the Helmet Umbilical Adapter on side block and tighten.</p> <p>Red _____ Green _____ Yellow _____</p>	
	<p>b. Attach Umbilical to the ICS inlet fitting and shackle in Harness, ensure umbilical is routed properly through back pack loops.</p> <p>Red _____ Green _____ Yellow _____</p>	
<b>2.6 Communications Whip</b>	<p>a. Connect communications Whip to the Helmet and tape.</p> <p>b. Perform a communications check with all divers.</p> <p>Red _____ Green _____ Yellow _____</p>	

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06/13/11

<b>2.7 Air to All Divers</b>	<b>When directed from supervisor, open appropriate valves on console to send air to divers</b>	
	<b>RED</b> diver Open ALP-1	
	<b>GREEN</b> diver Open ALP-2	
	<b>YELLOW</b> diver Open ALP-3	
	<b>SECTION 3</b> <b>LIGHTWEIGHT FULL FACE MASKS</b>	
<b>STEP</b>	<b>PROCEDURES</b>	<b>INITIALS</b>
<b>3.1 Mask Maintenance STEP</b>	<b>Diver/Tender check the following: (a)</b>	
	a. Ensure all pre-dive maintenance has been performed on the particular mask being used.  Red _____ Green _____ Yellow _____	
<b>3.2 Checking the EGS</b>	<b>Diver/Tender- Check the following (a - g):</b>	
	a. Attach the EGS whip to the EGS valve on the ICS regulator.  Red _____ Green _____ Yellow _____	
	b. Attach and secure the ICS interface hose to the face mask  Red _____ Green _____ Yellow _____	



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06/13/11

<b>3.2 Continued Checking the EGS</b>	c. Slowly open EGS cylinder valve Red _____ Green _____ Yellow _____	
	d. Open the ICS EGS valve Red _____ Green _____ Yellow _____	
	e. Check the full face mask for proper function. Red _____ Green _____ Yellow _____	
	f. Shut ICS EGS valve. Red _____ Green _____ Yellow _____	
	g. Log EGS Cylinder pressure. Red _____ Green _____ Yellow _____	
<b>3.3 Attach Umbilical and Main Gas whip</b>	<b>Diver/Tender: Check the following (a):</b>	
	a. Attach Umbilical to the ICS inlet fitting and shackle in Harness; ensure umbilical is routed properly through back pack loops. Red _____ Green _____ Yellow _____	
<b>3.4 Communications Whip</b>	<b>Diver/Tender: Check the following (a - b):</b>	
	a. Connect communications Whip to the Helmet and tape. b. Perform a communications check with all divers. Red _____ Green _____ Yellow _____	

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<b>3.5 Air to All Divers</b>	<b>When directed from supervisor, Open appropriate valves on console to send air to divers</b>	
	<b>RED</b> diver Open ALP-1	
	<b>GREEN</b> diver Open ALP-2	
	<b>YELLOW</b> diver Open ALP-3	

Technician Signature: \_\_\_\_\_ Date \_\_\_\_\_

Comments: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_