

Project Name –MSA Orion online tutorial (draft number 5 2010)

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Screen Description -

Section	Visuals (What will be seen on screen)	Text / graphic	Script (Voiceover – what will be heard)	Video time
Introduction	A couple of still photos or some video of the Orion in use	Orion gas detector	Fire Rescue NSW uses the MSA Orion 4-head gas detector to monitor: <ul style="list-style-type: none">• Oxygen deficient or enriched atmospheres.• Exposure to carbon monoxide and hydrogen sulphide.• The explosive hazard presented by combustible gases.• To determine hot zone and safe OHS limits with personnel protective equipment	
	Shot of the Orion (Shot of the Orion naming parts of the Orion)		This video shows you how to conduct a pre-operational check to prepare the Orion for use at an incident. You can also use these procedures during SIMS (station inventory management system) checks of the Orion.	
Atmospheres detected	A shot of the detector's LCD showing the instant reading screen. Arrow pointing to each of the correlating displays	What does the Orion's sensors detects	The Orion has 4 sensor heads. It will only detect and measure: <ul style="list-style-type: none">• Oxygen (O²) as a percentage in the atmosphere• Carbon monoxide (CO), in parts per million• Hydrogen sulphide (H₂S) in parts per million• Combustible gases and some combustible vapours as a	

			percentage of the Lower explosive Limit	
Kit contents	<p>Photo or shot of the unit in its carry case, showing the contents of the case labelled with arrows.</p> <p>(If possible animate the arrows to show each item as it is mentioned.)</p>	Detector and contents	<p>The Orion kit includes:</p> <ul style="list-style-type: none"> • The Orion, with rubber boot and carry strap. • Sample hose with wand connection for remote sampling. • Sampling wand with moisture. • Calibration gas cylinder • Regulator for calibration gas • A black rubber hose for connecting the regulator and calibration gas to the detector. • Tool kit, with calibration nozzle, spare water stop filters, spare internal dust filters, screw driver with Phillips head and two sizes of Allen key. • Three spare Duracell AA batteries. 	
Turning on the Orion	<p>Video of turning on the unit by pressing the green On/Off/Page button.</p> <p>The LCD will be blank.</p>	Turning the Orion on.	To turn the Orion on, press the green On/Off/Page button. The unit will beep and you will hear the pump start.	
Zeroing the Orion	<p>Video of initiating the zeroing process.</p> <p>Press the green On/Off/Page button while the Zero flag is flashing on the LCD.</p> <p>LCD show Zero flag solid and hour glass.</p> <p>LCD showing Zero flag and hour glass icon disappear.</p> <p>Alternately show the Change/Reset and green On/Off/Page buttons being pressed.</p>	Zeroing the Orion.	<p>After starting the Orion, it must be zeroed. This automatically sets the zero concentration point for the Orion's sensor heads, and must be done in clean air.</p> <p>Before zeroing, the instant reading screen needs to show 20.8% O₂, 0ppm CO, 0ppm H₂S, 0% LEL</p> <p>When you start the Orion, the Zero flag will flash for approximately 5 seconds in the top left hand corner of the flag screen.</p> <p>To commence zeroing:</p> <ul style="list-style-type: none"> • Press the green On/Off/Page button. The flashing Zero will then 	

			<p>become solid and a small hour glass will show.</p> <ul style="list-style-type: none"> Zeroing is complete when the Zero flag and hour glass icon disappear. 	
	<p>Video of initiating the zeroing process during operations.</p> <p>With the LCD showing instant reading in clean air, press and hold the Change/Reset button.</p> <p>Visuals should then follow the steps in the voiceover.</p>	Zeroing during operations	<p>If required, you can zero the Orion during operations. To do this:</p> <ul style="list-style-type: none"> Ensure you are in clean air and the Instant reading screen is showing 20.8% O₂, 0ppm CO, 0ppm H₂S, 0% LEL Push and hold the Change/Reset button until the Cal flag is solid and the Zero flag flashes. Push the green On/Off/Page button to accept zeroing. The Zero flag will remain solid during zeroing. When zeroing is complete, the Zero flag disappears and the Cal flag flashes. Return to instant reading mode by pressing the Change/Reset button 	
Challenge test	<p>Video of the challenge test being set up:</p> <p>Show each piece of equipment needed for challenge test:</p> <p>Show the expiry date on cylinder.</p> <p>Show the equipment being assembled according to the voiceover.</p> <p>Show the alarm activating. Press Change/Reset to acknowledge.</p> <p>Show the LCD stabilising and compare the readings with a close up of the cal gas</p>	Challenge test	<p>After zeroing the Orion, the Orion must be challenge tested. This challenge test confirms that the Orion sensors are reading accurately, and that the Orion will display accurate results. To challenge test the Orion, you will need the following equipment:</p> <ul style="list-style-type: none"> Orion with sample hose removed. Calibration nozzle. Cylinder of calibration gas. Regulator. Black rubber hose. <p>To challenge the Orion:</p> <ul style="list-style-type: none"> Begin with Orion turned on. Check the expiry date on the cylinder. 	

	<p>specifications.</p> <p>Show the hose being disconnected from the Orion.</p> <p>Show LCD returning to a clean air display. This is the recovery.</p> <p>(Video should show the appropriate buttons being pressed and LCD displays.</p> <p>If required, show the LCD displays as photos.)</p>		<ul style="list-style-type: none"> • Screw the calibration nozzle to the gas inlet port. • Connect the regulator to the cylinder. • Attach the black rubber hose to the regulator. • Fully open the regulator and connect the black rubber hose to the Orion. • When unit goes into alarm during the challenge test acknowledge alarm by pressing the Change/Reset button and continue. • Wait until readings stabilize this should occur within two minutes. The Orion must display readings within the limits indicated on the gas cylinder. • Turn off the regulator and disconnect the hose from the Orion. <p>If readings are within the limits shown on the cylinder, the Orion has passed the challenge test and can be readied for operation.</p> <p>Wait until the Orion sensor heads have recovered. This is indicated by zero contaminants and oxygen reading of 20.8%. Then move on to clearing peaks, min, STEL, TWA, and checking the time and date.</p> <p>If the readings are outside the limits shown on the calibration cylinder, the Orion's challenge test has failed and must be field calibrated before use.</p>	
Calibration	<p>Shot of equipment used for calibration.</p> <p>Show the calibration being setup and initiated according to the voiceover.</p> <p>Video should show the appropriate buttons being pressed and LCD displays.</p> <p>If required, show the LCD displays as photos or vector graphics.</p>	Field calibration	<p>To field calibrate the Orion, you will need the same equipment you used for the challenge test.</p> <p>In the first step of calibration, the Orion will again be zeroed. This must be done in clean air.</p> <p>To calibrate the Orion:</p> <ul style="list-style-type: none"> • Have the calibration gas ready, with regulator and black rubber hose attached. 	

			<ul style="list-style-type: none"> • Start with the unit turned on, and the calibration nozzle attached. • Whilst in the instant reading screen press and hold the Change/Reset button until the Cal flag shows and the Zero flag flashes. • Confirm zeroing by pressing the green On/Off/Page button. The Zero flag stops flashing and remains solid. • Once the unit is zeroed, the Zero flag disappears, and the Cal flag flashes. Confirm calibration by pressing the green On/Off/Page button, the Cal flag will then remain solid. • You have 45 seconds once the cal flag is solid to turn the regulator on and connect the gas, if you fail to do so within 45 seconds the detector will revert back to last time it was calibrated • Open the regulator and connect the calibration gas. • During calibration the Orion will not alarm when alarm levels are exceeded, this only occurs during challenge test or normal operations • The Orion will now automatically calibrate the H₂S, CO and LEL sensors against the calibration gas. • When calibration is complete the Cal flag disappears and the Orion returns to instant reading mode. Remove the black rubber hose and close the regulator on the cylinder, and allow the detector to recover. • During calibration the Orion should not go into alarm. If the Orion goes into alarm call the gas help line on 0407663491 • The next step is to clear peaks, mins STEL and TWA. 	
	Show the LCD after a calibration failure.		<p>If the Orion fails calibration, it will alarm and show the auto calibration failure screen with dashed lines on one or more sensor displays</p> <p>Acknowledge the alarm by pressing the Change/Reset button. Repeat the field calibration. If unit fails again, do not use the unit. Contact Gas Help immediately on 040 766 3491</p>	

	<p>Video of peaks and min being cleared.</p> <p>Follow the steps indicated by the voiceover.</p> <p>Video should show the appropriate buttons being pressed and LCD displays.</p> <p>If required, show the LCD displays as photos or vector graphics.</p>	<p>Clearing peaks and Min</p>	<p>For the Orion to show accurate readings during operations the artificially high readings recorded during the challenge test and calibration must be cleared from the memory. To do this:</p> <ul style="list-style-type: none"> • Start in instant reading mode. • Press the green On/Off/Page button once for the Peak reading screen or twice for the Min screen • The Peak or Min flag will show, and the display gives the peak readings for O₂, LEL, H₂S, CO or minimum readings for O₂, recorded since the unit was turned on, or since peaks were last cleared. • If necessary, record the Peak and min values. • Press the green On/Off/Page button until you return to the Peak screen. • Press and hold the Change/Reset button until the Change flag shows and the Peak flag flashes. • Press the On/Off/Page button to confirm. Clearing peaks will also clear the O₂ minimum reading. Peaks and O₂ minimum are reset to zero, and the unit will return to instant reading mode. 	
	<p>Video of peaks and min being cleared.</p> <p>Follow the steps indicated by the voiceover.</p> <p>Video should show the appropriate buttons being pressed and LCD displays.</p> <p>If required, show the LCD displays as photos or vector graphics.</p>	<p>Clearing the TWA and STEL</p>	<p>For the Orion to calculate accurate gas exposures during operations, the artificial readings generated by the challenge test and calibration must be cleared from the memory. STEL and TWA must be cleared independently. To do this:</p> <p>Short term exposure limit or STEL takes all readings since the detector was turned on, and displays your exposure averaged over a fifteen minute period</p> <p>Time weighted average or TWA takes all readings since the detector was last turned on and displays your exposure averaged over an eight hour period.</p>	

			<ul style="list-style-type: none"> Press the green On/Off/Page button and scroll through the displays until the STEL screen is displayed. The display gives the measurements for STEL since the unit was last turned on, or since the STEL was last cleared. Press and hold the Change/Reset button until the Change flag shows and the STEL flag flashes. Press the green On/Off/Page button to confirm. STEL is reset to zero, and the unit returns to instant reading mode. Repeat for TWA. 	
Assembling the wand	Video of the sampling wand being assembled and attached to the Orion, following the voiceover.	Wand assembly	<p>The Orion should be used with the sampling wand attached. A water stop filter inserted in the wand protects the Orion from damage by moisture. To assemble and attach the wand:</p> <ul style="list-style-type: none"> Dismantle wand Insert moisture barrier into metal connection in wand handle if not already in place Thread sample tube through spring in handle Reassemble handle and attach sampling hose to detector. The unit may go into pump alarm at this point, if so acknowledge alarm by pressing the change reset button 	Assembling the wand
Pump test	<p>Show a firefighter blocking end of sampling wand with finger.</p> <p>Show the Orion in alarm, and the alarm being acknowledged.</p>	Wand and hose leak test	<p>If there are any leaks in the Orion's gas sampling circuit, then displayed gas concentrations may not be accurate. A simple test will confirm there are no leaks. To do this:</p> <ul style="list-style-type: none"> Block end of wand with your finger. Alarm LEDs should flash and the Pump flag on LCD will be solid, and an audible alarm will sound. Remove your finger and acknowledge the alarm by pressing the Change/Reset button. 	

			<ul style="list-style-type: none"> • If unit does not alarm check all hose connections and the wand assembly. • Repeat the test. • If the unit still doesn't alarm, try to isolate leak by removing the wand and or hose one part at a time. <p>As a final resort, use the Orion without the hose or wand connected, provided it passes the pump test in that state.</p>	
Operations	To give a purpose to the procedure, and an endpoint to the video, show some footage of a firefighter with their partner bravely venturing forth into the unknown with their trusty Orion.		<p>The Orion is now ready for use!</p> <p>Remember, while monitoring gases with the Orion, you must wear BA and appropriate PPE.</p>	
Gas Help	Gas Help	Gas Help	If you have any problems using the Orion or require gas help, call Gas Help on 0407 663491.	