MUSTANG SURVIVAL OCEAN COMMANDER,
MUSTANG MODELS OC4001, OC8001 AND OC8001 HR
DESCRIPTION AND MAINTENANCE INSTRUCTIONS
MAY 22, 2007, REV: 1.1
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1.0 INTRODUCTION

1.1 GENERAL

1.1.1 Mustang Immersion suits are items of primary survival equipment, and as such, every precaution shall be taken to assure proper storage, maintenance, and handling. This publication provides the information required to inspect, test, and maintain Mustang Survival immersion suits OC4001, OC8001 and OC8001 HR.

1.1.2 Read this manual thoroughly to become familiar with the operation of the zippers, pockets and seals. The life of the wearer may very well depend on the condition of the immersion suit and the security of its attachments and equipment. Keep the manual in a convenient location for easy reference in the event that the suit requires inspection, repair or cleaning.

1.1.3 Fit

1.1.4 The Ocean Commander is constructed in an adult universal size, ranging from a body mass of 50-150 kg (110-330 lbs) and a height of 1.5-2.0m (4’11”-6’7”).

1.2 CONTACT

1.2.1 For further information concerning this manual or the suit, contact:

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1.3.2 SeamGrip™ is a trademark of McNett Corporation.

1.3.3 Uniroyal® is a registered trademark of Uniroyal.

1.3.4 Lycra® is a registered trademark of DuPont Corporation.

1.4 RESPONSIBILITIES

1.4.1 The individual to whom the suit is issued or assigned, following internal training, assumes responsibility for pre and post use inspections and for returning the suit to the maintenance shop for periodic inspection and testing on required dates.

1.4.2 Each operational organization is responsible for the instruction and survival training of all Ocean Commander suit users in the following:
a. Fitting of the immersion suit.
b. Purpose, use and operation of all accessories.
c. Importance and method of visual pre and post use inspections.

1.4.3 The maintenance shop is responsible for:

a. Inspection upon first issue from the supplier or contractor.
b. Ensuring the suit is complete and serviceable prior to issue.
c. Periodic inspection and testing of the suit (see section 5.4).
d. Maintenance, cleaning and repair when required.
e. Requisitioning and maintaining stock.
f. Maintenance of inspection records for all Ocean Commander units.
2.0 IMMERSION AND ANTI-EXPOSURE CLOTHING

2.1 HAZARDS

2.1.1 Cold-water immersion is a life-threatening situation, and your survival depends on the clothing you wear. Cold, shock, hypothermia, loss of dexterity and mental sharpness and drowning are your primary concerns. Many strong swimmers drown within yards of safety in cold water. This suggests that many drown as a result of the rapid shock of immersion, causing immediate hyperventilation, water ingestion, and often heart failure, which may occur in water below 59°F (15°C).

2.1.2 Without adequate buoyancy and insulation, individuals rely on swimming ability and endurance for survival. Your strength and endurance are seriously diminished in colder water, reducing your ability to overcome waves, currents, spray, etc.

2.1.3 Hypothermia results when your body loses heat faster than it can be replaced, and can occur in any environment below 98.6°F (37°C), our normal body core temperature. Water conducts heat away from our body 25-30 times faster than air, presenting a high risk.

2.1.4 Shivering is the body’s way of generating heat to replace the heat that is lost. The smallest blood vessels constrict close to the skin, reducing the blood circulation to your hands and feet. Circulation to the body core is also restricted, where it is needed most, resulting in a loss of dexterity. As the effect of cold increases, muscles weaken and stiffen, leading to the loss of feeling and reduced co-ordination. Your decision-making and thinking processes slow down.

2.1.5 Proper clothing reduces many of these hazards, improving your chances of survival. Clothing should provide insulation from the cold and should not hinder mobility. Ensure buoyancy is provided either inherently in your outfit, or with an additional life preserver, preferably both.

2.2 HYPOTHERMIA PROTECTION

2.2.1 Immersion in cold water is a danger for anyone working on or near the water. The length of time a person can survive in cold water largely depends on both the water’s temperature and the thermal protection of their protective clothing.

2.2.2 To create the most effective protection against hypothermia, Mustang Survival begins by evaluating the clothing’s immersed Clo value, which depicts the level of thermal insulation a garment provides. Clo is a measurement of insulation, much like the ‘R’ values assigned to fibreglass house insulation. We determine the rate at which heat is lost from the body, as well as the difference in temperature between the skin and the water.

2.2.3 Figure 1 indicates random samples of Immersed Clo values and the corresponding estimation of survival time in cold water (assuming a thin person with a 5.5°F (3°C) drop in body core temperature).
2.2.4 When tested on a thermally insulated manikin, the OC8001 and OC8001 HR exceeded 0.96 Immersed Clo in stirred water. This level of immersion protection provides approximately ten hours of survival time in 32°F water temperatures.

**NOTE:** Appropriate thermal undergarments (such as polypropylene underwear) should be worn to enhance the protection afforded by the Ocean Commander and assist in wicking moisture away from the body.

![Clo Insulation Graph](image)

**Figure 1. Clo Insulation Graph**

Estimated Calm Water Survival Time (hours)

**NOTE:** When using Figure 1, keep in mind that the chart was derived empirically by mathematical modeling and conservatively applied to the tenth percentile (thin) individual in calm (stirred) water.

*With the complexity of factors involved, there is no guarantee as to the accuracy of the predicted survival time on an individual case basis.*
2.2.5 Generally, there are two types of immersion protective clothing:
   a. Wet suits
   b. Dry suits

2.3 WET SUITS
2.3.1 Wet suits allow some water in, but restrict water movement into and out of the suit. Your body heats up the water that becomes, more or less, trapped in the suit. If the openings of the suit become restricted, the warmed water stays inside the suit longer, reducing heat loss. If a wet suit is damaged or torn, the level of protection is reduced.

2.4 DRY SUITS
2.4.1 Dry suits protect you during cold-water immersion by using, in conjunction with garments worn under the suit, trapped air as an insulation layer from the cold water. Most dry suits utilize seals at the wrists, neck and ankles, unless incorporating gloves and boots. These seals are made from waterproof materials, insulated or non-insulated.
2.4.2 Mustang Survival’s OC4001, OC8001 and OC8001 HR are dry suits.
3.0 OCEAN COMMANDER FEATURES

3.1 DESIGN AND CONSTRUCTION

3.1.1 General

3.1.1.1 The Ocean Commander is a coverall type garment, fitted with a removable Thermal Liner. The Outer Shell provides waterproofness, while the liner provides buoyancy and hypothermia protection. The suit is made of watertight fabric and has neoprene wrist seals and an adjustable neck seal, a waterproof main entry zipper. The suit is watertight and is intended to keep the wearer dry in the event of immersion.

3.1.1.2 Mustang Survival personal immersion suits are designed to provide flotation in case of accidental immersion in water, and to minimize the risk of drowning. The suits are also designed to reduce thermal shock upon entry into cold water and delaying the onset of hypothermia.

3.1.2 Familiarize yourself with all the features of the suit to maximize its effectiveness. Illustrations are provided as an additional reference.

3.1.3 Outer Shell

3.1.3.1 The Outer Shell is constructed of 200-denier polyurethane coated nylon fabric. All seams are welded to provide watertight integrity without the necessity of taping over sewn seams. The only sewn seams are at the wrists, ankles, and hood, where the neoprene joins the shell.

3.1.3.2 The Outer Shell is equipped with snap studs at the wrists, ankles, neck, and along the front entry of the liner, which form the primary attachment to the Thermal Liner.

3.1.3.3 The shell provides waterproof coverage from the feet to neck and wrists. The wrist and neck seals contribute to watertightness; while not completely watertight, they provide a significant degree of protection, remaining comfortable to wear for long periods of time.

3.1.4 Thermal Liner

3.1.4.1 The liner is constructed using two layers of material. The inner lining is black 100% nylon. This fabric is attached to the PVC foam flotation material, 5.0 mm for the OC4000 series, and 6.0 mm for the OC8000 series. The liner is designed to be removable, and is equipped with snap studs at the wrists, ankles, neck, and along the front entry of the liner, which form the primary attachment to the shell.

3.1.5 Boots

3.1.5.1 The integrated boots, of the OC8001 and OC8001 HR are fitted with non-skid soles for traction, and steel toes for use in an industrial environment. They provide superior footing on slippery, unstable decks.

3.1.5.2 The OC4001 uses a durable non-slip sole for traction on wet surfaces.

3.1.6 Main Entry Zipper

3.1.6.1 The main entry zipper, located on the Outer Shell (see figure 2), is a heavy-duty zipper with metal teeth that provides a watertight seal when closed. It is sewn onto the shell, and seam sealed to watertight integrity.

3.1.6.2 A thong is attached to the zipper slider, assisting the wearer in opening and closing the zipper.
CAUTION: Avoid snagging your clothing in the zipper, as this may break the zipper’s seal.

3.1.6.3 The zippers should always be left in the open position while the suit is stored. See section 5.3.5 for zipper care procedures and for recommended zipper cleaners and lubricants.

3.1.7 **Wrist and Neck Seals**

3.1.7.1 The wrist seals are constructed of 3.0 mm neoprene foam for the OC4000 series, and 5.0 mm for the OC8000 series, which is coated with glideskin to assist in donning while maintaining watertight integrity. The seals are designed to be more comfortable to wear than conventional latex seals but still provide the same degree of watertight integrity.

3.1.8 **Hood**

3.1.8.1 The neoprene thermal hood is permanently attached at the collar, with a face shield to keep spray from the wearer’s mouth and nose. The hood should be worn when entering the water.

3.1.9 **Mitts**

3.1.9.1 The mitts are permanently attached to the suit’s arms by a fabric flap. They are designed to be removable to provide the wearer with dexterity when necessary.

3.1.10 **Other Features**

3.1.10.1 Watertight zippers and seams.

3.1.10.2 Highly visible yellow Outer Shell colour that meets CAN/CGSB-65.17-M99.

3.1.10.3 Provides 32 lbs (156N) of buoyancy, suitable for egression from an inverted helicopter (less than 175N).

3.1.10.4 SOLAS approved high visibility reflective tape.

3.1.10.5 An inflatable head pillow is attached at the shoulders for buoyancy with an oral inflation hose routed over the left shoulder that is secured to the left chest area.

3.1.11 **OC8001 HR Tethering Harness**

3.1.11.1 The tethering harness is to be attached to a vessel for securing the wearer. The harness is not to be used as a hoisting harness.

**CAUTION: Use of the tethering harness as a hoisting harness may result in damage to the suit and/or injury to the wearer.**
3.2 ASSEMBLED OC4001

Figure 2. OC4001 Component Locations

- Neoprene Hood
- Face Shield
- Oral Inflation Hose for Head Pillow
- Mitt Pockets
- Wrist Seal
- Non-slip Sole
- Ankle Closure
- Entry Zipper
- Whistle
- Reflective Tape
3.3 ASSEMBLED OC8001

Figure 3. OC8001 Component Locations

- Neoprene Hood
- Whistle
- Reflective Tape
- Entry Zipper
- Oral Inflation Hose for Head Pillow
- Mitt Pockets
- Wrist Seal
- Non-slip Sole
- Boot
- Face Shield
3.4 ASSEMBLED OC8001 HR

Figure 4. OC8001 HR Component Locations

- Neoprene Hood
- Face Shield
- Oral Inflation Hose for Head Pillow
- Mitt Pockets
- Wrist Seal
- Boot
- Non-slip Sole
- Entry Zipper
- Reflective Tape
- Tethering Harness
- Whistle

3.5 ASSEMBLY

3.5.1 General

WARNING: The Ocean Commander should be worn with both modules assembled. The modules are not to be worn independently. A loss of protection and wear resistance will result if worn improperly.

3.5.2 Assembling the Ocean Commander

3.5.3 Layout the Thermal Liner and Outer Shell

a. Lay out the Thermal Liner and the Outer Shell side by side in the same orientation as worn.

NOTE: Ensure the Thermal Liner is located on the inside (the seams of the Thermal Liner should face out).

b. Ensure the Outer Shell’s waterproof zipper is fully opened.
3.5.4 Connect the Thermal Liner/Outer Shell at the Ankle
   a. Keeping the bottom flat and straight, insert each Thermal Liner leg down into each Outer Shell leg until it reaches the snaps above the ankle.

   **NOTE: Ensure the legs do not twist, maintaining a matching orientation during insertion.**

   b. To join these layers, fasten the ankle connection snaps (3) for each leg.

3.5.5 Wrist Connection
   a. After laying the Outer Shell out flat, push the left arm of the Thermal Liner down to the end of the left arm of the Outer Shell.

   **NOTE: Ensure that the arms do not twist. Maintain a matching orientation during insertion.**

   b. Repeat this procedure with the right arm.
   c. To join these layers, fasten the wrist connection snaps (3) on each arm.

3.5.6 Neck Connection
3.5.6.1 Align and fasten the Outer Shell neck snaps (7) with the Thermal Liner neck snaps.

3.5.7 Interconnection Snaps
3.5.7.1 Complete the connection of the Outer Shell to the Thermal Liner by fastening the interconnection snaps (10), located at the front of the suit on either side of the opening.

3.6 TESTING
3.6.1 All garments are tested to ensure the highest level of reliability and performance. Mustang Survival offers superior quality under rigid ISO-9001 standards.
4.0 DONNING AND PACKING INSTRUCTIONS

4.1 GENERAL

NOTE: The Ocean Commander may be donned without assistance.

WARNING: The Ocean Commander must be worn with both modules assembled. The modules are not to be worn separately. A loss of protection and wear resistance will result if worn improperly.

4.2 DONNING INSTRUCTIONS

CAUTION: Use extreme caution when donning the Ocean Commander. Prior to donning, remove all footwear, rings, watches, earrings, necklaces and eyeglasses that will cause damage to wrist and neck seals.

a. Lay the suit face up on a large flat clean surface, ensuring that the legs and arms are not tangled or twisted.

b. Open the front entry zipper and ensure the liner is fastened into the suit. Do not wear the suit without its liner.

c. Don the suit as you would a pair of coveralls. Place your legs into the suit and draw it up and on, putting your arms through the wrist seals.

NOTE: For ease of donning, the suit may be folded down over its legs and boots in the fire suit ‘bunker’ position.

d. Tighten the ankle straps to snug in the legs (OC4001 only) to remove air for mobility.

e. Remove the mitts from the pockets and don securing with the Velcro™ straps. The mitts may be doffed when dexterity is required.

f. Secure the face shield by attaching the Velcro™ patches.

g. Inflate the head support pillow prior to water entry, or while floating.

WARNING: Failure to completely close the waterproof entry zipper will result in leakage of water into the suit and reduction of in-water survival time. Double-check the zipper to ensure it is completely closed against its sealing plug.

4.2.1 Doffing Instructions

a. Remove all other equipment donned over the Ocean Commander before proceeding.

b. Wash down the Ocean Commander while wearing it, paying particular attention to the entry zipper. Remove all traces of salt. See section 5.3 for additional instructions.

c. Unfasten the face shield.

d. Completely open the waterproof zipper.

CAUTION: Failure to completely open the waterproof entry zipper may result in damage to the suit when it is doffed.

e. Insert two fingers under wrist seal and gently pull seal outward. Cup the hand, fingertips and thumb together, and gently pull your hand from seal. Repeat for your other hand.
f. Remove your legs from the suit.

g. Hang the suit by the hanging loop, halfway close the waterproof zipper and hang until dry.

h. Stow the suit in the carry bag. Refer to section 4.3 for the folding and packing procedure.

4.3 FOLDING AND PACKING INSTRUCTIONS

4.3.1 Fold and pack of the Ocean Commander dry suit using the following steps. The folding and packing takes a little practice, as the container is designed to be just large enough to store a properly rolled suit.

4.3.2 The points of reference used here are from the perspective of the individual folding and packing the suit.

4.3.3 To fold and pack the Ocean Commander:

   a. Ensure that the entry zipper is in the open position. Rub a recommended lubricant on the zipper for a smoother action. Put talc powder on the inside of the wrist and neck seals to reduce sticking. Refer to section 5.3.5 for metal zipper cleaning guidelines.

   b. Lay the suit flat on its front on a horizontal, clean surface, allowing the suit to be fully extended.

Figure 5. Steps a. and b. Folding and Packing Instructions
c. Fold the right leg, so that it covers half of the left leg.

d. Fold the right arm over the body, with the pocket facing upwards.

e. Fold the left arm over the body, with the pocket facing upwards.

f. Starting from the feet, roll the suit up towards the chest as tightly as possible, taking care that the sleeves and legs do not shift.

Figure 6. Steps c. to f. Folding and Packing Instructions

g. Carefully tuck the hood and neck seal into the rolled suit.

h. Slide the rolled suit into the container.

Figure 7. Step h. Folding and Packing Instructions

i. Fasten the three snaps, at the top, to close the bag.

4.4 STORAGE INSTRUCTIONS

4.4.1 The suit should be stored hanging by its boots in a dry, well ventilated area. An area without excessive heat, sunlight, and ultra violet rays, and is free of petroleum products, acids and other damaging contaminants, where normal room temperature may be maintained. If it cannot be hung upside down, it may be hung from a strong wide coat hanger.
NOTE: Avoid wire hangars, as they will damage the foam. Never hang the suit from the neck seal; doing so may result in suit damage. Never store the suit wet.

4.4.2 If the suit cannot be hung, then it may be stored folded on a flat shelf.

4.4.3 To fold the Ocean Commander for storage:
   a. Lay the boots down first.
   b. Fold the suit at the knees.
   c. Bring the arms in across the chest.
   d. Fold again at the waist so that the suit lays folded in three layers, with its back uppermost.

5.0 MAINTENANCE AND CARE

5.1 GENERAL

5.1.1 After immersion in water (other than fresh clean water), the suit modules should be either washed or rinsed separately. To increase the life of the garment, it is recommended to wash the suit only when required.

5.2 CLEANING

5.2.1 Laundering Procedures

5.2.1.1 Separate layers and wash in warm water 38°C (100°F) using mild laundry detergent and hang to dry.

NOTE: Do not dry clean.

Do not use bleach or other chlorine products.
Do not use fabric softeners.
Do not tumble dry.
Do not iron.
Do not dry in front of a radiator or other source of direct heat.
Do not store in a wet condition.

a. Ensure all pockets are emptied and layers have been separated.

b. Hand wash or sponge down the fabric in warm soapy fresh water, then rinse with clean water. If machine washing, use the gentle cycle with a mild detergent or soap.

c. Hang to dry in a well-ventilated area, which is free from direct sunlight. The suit should be hung from its boots to allow water to drain. Ensure the Outer Shell and Thermal Liner are completely dry before reassembling.

5.2.1.2 To avoid premature aging of the nylon fabric and stitching, the suit should not be hung in direct sunlight for extended periods of time. To avoid mildew, hang dry the suit after every use, and be sure not to roll up the product or stow it away while damp.

5.2.1.3 Refer to section 5.3.5 for metal zipper cleaning guidelines.
5.3  TREATMENT AFTER IMMERSION

5.3.1 Whenever a suit has been immersed in water, it must be treated as specified below and then inspected in accordance with the current authorized servicing schedule.

5.3.2 Fresh Water Immersion

5.3.2.1 Allow the suit to dry naturally, preferably in the open air. If the insides of the boots are waterlogged, drying may be hastened by blowing with oil-free compressed air at room temperature.

5.3.3 Salt Water Immersion

5.3.3.1 Disassemble the layers and rinse thoroughly with clean, fresh water. Allow the suit modules to dry naturally, preferably in the open air.

5.3.4 Chlorinated Water Immersion

5.3.4.1 Immersion of the suit in chlorinated water is not recommended. If the suit is immersed in chlorinated water, use the same washing procedure as for salt water immediately following immersion.

5.3.5 Metal Zipper Care

5.3.5.1 Zipper cleaning is the first step to zipper longevity. Clean the zipper of any mud, sand, salt or foreign elements. Use warm soapy water to remove any heavy deposits. For the metal entry zipper, use one of the zipper manufacturers' recommended cleaning fluids listed in figure 5.

5.3.5.2 Every few uses, apply a recommended wax after cleaning (see figure 5) for zipper lubrication. For example a daily use suit requires wax once a week.

<table>
<thead>
<tr>
<th>CARE PRODUCT</th>
<th>PRODUCT NAME</th>
<th>SUPPLIER</th>
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</tbody>
</table>

5.3.6 Service Life

5.3.6.1 The suit’s service life is determined on condition rather than age. Suits may remain in service if properly maintained and all test and inspection results are satisfactory.

5.3.7 Work Area

5.3.7.1 The work area where inspection and maintenance of the suit is performed should be smooth and flat, where the suit will not snag, tear or otherwise be punctured or damaged and should also be cleared of all non-essential equipment and materials.

5.3.7.2 The working surface should be free of harmful contaminants such as oil, grease, acids or solvents. Work areas, which are subjected to wide temperature variations, should be avoided.
5.4 INSPECTION PROCEDURES

5.4.1 Inspection Intervals

5.4.1.1 A close visual inspection should be performed prior to issue, by the issuer and the suit user.

*NOTE: Proper care of this garment is extremely important for best results and extended service.*

5.4.1.2 The suit should have a close visual inspection (see section 5.4.2) performed:

   a. On receipt from the supply depot or contractor.
   b. Before and after use by the individual issued the suit (see section 5.4.2).
   c. At least once a year.
   d. Whenever the integrity of the suit is in doubt.

5.4.2 Close Visual Inspection

5.4.2.1 To perform a close visual inspection separate the two layers and lay them on a clean, flat surface and ensure:

   a. The suit is dry inside and out.
   b. There are no abrasions, especially in the knees, seat and elbows.
   c. There is no excessive wear or damage to the material, particularly stiffness, discoloration, burns, holes, cuts, tears and frayed edges.
   d. There is no separation of the seams, broken or missing stitches or coating delamination.
   e. The presence of all components.
   f. All metal components are intact and free from damage or corrosion.
   g. The zippers are intact and operating smoothly.
   h. All adjustment straps are adjusting freely and smoothly.
   i. All pockets and pocket closures are intact.
   j. Neck, wrist seals and socks have not deteriorated: cuts, tears, detachment.
   k. Retro reflective tape is in good condition and is adhering. Replace if necessary.

5.4.2.2 Lubricate the front entry zipper after inspection (see section 5.3.5).

5.4.3 Sea Light Inspection (For the OC4000 Series)

5.4.4 Check the sea light system expiry date, if the system has expired remove it from the suit, and follow the instructions in line (f) below, otherwise proceed as follows.

5.4.5 Check the:

   a. Light dome for cracks.
   b. Battery pack casing for cracks and damage.
c. Power cord and plug for damage and corrosion.

d. Cell for deterioration, IE. Swelling.

e. Operation of the circuit and bulb, by doing a water test or use a paper clip to touch both of the end probes underneath the plastic. The bulb should light under these conditions; if it does not light, renew the bulb or the entire unit.

f. Fitting of the rescue light. If the existing sea light is to be replaced follow these procedures for fitting the new light:
   i.) Remove the existing light.
   ii.) Test the new circuit and bulb by procedure (e) above.
   iii.) Push the battery into the neoprene pocket.

5.4.6 **Whistle Inspection**

5.4.6.1 Inspect the whistle for:

a. For cracks or signs of wear or damage to the casing.

b. Check the operation of the whistle by blowing the whistle several times; the sound should be clear and not muffled.

c. The whistle is to be replaced if the whistle shows signs of damage, or the sound is unsatisfactory. Inspect and test the new whistle.
5.5 TESTING PROCEDURES

5.5.1 Suit Leakage Test

5.5.1.1 Have a qualified approved technician test for leaks periodically, at least every six months. Leak test prior to issue, and when a visual inspection raises any doubt about the integrity of the suit.

5.5.1.2 To perform the suit leakage test on the Outer Shell only:

a. Remove the Thermal Liner.

b. Lay the suit flat on the test bed, and insert the air line.

c. Close the main entry zipper, and make certain that the properly sized ball fits into the neck seal. Tighten the ratchets if necessary.

d. Seal the wrists using clamps.

e. Inflate the suit to six inches water column (.216 lb/in²). Adjust the air pressure by releasing part of one wrist seal until it is steady at six inches.

f. Spray the entire suit with a soap and water mixture consisting of 0.5% soap by weight to detect leaks.

g. The presence of bubbles indicates a leak, indicating a failure that requires repair.

h. Mark any leaks with a chinagraph type pencil for later sealing.

i. When finished spraying, rinse the suit with tap water, deflate, and hang by the boots to dry.
6.0 SUMMARY

Mustang Survival Ocean Commanders (OC4001, OC8001 and OC8001 HR) are emergency use dry suits that protect Ocean Rescue Professionals and transport passengers in harsh marine environments with cold-water immersion features and flotation. These suits are easily donned, maintained and stored. Only qualified approved technicians, with proper equipment, or Mustang Survival Corp. may make suit repairs. A well-maintained suit means survival in emergency situations for which normal clothes were not designed.