

CIFALDI TECHNIQUES For SWIFT WATER RESCUE

Aircraft (A) Techniques – Use of Helicopter

Helicopter to hover over person in water at same speed of water. If **water** is moving at **50 MPH**, then **Helicopter** should be **50 MPH also**. Therefore the person in the water is stationary relative to the Helicopter.

A-1 A Jacobs-like type of ladder can be deployed from the Helicopter. If the victim is too weak to climb the ladder, the person just has to (assisted or unassisted), hook one leg into one of the rungs and grab hold of another rung (for balance/stability) and allow the Helicopter to lift him/her out of the water.

Helicopter should lift victim out of water, only enough to clear any obstacles, so that person being saved will **NOT** be severely injured/killed if he/she tumbles free of ladder.

A-2 A life preserver/steel-mesh crib, with a heavy duty strap [which fastens with **Velcro**] or other configured harness can be lowered from Helicopter and victim can fit in, straddle, or hang onto, said apparatus assisted/unassisted.

A-3 A rope [with or without a hand loop(s)], can be grasped by the victim in the water. The Helicopter does **NOT** have to lift the person out of the water. The **Helicopter** just must **match** the **speed** of the **water** and veer slowly towards an embankment or other safety terrain/structure etc.

If the Helicopter pilot is alone, this would be the recommended procedure, because it requires only minimal strength of the victim to be “towed” or conducted towards safety. **This could be assisted/unassisted, as circumstances dictate.**

Naturally, if assisted, a rescuer providing the assistance may also enter the water and both parties may embrace each other, again

requiring minimum energy out-put from **both parties**, while being “towed” to shore, or lifted out of the water.

While the rescuer may be well trained/athletic and fresh, the victim may be exhausted/weak, numbed from cold/ unconscious/ frightened. He/She may be unable to understand the language of the rescuer. There may be other reason, not listed here, which may impede or otherwise make the rescue process difficult or hazardous.

As different cases are encountered, not specifically addressed herein, such should be added to all the enclosed “Cifaldi Techniques” in Swift Water Rescue by: **Air (A); Boat (B); Rope (R).**

Aircraft (A) Helicopter/Suggested Equipment

Helicopter equipped with a **30’ rope**/Jacobs/aluminum flexible ladder, with lifting mechanism for rope/steel mesh crib/platform.

A Steel mesh crib to receive inert body with quick tie-down/uncouple fittings

Life preservers (**at least 3**), with various rope-loops for able/cooperative victims

Various rope lengths with quick-couple/uncouple fittings. Total length possible **300 ‘**.

At least one quick-couple rope with a life-preserver already attached (**25’**)/or with quick-couple capability.

Heat-accumulating blanket cover.

Electric, **Heat-producing blanket** cover, see Boat Equipment 1G. See also Boat Equipment suggested attached hereto especially 1 D, 1E, 1F, & 1G

Boat (B) Techniques

B Use of **speed** of water **as an ally** and the use of physics/relativity, can turn heretofore **dangerous/deadly** situations into **manageable** circumstances. This may be achieved with as few rescuers as one person, trained in the Cifaldi Swift Water Rescue Techniques as provided in the following:

B1 A boat, with a **75 HP** engine (desirable), but in reality, one with lesser horse power would also be usable. Preferably, a flat bottom craft would be used, but a rowboat, raft or other floatable platform may also be utilized. (Of course, in an emergency, any floatable device **with, or without**, a motor can be used)!

With appropriate associated equipment in and/or attached to said boat, one person (preferably with at least one assistant) could be propelled towards and to the victim. The victim could cling to the boat, (properly fitted), or life preserver etc. and then the boat could head **down stream**, to a **safe landing point**.

This would require little strength from the victim as the boat would be traveling with the water (although faster – if desired) and **NOT against the water flow**. **NOTE:** Fighting the pressure of a body immersed in a torrent is, most of the time, **difficult**, if **NOT** impossible for a fresh-muscled rescuer, much less, a weary frightened victim.

B2 A boat or other floatable device, and including a life preserver/with **NO** motor may also be used. Means to propel the floatable rescue platform should be available, (paddles/oars/poles/hands/swimmer. Any speed attained, traveling up-water, would be subtracted from the speed of the water [relative to the land].

When said rescue platform is being deployed downstream, it will travel at the speed of propelling activity, plus, the speed of the rushing water, [relative to a point on the land].

This same device will be traveling **toward the victim** at the speed which said propelling activity produces, both upstream and downstream. In any case, whichever floatable device is employed, means attached thereto should be available for the victim to grab onto.

Whenever contact is made and secured, the boat/floatable device should point downstream and angle towards a safe landing point. This would thereby **require minimal strength of the victim**.

Re-iterating: If the boat's speed is **35 MPH** in a **50 MPH** torrent *, then in that case a boat heading upstream will be swept downstream at only **15 MPH** relative to the land. Relative to a victim, the boat will be coming toward him at **35 MPH**. If a boat is launched upstream from the victim, the boat would be traveling at **85 MPH**, relative to the land. More importantly, it will pursue the victim at **35 MPH**.

* **50 MPH** water speed is an arbitrary speed, but probably one that could happen in a culvert or waterfall – dominated area. Such speed, where location permits, is easily handled by a Helicopter. A properly trained/equipped, (motorized platform/boat), used by a swift-water rescue team, can also safely be effective at such water velocities, in those cases where a helicopter is **NOT** available/**NOT** practical.

Where victims are **trapped under water** in cars, airplanes, trains, overturned boats, etc., where seconds can mean the difference between life **or** death, getting to their location quickly is absolutely vital. While a **Sea-Doo** type vehicle is not the ideal platform to operate from, the agility and speed of such vehicle can be immensely valuable in such circumstances.

For swift water teams/**rescue personnel**/**fire**/**police**/**EMT teams** etc., where money is available, a **Sea-Doo** equipped to hover over the submerged/partly submerged

structure would serve as an unsinkable life preserver as well as a marker for a lone rescuer under water. When the Sea-Doo motor is in neutral, it **can also activate an air compressor**, with an attached air line/mask for utilization by the rescuer, as well as the victim(s).

When a victim is in a body of water, affected by waves/ tides/strong currents, and bounded by hazardous objects, such as rocks/cliffs/ and/or other structures, an high-powered motorized platform, (such as a seadoo/boat with a **50 HP**, motor, or more), is **absolutely essential** to successful rescue.

Getting to the victim as quickly as possible is extremely vital before the victim is dashed against the rocks/cliff or other hazardous structure.

Should the rescuer be alone, (with a helper would be ideal), a tethered life preserver, with or without appropriate hand holds/harness/loops should be deployed to the victim.

Once the victim (has been grasped by an assistant), grasped the tethered device, the powered platform driver should, depending on conditions or circumstances, do one or several of the following (pre-determined, if possible);

Motor away from the structures at a slow, steady rate of speed. Therefore the victim would not have too much resistance to overcome **while being towed away** from the hazardous structure(s).

A. Motor in direction of the current, if away from the hazardous structure, while steadily moving away, at a modest angle, again, requiring a lesser amount of energy by the victim, instead of apparently moving in the safer direction opposite the current. Naturally if the victim is securely attached, then in that case, move rescue device at a more rapid pace.

B. In the case of large waves hitting the hazardous structure, timing a powered escape, with the victim in tow, when the driver

hears/sees the waves impact might be feasible. When the wave-induced excess **water starts to move away** from the structure, there will be a period of lessened movement in the escape direction, and a more rapid rescue speed may be employed, being careful not to exceed a speed, greater than the strength of the party being rescued can handle.

C. In the case of large waves hitting the hazardous structure, timing a powered escape when the driver hears the wave(s) hit the structure, at which time the water will have some receding characteristics, and thus lessen the resistance being thrust upon the victim. If the waves are coming in at **10** second (or more) intervals, then in that case there would be a **10** second lessening of force against the victim.

Note: The point being stressed here, is that faster speeds would **NOT** necessarily be **better** because the drag being exerted on the victim might exceed his strength to hold on to the life-line. Slow, steady movement away from danger could be more productive than attempted high-speed movement.

Naturally, if victim is firmly secured, in no danger of being dislodged from the tethered device, then, by all means, move away from danger at a faster rate. These life-saving maneuvers should be practiced, if possible. If being employed for the **1st** time, a plan of action, such as suggested herein would be recommended.

Naturally, if the threatening waves are very high the rescuer should take care that he is not broadsided. The **seadoo/boat/etc.** should face into the high wave and then maneuver into position after the wave has passed.

R1 **Using the speed/velocity of water as an aid,** (**NOT**, as an enemy), a lone rescuer could throw a rope, life preserver/looped rope, to the victim and when victim grasps same, the rushing

water will **force** the **victim** to come **towards** the **rescuer** (albeit further downstream from the rescuer), with **minimum energy requirements of both parties**.

This technique would be extremely valuable for use in a culvert, by the 1st rescuer on the scene (provided he at least has a rope). Valuable time would not be wasted, waiting for additional rescuers to assist. The lone rescuer would not have to enter the water. A lone rescuer should **NOT** enter the water, unless sufficiently trained, or otherwise noted herein.

R2 If a rescuer is properly trained, in Swift Water Rescue techniques, then, if frogman type of activity, such rescuer could make the rope fast to a tree/boulder/structure/motor vehicle/or stake in the ground and attach the other end to himself and enter the water. The rescuer should enter the water ahead of the victim and “swim” upstream towards the victim, (to minimize the length of the rope being used).

For example if rescuer can swim at **2MPH**, then in a **50 MPH** torrent, relative to the land, he would be being propelled downstream at **48 MPH** and approaching the victim upstream at **2 MPH**. Conversely if the rescuer was swimming, (starting from behind the victim) the rescuer would be traveling at **52 MPH**, or towards the victim at **2 MPH**.

R3 A rope, with associated accoutrements, could be lowered from a span (crossing the swift water torrent). As soon as the victim grasps said lifeline, rope should be quickly, adequately slackened and brought to one side of the span or the other, which ever is safer/quicker – such to be determined, if possible, before victim grasps life-line.

Note: With a secure tying point (tree/rock/edifice, motor vehicle/ etc.) then the rescuer securing the life-line, or his associate, may be ready to assist downstream grounding of victim.

R4 On the span, If a rescuer, sufficiently trained in Swift Water Rescue Techniques, as delineated herein (frogman attired/ trained, in the alternative), such rescuer may be lowered into the water and/or slightly above the water, in approximately the area where the victim is being swept.

The rescuer can be dropped into the water at the appropriate time or if already in the water, both parties can embrace each other. The rope should then be generously slackened and moved to one side of overpass/torrent constraining abutment, and there anchored.

When anchoring completed, **NO** more rope is to be slackened (unless a more favorable “docking” place is found/desired). The rope being fastened to that side, will then dictate that the victim at the other end of the rope be brought to the center of gravity (in line with the anchored end).

The further inland away from the water of the anchored end, the quicker and more powerful response to the center-of-gravity requirement, in beaching the victim and/or the embracing pair. Because of the hugging/”bundling” both parties, and being propelled by the swift water – no great strength is needed by either party.

R5 If a rope is stretched downstream across the rapid torrent, and there is access to both sides, loops and/or life preservers/ other floatable devices previously attached are waiting for the person in the water. When victim reaches said line, and his secured himself, immediately release one side of the rope. The victim will be carried to the opposite side (which is still anchored) with **NO** rescuer in the water.

There will be a minimal amount of strength needed by the victim because he is **NOT** fighting against the torrent, but rather using just enough energy, to go sideways to land with the rushing water providing the impetus to bring he/she, ashore.

R6 Note: With a fishing pole/rope/piece of string, attach a floatable object (no sinkers) and test at water speeds as little as **1 to 2 MPH**. Naturally, you can also test at other slow-moving water speeds, of **5 to 10 MPH**.

See what happens when you use **25 to 30 feet of “line”**, and move inland **6 to 10 feet** away from the water, (after you cast the floatable object in), and stand still or anchor your end. **Hint:** It will float **Down-stream ... toward your side** on the stream, (whether you like it or not)!

Rope “R” Swift Water recommended equipment for use, from a police vehicle, fire vehicle, ambulance, E.M.S. vehicle, any governmental-owned vehicle, etc...see Boat “B” equipment, attached hereto, numbers 1A, 1B, 1D, 1E, 1F, and 1G. Should there be space-constraints, the following numbers would be considered absolute minimums: 1A, 1B, 1E, and 1G.

Boat (B) Swift Water Equipment Recommended

1 Flat bottom boat approximately **9 ‘ long X 42 “ wide** with **75** horse power rear mounted motor (with motor that will exit water when hitting a submerged object). Flat-bottom boat to have sides curving upwards. Secure eyehooks for attaching lines/cable.

1A Various ropes with quick couple/uncouple, lengthening/shortening ends, some with loops with quick-couple connections for victim to make it easier to grab and hold onto rope. These loops should be quick-couple fitted also. Approximately **300’** of rope in **25’/50’** lengths (with quick-couple both sides).

1B At least **(2)** life preservers with quick-couple capability; **(2)** life jackets; **(1)** waist belt with quick-couple capability.

1C One rough mesh metal open ended cage with concave contour, to house inert bodies, with at least **(1)** heavy duty strap, with Velcro-tying capability.

1 D (1)-10' pole (rigid), with a **non-sharp hook**, to ensnare clothing, extra rope-lines, harnesses or life preserver. Eye-bolt, to accommodate quick-couple-ended other equipment.

1E (1) 10' pole (flexible) with non-sharp hook. **Tough gloves** with **non-slip capability**, even when wet.

1 F 24" to 36" oxygen tank, regulator, gauge, mask; **compressed air tank**, with **20' to 30' of air line**, [with Scuba capability], **face mask**; **swim fins**; and a **1st Aid Kit**.

1 G 1 heat-accumulating blanket cover; **1 heat-producing electric blanket**; a **1500 watt inverter**; a **6-position surge suppressor**; a **12 volt portable car battery**, (used for quick jump-starts), [which will power electric blanket], **110 volt water-proof search light**, **Electric, hair blow-dryer** etc., **3-pronged 15' heavy-duty, extension cord**.

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