



Incident Command System

SWIFTWATER/FLOOD SEARCH AND RESCUE

RECOMMENDED TRAINING, SKILLS, AND  
EQUIPMENT LIST

ICS-SF-SAR 020-1

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This document contains information relative to the Incident Command System (ICS) component of the National Incident Management System (NIMS). This is the same Incident Command System developed by FIRESCOPE.

Additional information and documentation can be obtained from the following sources:

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The State Board of Fire Services and the Fire and Rescue Service Advisory Committee/FIRESCOPE Board of Directors have approved the information contained in this document for application in the statewide Fire and Rescue Mutual Aid System.

This material is a development of the FIRESCOPE Program.

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## **INTRODUCTION**

The following information supports the Incident Command System, Swiftwater/Flood Search and Rescue, Operational System Description. This document recommends minimum skill levels, training requirements, and proper equipment. This information is duplicated in the Law Enforcement Mutual Aid Plan, SAR Annex.

It is the responsibility of agencies responding to California Mutual Aid, SF/SAR requests, to provide qualified personnel and equipment that meet or exceed the recommended level of skills and capabilities stipulated in this document.

**SF/SAR Team Skills**

It is recommended that teams have the following skills. A number indicates the minimum number of members on the team with indicated skills. "X" indicates recommended skills for all team members.

	Swiftwater/Flood Search & Rescue Team				FEB
	Type 1	Type 2	Type 3	Type 4	
Animal Rescue	2	1	1		1
Class 3 Paddle Skills	X	X	X		
Communications Skill (Radios)	1				
Contact and Self Rescue Skills	X	X	X		
EMS-ALS Capability	2				
EMS-BLS Capability	X	X	X	X	X
Hazardous Materials	X	X	X	X	X
Helicopter/Aquatic Rescue Operational Skills	4	2			
Helicopter Operations Awareness	X	X			
Incident Command System (ICS)	X	X	X	X	X
Powered Boat Operator	4	2			2
SF/SAR Management	X	X			
SF/SAR Operations	X	X	X	X	X
Technical Rope Rescue Skills	X	X			
SCUBA Support	4*				

**\* = Optional**

**SF/SAR Team Training**

It is recommended that team personnel have completed the following training as indicated. A number indicates the minimum number of person(s) on a team with the indicated training. "X" indicates recommended training for all team members.

		SF/SAR Type 1 Team Manager	Swiftwater/Flood Search & Rescue Team				FEB
			Type 1	Type 2	Type 3	Type 4	
1	Annual skills proficiency demonstration (by agency)	X	X	X	X	X	
2	Annual swim demonstration (by agency)	X	X	X	X		
3	EMS-Advanced First Aid & CPR			X	X	X	X
4	EMS-Emergency Medical Technician		X	1	1		
5	EMS-Paramedics/ALS		2				
6	Hazardous Materials	X	X	X	X	X	X
7	Helicopter Operations Awareness*	X	X	X			
8	Helicopter/Aquatic Rescue or Equivalent*		4	2			
9	ICS	X	X	X	X	X	X
10	Power Craft Operators Training* per type of craft on team		4	2			2
11	Swiftwater/Flood Rescue Operational**					X	
12	Swiftwater/Flood Rescue Technician**	X	X	X	X		
13	Rope Rescue Technician**	X	X	X			
14	Search Management	X	X	X			
15	Technical Animal Rescue or Equivalent		2	1	1		1
16	Basic SCUBA w/equipment orientations recommended*		4				

\* = Annual Refresher

\*\* = Three (3) year refresher

**SF/SAR Air Resource Typing**

Helicopters staffed by personnel trained in search and rescue operations can be ordered through normal Mutual Aid Request procedures. Specify need such as search platform with lights and infrared detectors, hoist capability, swiftwater capability, etc.

Resource	Component	Types			
		1 (Heavy)	2 (Medium)	3 (Light)	4
Helicopter	Seats w/pilot	- 16	- 10	- 5	- 3
	Useful Load (lbs)	- 5000 lbs	- 2500 lbs	- 1200 lbs	- 600 lbs.
	Examples	- UH-60	- Bell 205, 412	- Bell 206, MD 500E, BO 105	- Bell 47  Does <u>not</u> meet mission requirements for external live load.

<b><u>HELICOPTER Capability/Mission Selection Sheet</u></b>	<b><u>Mission Equipment Selection Sheet</u></b>
<p>*Communications -VHF Programmable Radios</p> <p>*Over Water Survival Equipment -PFD's for flight crew and passengers,</p> <p><input type="checkbox"/> Live Load *External Load Capable -with rescue equipment <input type="checkbox"/> Hoist <input type="checkbox"/> Short Haul</p> <p><input type="checkbox"/> Sling Load <input type="checkbox"/> Medical: BLS <input type="checkbox"/> Medical: ALS <input type="checkbox"/> Personnel Transportable (number of people) <input type="checkbox"/> Usable Time (mission duration) <input type="checkbox"/> Search/Observation</p> <p>* Mandatory for aircraft</p>	<p><input type="checkbox"/> ALS <input type="checkbox"/> BLS <input type="checkbox"/> Basket (i.e. Stokes type litter) <input type="checkbox"/> Cinch Collar <input type="checkbox"/> Cinch Strap <input type="checkbox"/> FLIR <input type="checkbox"/> Night Illumination (1 million candle power +) <input type="checkbox"/> PA <input type="checkbox"/> Rescue Capture Ball <input type="checkbox"/> Rescue Ring <input type="checkbox"/> Short Haul System <input type="checkbox"/> Sling Load Capability (in lbs.) <input type="checkbox"/> Hoist Load Capability (in lbs.)</p> <p>See next page for Pilot and Flight Crew Capabilities</p>

<b><u>Pilot Capability</u></b>	<b><u>Flight Crew Capability</u></b>
<p>External Load Capable</p> <ul style="list-style-type: none"><li><input type="checkbox"/> Victim Location in Static Water</li><li><input type="checkbox"/> Victim Location in Dynamic Water</li></ul> <ul style="list-style-type: none"><li>• Must be a public service operator, who meets their respective agencies requirement or possesses a USFS, CDF, or OAS (Office of Aircraft Service) valid card.</li><li>• Pilot must have a minimum of swiftwater/flood rescue awareness or operational training along with training and experience in helicopter water rescue evolutions.</li></ul>	<p>External Load Capable</p> <ul style="list-style-type: none"><li><input type="checkbox"/> Victim Location in Static Water</li><li><input type="checkbox"/> Victim Location in Dynamic Water</li></ul> <ul style="list-style-type: none"><li>• Air Crew should have a minimum of swiftwater/flood rescue awareness or operational training along with training and experience in helicopter water rescue evolutions. Aircrew performing water rescue operations must complete annual helicopter water rescue training.</li><li>• Areas to include helicopter orientation and safety, hand signals and communications, water rescue device orientation and operations and any additional individual agency specific or type specific requirements.</li></ul>



## **SF/SAR Decontamination**

### **DECONTAMINATION OF EQUIPMENT AND PERSONNEL:**

The following are the recommended decontamination procedures for resources assigned to SF/SAR operations. Any resources exposed to flood waters during their operations should complete the appropriate level of decontamination. Consult with qualified Hazardous Materials personnel when available.

#### **Basic Decontamination:**

##### **Personnel:**

After completing assignments in floodwaters, hands and face should be washed with clean water and soap. All members should be required to wash hands before entering vehicles and eating areas. Hand washing is essential to reduce secondary contamination.

##### **Equipment:**

When the team's operational assignment is completed; equipment should be rinsed with clean water. Visible contaminants, mud and light oils, should be removed with soap.

#### **Level 1 Decontamination:**

Level 1 decontamination procedures should be used in areas where there is potential for exposure to general contaminants and the water is standing or moving slowly. Examples of areas where the use of this level of decon is needed would be residential and agricultural areas where there is no evidence of large releases of hazardous materials.

##### **Personnel:**

After completing assignment in floodwaters, hands and face should be washed with clean water and anti-microbial soap (i.e., Vionex or PhisoHex). All members should wash their hands before entering vehicles and eating areas. On completion of the day's operations, all members exposed to suspected or known contaminated water should shower and change into clean clothes.

##### **Equipment:**

When the team's operational assignment is completed, equipment should be washed with soap and clean water. This decon should be completed as soon as possible following the operations. Dry suits should also be washed before entering vehicles for trips from one work site to another.

**Level 2 Decontamination:**

Level 2 decontamination procedures should be used any time hazardous materials are identified or likely to be present. These include areas of sewage contamination as well as agricultural and chemical contamination. These areas should not be entered, if possible. Limiting the number of personnel exposed to the water should be the top priority of the Team Leader. Support for decontamination should be arranged before units are committed to the contaminated area. **Water samples should be taken for testing from areas entered by the team.** The Medical Unit should be notified if any personnel require this level of decontamination. All personnel exposed to the contaminates should have a one hour, twelve hour, and twenty-four hour medical check following their exposure.

**Personnel:**

After exiting the water, even for short periods during the operational period, members should go through a scrub gross decon\* wash with soap and clean water. Remove gloves and wash hands and face with clean water and anti-microbial soap. At the end of the duty period, members should go through a gross decon scrub wash with soap and clean water before any safety gear is removed. Wash hands and face with clean water and anti-microbial soap after removing all safety gear. Shower, using anti-microbial soap, before leaving the scene if possible or as soon as possible thereafter and change into clean clothes.

**Equipment:**

All equipment should be sprayed with bleach solution\*\* or other agents as recommended by on-scene Hazardous Materials personnel and allowed to stand a minimum of fifteen minutes. Thoroughly rinse all treated equipment with clean water and allow to dry before storing with other equipment. Bag any equipment that cannot be dried for the return trip to the base. Wipe with bleach solution\*\* any surfaces inside vehicles that might have come in contact with wet safety equipment during the duty period. Units requiring Level 2 Decontamination should be taken out of service until all equipment has been cleaned and dried.

\* Gross Decon Wash: This is a two-stage process that is set up along a decontamination corridor. All run-off solutions are retained for proper disposal. Persons implementing the corridor should be protected by splash gear. It is recommended that qualified Hazardous Materials personnel be requested to implement this procedure.

Stage 1: Rescuer in safety gear is scrubbed with brushes using a clean water and soap solution. Any contaminated tools are left behind here for cleaning.

Stage 2: Rescuer is rinsed with clean water.

\*\* Bleach Solution: Bleach solution should be made using 30cc of Sodium Hypochlorite 5% (household bleach) for every one gallon of clean water. This will yield a 20,000 ppm solution of bleach.

### SF/SAR Team Equipment List

Any equipment, beyond that listed herein brought by a responding agency, must be approved for use by the Incident Commander or designee. Should the responding agency fail to receive approval for use, or use of equipment without approval, the responding agency may be required to assume full responsibility for any damage or loss.

# = Minimum (#) = Preferred * = Optional	Swiftwater/Flood Search and Rescue Team				FEB
	Type 1	Type 2	Type 3	Type 4	
<b>COMMUNICATIONS</b>					
Aircraft radio	0 (2)	0 (1)	0	0	0
Bags, waterproof, radio	7 (14)	3 (7)	2	2	1
Battery, spare/charger	7 (16)	3 (6)	2	2	1
Headset, waterproof	0 (14)	0 (6)	0 (2)	0	0
Phone, cell	2	1	1*	1*	1*
Radio, portable (waterproof)	7 (16)	3 (6)	2 (4)	2 (3)	1
<b>MEDICAL (Equipment to be carried as</b>					
Basic life support medical kit	0	Yes	Yes	Yes	Yes
Advanced life support medical kit	1-2*	0	0	0	0
Emergency blankets	Yes	Yes	Yes	Yes	Yes
Spine board (flotation back board)	2	Yes	0	0	0
Stokes type litter (w/float kits)	2	Yes	Yes	0	0
<b>PERSONAL EQUIPMENT</b>					
Aerial flares	14 (28)	6	4	3	2
Dye markers	14	6	4	3	2
Dry gear bags	Yes	Yes	Yes	Yes	Yes
Dry suit with liner	14	6	Wet or Dry 4	0	Wet or Dry 2
Eye protection	14	6	4	3	2
Fins, pair	8	4	2	0	0 (1)
Flashlight	14	6	4	3	2
Gloves-water	14	6	4	0	2
Gloves-leather	14	6	4	3	2
Helicopter Emergency Escape Device-H.E.E.D.* (or equivalent)	0 (14)	0 (6)	0	0	0

# = Minimum (#) = Preferred * = Optional	Swiftwater/Flood Search and Rescue Team				FEB
	Type 1	Type 2	Type 3	Type 4	
Handheld flares	14 (28)	6	4	3	2
Handheld survival strobe light	14	6	4	0 (3)	2
Headlamps, waterproof	14	6	4	0 (3)	2
Helmet, swiftwater	14	6	4	3	2
Helo flotation vest* (USCG Approved)	14*	6*	0	0	0
Chemical Light Sticks	Yes	Yes	Yes	Yes	Yes
PFD, Type V, Tethered Swimmer (USCG Approved)	14	6	2	0	0
PFD, Type III/V (USCG Approved)	0	0	2	3	2
Rescue knives	14	6	4	3	2
Smoke marking device	14 (28)	6	4	3	2
Tennis shoes or appropriate water booties	14	6	4	3	2
Whistles	14	6	4	3	2
<b>TEAM EQUIPMENT</b>					
Admin. Kit / ICS-Agency Forms	1	1	1	1	1
Air Monitors	0 (2)	0 (1)	0	0	0
Axe / Handsaw	2	1	1	1	1
Bail-out system	0 (4)	0	0	0	0
Body Bag	4	2	2	2*	2*
Brake bar racks	4	2	1*	0	0
Carabiner, locking "D", steel	40	0	0	0	0
Carabiner, locking "D", aluminum	20	0	0	0	0
Carabiner, locking "D"	0	40	20	12	0
Chainsaw w/kit	1	1	1*	1*	1*
Collection rings	4	2	1*	0	0
Compass	2	2*	1	1*	1
Dust mask, disposable	2 box	2 box	1 box*	1 box*	1 box*
Edge protection	Yes	Yes	Yes	0	0
Eight plates	4	2	2	2*	0
Fire extinguisher	Yes	Yes	0	0	Yes
Filter, water, hand pump	Yes	Yes	Yes*	Yes*	Yes*

# = Minimum (#) = Preferred * = Optional	Swiftwater/Flood Search and Rescue Team				FEB
	Type 1	Type 2	Type 3	Type 4	
FLIR, hand	0 (2)	0 (1)	0	0	0
Food/water/sleeping – 24 hours	Yes	Yes	Yes	Yes	Yes
Forcible entry tool	2	1	1	1	1
Fuel cans, transportable	Yes	Yes	Yes	0	Yes
Generator with light attachment	0 (1)	0	0	0	0
GPS, hand held	4	2	2*	2*	2*
Hammer, sledge	2	1	1*	1*	0
Hand held spot	4	2	1	1*	1
Harness, Rescuer	14	6	4*	3*	1*
Helmet, victim	4	2	2*	2*	2*
Helo victim lifting device	2	1	0	0	0
Jacket, exposure	2 (12)	0 (6)	0 (4)	0 (3)	0 (2)
Inflatable hose kit (including hose)	2*	1*	1*	1*	0
Knot passing pulleys	2	1	0	0	0
Line Thrower	2	1	1*	1*	0
Mask, dive	4*	2*	2*	0	0
Megaphone/PA	1	1	1*	1*	1*
Night vision, hand	2*	1*	1*	1*	1*
Oils, Fuels	Yes	Yes	Yes	0	Yes
PFD, Type III, Victim assort. (USGC Approved)	Yes	Yes	Yes	0	Yes
Pick off straps	0 (4)	0 (2)	0	0	0
Pickets	12	6	6*	6*	0
Pole, reaching (pike or equivalent)	2	1	1	1	1
Prusik's, tandem	12	6	4	2	0
Pulleys	12	6	2	2	0
Repair kits	Yes	Yes	Yes	0	Yes
Rope 200' w/bag	4	2	2	1	0
Rope 300' w/bag	3	2	1	0	0
Rope 600' w/bag	1	1	0	0	0
Compressed air cylinder (Hose/IRB Inflation)	2*	1*	1*	1*	0
Search Dog floatation device	0 (1)	0 (1)	0	0	0

# = Minimum (#) = Preferred * = Optional	Swiftwater/Flood Search and Rescue Team				FEB
	Type 1	Type 2	Type 3	Type 4	
Shovel, hand	2	1	1	1	0
Snorkel	4*	2*	2*	0	0
Storage containers, as needed	Yes	Yes	Yes	Yes	Yes
Swimmer Rescue Board	4	2	2	0	0
Throw bags	14	6	4	3	2
Throw-able Flotation Device (USCG Approved)	2	1	1	1*	1
Victim harness	2	1	1*	0	0
Water sample kit	0 (2)	0 (1)	1*	0	0
Webbing 1" x 5' Nylon tubular (green)	20	12	8	4	0
Webbing 1" x 12' Nylon tubular (yellow)	20	12	8	4	0
Webbing 1" x 15' Nylon tubular (blue)	20	12	8	4	0
Webbing 1" x 20' Nylon tubing (orange)	20	12	8	4	0
<b>INFLATABLE RESCUE BOAT (IRB)</b>					
Air, manual inflation pump	2	1	1	0	Yes
Boat, non-powered, 4 person minimum	0	0	1	0	Yes
Fuel, bladder / tank	2	1	0	0	Yes
IRB, 12' minimum	2	1	0	0	0
Kit, patch/Repair/Maintenance	2	1	1	0	Yes
Lanyard, wrist, kill switch	4 (14)	2 (6)	0	0	Yes
Motor, 30 HP (Minimum), prop w/guard	2	1	0	0	Yes
Motor flush kit, "rabbit ears"	2	1	0	0	Yes
Paddles	8	4	4	0	2
Prop, spare	2	1	0	0	Yes