

North Carolina Helicopter Aquatic Rescue Team



Operations Support Specialist



North Carolina Emergency Management



North Carolina National Guard

- The NCNG with North Carolina Emergency Management has developed a North Carolina Helicopter and Aquatic Rescue Team (NCHART) for rescue operations across the state.
- NCEM/NCHART has a set of (SOGs) and equipment criteria for utilizing a winch equipped UH-60 Blackhawk helicopter during an airborne rescue extraction.
- If requesting NCHART you must contact your local EM coordinator.
- A copy of the SOGs may be obtained through the NCEM SAR Coordinator.



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NC Helicopter Aquatic Rescue Team

NCHART is a highly specialized team consisting of:

- North Carolina Emergency Management
- North Carolina National Guard
- North Carolina State Highway Patrol
- Local emergency services personnel

Utilizes 3 distinct airframes based on mission

- UH-60 Blackhawk
- UH-72 Lakota
- Bell-407



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NCHART missions:

- Swiftwater / Flood Rescue
- Urban Rescue
- Wilderness Rescue
- Mountain Rescue
- High Angle Rescue



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NC Helicopter Aquatic Rescue Team

NCHART can respond, once approved, at the request of:

- Local emergency management
- NCEM Area Coordinator

Examples of NCHART missions include:

- Swiftwater / Flood Rescue
- Urban Rescue
- Wilderness Rescue
- High Angle Rescue



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Enabling Objectives

1. The NC HART OSS candidate shall describe the criteria for requesting a NC HART helicopter for rescue missions
2. The NC HART OSS candidate shall describe the capabilities of a HART hoist and short-haul equipped helicopters, and the criteria for packaging a patient for extrication by air.



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Enabling Objectives (Cont.)

3. The NC HART OSS candidate shall correctly demonstrate setting up a safe landing zone (LZ) for day and night landings.
4. The NC HART OSS candidate shall correctly address safety considerations at rescue site and assume control of site hazards.



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NC-HART Aircraft



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**UH-72A Lakota
helicopter is a non-arms
bearing helicopter that
performs medical and
casualty evacuations,
provides disaster relief,
aids in homeland defense
and works in counter
drug operations**

UH-72A Lakota Based out of RDU



***UH-72 IS A HOIST ONLY
AIRFRAME***



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UH-72A Lakota

Crew: 2 pilots, 1 crew chief, and two rescue techs

Length: 42 ft 7 in (13.03 m) **Height:** 11 ft 9 in (3.45 m)

Rotor diameter: 36 ft 1 in (11.00 m)

Empty weight: 3,950 lb (1,792 kg) **Useful load:** 3,953 lb (1,793 kg)

Powerplant: 2 × Turbomeca Arriel IE2 turboshafts, 738 shp each

Performance

- **Maximum speed:** 145 knots (167 mph, 269 km/h)
- **Cruise speed:** 133 knots (153 mph, 246 km/h)
- **Range:** 370 nmi (426 mi, 685 km)
- **Service ceiling:** 18,000 ft (5,791 m)
- **Rate of climb:** 1,600 ft/min (8.13 m/s)



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The Bell 407 is a four-blade, single-engine, light utility helicopter that performs LEO and rescue missions.



BASED IN RALEIGH



***BELL 407 IS SHORT HAUL
AIRFRAME ONLY***



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Bell 407

Crew: 1 pilot

Capacity: Typical seating configuration comprising pilot, system manager, and 2 rescue techs.

Length: 41 ft 8 in (12.7 m)

Rotor diameter: 35 ft 0 in (10.67 m)

Height: 11 ft 8 in (3.56 m)

Empty weight: 2,668 lb (1,210 kg)

Useful load: 2,347 lb (internal) (1,065 kg (internal))

Max takeoff weight: 6,000 lb (2,722 kg)

Powerplant: 1 × [Allison 250-C47 turboshaft](#), 700 shp (520 kW)

Propellers: 4 blade rotor

Performance

- **Maximum speed:** 140 knots (260 km/h)
- **Cruise speed:** 133 knots (152 mp/h, 246 km/h)
- **Range:** 324 nmi (372 mi, 598 km)
- **Service ceiling:** 18,690 ft (5,698 m)



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BASED OUT OF SALISBURY

The UH-60L Black Hawk is a four-bladed, twin-engine, medium-lift utility helicopter.



***SHORT HAUL AND HOIST
CAPABLE AIRFRAME***



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UH-60L Blackhawk

Crew: 2 pilots (flight crew) with 2 crew, rescue leader, and two rescue techs

Capacity: 2,640 lb of cargo internally, including 14 troops or 6 stretchers, or 8,000 lb (UH-60A) or 9,000 lb (UH-60L) of cargo externally

Length: 64 ft 10 in (19.76 m)

Fuselage width: 7 ft 9 in (2.36 m)

Rotor diameter: 53 ft 8 in (16.36 m)

Height: 16 ft 10 in (5.13 m)

Empty weight: 10,624 lb (4,819 kg)

Loaded weight: 22,000 lb (9,980 kg)

Max takeoff weight: 23,500 lb (10,660 kg)

Powerplant: 2 × [General Electric T700-GE-701C turboshaft](#), 1,890 hp (1,410 kW) each



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Helicopter Rescue

Helicopter evacuation requires a coordinated effort between ground crews and flight crews

- Ensures the safety of everyone involved

Safety must be the overall goal of any helicopter rescue operation

- Can be easily obtained through teamwork and good communication



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Criteria For Requesting NCHART

- The Following Requirements Must Be Met For NCHART.
- Resources Are Not Available Locally.
- Mission Is For Rescue And Not Recovery.
- Longer Than 4 Hours For Other Type Of Access And Recovery.
- Patient Has Life-threatening Injuries.
- There Are Excessive Risks To Rescue Personnel.
- The Situation Is Included In A Declared State Of Emergency



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NC HART

If these criterion is met, the local Emergency Management Coordinator for that jurisdiction must be contacted.

Local EM Director makes the request for the resource would then be made to State EOC.



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Helicopter Rescue

If the criterion is met...

- Request made to Local Emergency Management Coordinator (LEMC)
- LEMC requests HART Mission through State EOC
 - 1-800-858-0368
- Mission vetted and assigned by:
 - NCEM Area Coordinator(s)
 - State SAR Coordinator
 - Air Boss & Flight Crews
 - Division Duty Officer



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Helicopter Rescue

Required Mission Information

- Radio frequency for scene
- Number of survivors
- Survivors condition
- Terrain / rescue site hazards



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Two Extraction Methods

Short haul

Hoist



NCNG-HART Capabilities

- ◆ Response time for a NCNG helicopter is four hours prep time plus actual flight time.
- Flight time before needing to refuel is 2.25 hours.
- *The NCNG crew will usually not provide in-flight patient care; an on-scene medical technician will be needed.*
- *The NCNG helicopter will fly patients **to the nearest LZ** where the patient can be transferred to an ambulance or aero-medical unit.*



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Capabilities Of The Winch

The lifting capacity is 600 pounds.

The usable cable spooled on the drum is 250 feet.

The cut-away or shear strength of the cable is 2000 pounds.



Rigging Procedures For Helicopter Extraction

Horizontal lifting device
may be manufactured
or made by the agency.

All pre-rigged slings
approved and used by
the AHJ are acceptable
alternatives

NCHART crew gives final
approval.

[Extraction Video](#)



Helicopter Rescue

There are two basic methods used to affect a helicopter rescue:

- The HART crew will usually not provide in-flight patient care
 - ◆ an on-scene medical technician will be needed
- The HART helicopter will move patients to the nearest LZ for transfer to an ambulance or aero-medical unit



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Helicopter Rescue

Capabilities of the hoist used on the UH-60 Blackhawk and UH-72 Lakota helicopters.

- *The lifting capacity is 600 pounds.*
- *The usable cable spooled on the drum is 250 feet.*
- *The cut-away or shear strength of the cable is 2000 pounds.*

Helicopter Rescue

Proper procedures to be followed when packaging a patient for extraction by air using the NC HART helicopters.

- Stabilize ABCs
- Control major bleeding
- Stabilize spinal injuries
- Splint fractures
- Restrain as needed
- Maintain body temperature
- The patient will be packaged in accordance with guidelines established by the responding agency



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Helicopter Rescue

Rigging procedures for helicopter extraction

- use an appropriate horizontal lifting device
- device may be manufactured or made by the agency
- All pre-rigged slings approved and used by the AHJ are acceptable alternatives providing the HART crew gives final approval.
 - Examples: stokes basket, yosemite rig, pre-rigged slings, etc.



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Helicopter Landing Zones

Landing Zone Requirements for Rescue/Military Helicopters:

- Depends on the aircraft...
 - *UH60 Blackhawk ideal 200' x 100' day and 200' x 200' night, no wind condition, maximum slope of 15 degrees*
 - Notify helicopter of any hazards in LZ
 - Flight crew may suggest secondary LZ on approach based on hazards

Helicopter Landing Zones

LZ for NC HART

- Prefer isolated / remote area
- Doesn't need lighting
- Doesn't need fire engine
- Secure area
 - Without people and vehicles moving around
- Prepare for violent winds from rotor wash

LZ for Medical Transport



NC-HART Mission Levels

- Level 4** - the most basic missions; includes day/night operations in open, land-based areas with limited confinement, such as simple hoists or short-haul operations.
- Level 3** - the most basic water operations; includes day/night operations in open, still-water areas with limited confinement. Missions include the most basic water operations for hoist or short-haul operations.
- Level 2** - confined, land-based rescues where extremely precise operations are required, such as day/night rescues from cliffs, buildings, windows, or trees.
- Level 1** - the most complex helicopter rescues; includes day/night operations in moving water where the entire rescue is performed in a dynamic environment that may/may not also be in a confined area. These rescues require extreme precision and coordination between all crew members to safely execute the mission.



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Helicopter Landing Zones

Approach zones and safety rules for working around a helicopter

- Always remain in the pilots view.
- Never approach a helicopter from the rear.
- No hats or ball caps unless secured by strap.
- Never hold IV bags above head with rotors turning.
- Always approach and depart from the downhill side
- No smoking within 100 feet of the helicopter.
- Always provide victim's face with cover when rotors are turning.
- Flight crew will secure all doors and load equipment
- Flight crew will direct on-loading and off-loading



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Helicopter Landing Zones

Landing Zone Lighting

- Limited if any due to Night Vision Devices
- Green is the only acceptable color
- NO emergency lights, headlights, etc.

Landing Zones

- Subject to severe rotor wash (more than medical helicopters)
- Don't require as large of an area
- Short haul operations may utilize Lilly pads
 - Goal of getting survivors out of immediate danger



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PPE

Working around helicopters

- Ear & Eye Protection
 - Consider disposable ear plugs for rescuers around the site and any survivors
- Helmet
- Long pants / Long Sleeves



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Rigging

Once NC HART crew is on the scene, they are responsible for all rigging and packaging.

- HART Techs may re-rig some items due to constraints within the airframe
- Ground crew members should not rig any device unless under the direction of the HART Tech



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Communication

Military / Rescue Helicopter (HART)

- NC VIPER – Event Channels
- National Public Safety (NPS) Channels
- Standard / Military Aviation frequencies
- 800 MHz portables or any mobile radio with appropriate channel



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Communication

Hand Signal Communication

- Rescue helicopters prefer not to depend on hand signals for landings and take-offs
- Instead they depend on radio communications
- There are times when hand signals may be the only alternative



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Summary

This lesson plan is designed to review general operating and safety rules when working with helicopters and emergency scenes. It is imperative that each responding agency have a good working knowledge of the procedures needed to be implemented to insure the safety of emergency responders, flight crews, and the on scene civilian population.



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Summary

More information about NC HART can be obtained through the NC HART SOG

- <http://www.ncdps.gov/div/em/emergencyservices/sar/nchart/HART-SOG-updated.pdf>



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