



# PLANNING & IMPLEMENTATION

## OBJECTIVE & STRATEGY

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This section describes general planning and implementation considerations related to the NORS strategy.

This tool is intended for command and general staff within an Incident Command System (ICS), and supplements guidance already contained in the STAR Manual and Alaska Incident Management System (AIMS) Guide by illustrating how component parts of the STAR Manual and AIMS may be applied to implement a robust and sustainable nearshore response. This tactic also includes information about equipping and staffing a nearshore response.

## DESCRIPTION

NORS is based on the assumption that the Unified Command overseeing a spill has decided to form a Nearshore Response Group (NRG) to implement nearshore recovery and sensitive area protection tactics. A NRG will deploy and support up to five Nearshore Task Forces (NSTF). A marine logistical support base of tugs, barges and other vessels provides the necessary staging, oil storage, support infrastructure, and supplies for 21 days of operation. Additional support includes aerial observation and spill tracking by aircraft that may be stationed with the marine support base or may be deployed from a nearby airport, depending on local resources.

### Planning Assumptions

The following planning assumptions were used to develop the NORS system and strategy:

- **Spill Type and Weathering** – NORS is designed for a very large offshore spill (>10,000 bbl) of crude oil or other persistent oil that threatens coastal resources over a broad area for an extended period of time. The oil is assumed to range from being somewhat emulsified to tar balls by the time it reaches the nearshore environment. The slick is not a solid mass of oil but broken into windrows of various thicknesses, spread over a wide area.
- **Spatial Coverage** - A NRG is assumed to operate in an area with a radius of between 5 to 15 miles from the marine response base depending on task force make-up and strike team options. This distance is based on the time necessary to transfer



recovered oil between primary and secondary storage units at the support base, responder safety, and weather conditions.

- **Operating Environment** - The NRG is assumed to operate in a Protected Water operating environment of up to 3-foot seas and 25-knot winds. In general, response vessels are assumed to operate in water depths greater than 6 feet. Special conditions such as shallow water (< 6 feet) and broken ice must be accommodated but are not considered in the basic strategy. Conditions may vary considerably by both location and season, and direction of the NRG will ultimately be determined by the Group Supervisor and Safety Officer. While this is a statewide document, region-specific planning should consider expected local conditions which will vary.
- **Operational Period** - A 12-hour per-day operational period is assumed for planning purposes. It is also assumed that all operations will be conducted in daylight, because of the danger of conducting coordinated small boat operations in shallow waters close to shore at night. It is also difficult to track oil in darkness.
- **Duration** - It is assumed that once deployed, the NRG will be capable of operating for up to 21 days without resupply.
- **Best Available Technology** - It is assumed that the NRG will utilize the best available technology for nearshore response, thus allowing for maximum effectiveness.
- **Tactics** - It is assumed that the NRG will be capable of implementing mechanical tactics associated with nearshore oil skimming and shoreline protection. This includes implementing Geographic Response Strategies (GRS) if they exist in the area of operations. Non-mechanical tactics, such as in-situ burning and dispersants, are not considered.
- **Logistics Support** - It is assumed that the NRG will be marine-based. Land-based support should be considered where the infrastructure exists, but for planning purposes the NRG is considered to be self-supporting.
- **Aerial Support** - It is assumed that nearshore operations will require aerial support, especially for oil tracking and spotting to support oil recovery. Aerial support from land should be utilized whenever possible, but for planning purposes it is assumed that this support will have to be stationed at the marine Logistics Base.
- **Vessel Speed** - It is assumed that vessels towing boom will travel at 10 knots unless towing a storage device. In that case, 5 knots is assumed.
- **Enhanced Recovery Device** - 72-foot boom swath, 3-knot tow speed.





# Planning & Implementation

- **High Efficiency Oleophilic Skimmer** – 550 bbl/hr, 93% recovery efficiency, 75% throughput efficiency
- **Primary Storage Device** – 249-bbl capacity and capable of 5-knot tow speed.
- **Secondary Storage** – 50,000-bbl capacity barge, may need to be lightered to tanker of opportunity or replaced with like kind depending on recovered fluids.

## Composition

The NRG consists of up to 5 NSTF and a Logistics Support Base comprised of one or more support vessels/barges, and one or more aircraft to support response operations. Each NSTF consists of up to five Nearshore Strike Teams (NSST) incorporating recovery systems, primary storage devices, oil containment boom, and response vessels with trained crew. Figure NORS-1 shows how a NRG would fit into the incident command structure and how the group might be organized with five NSTF each containing five NSST.

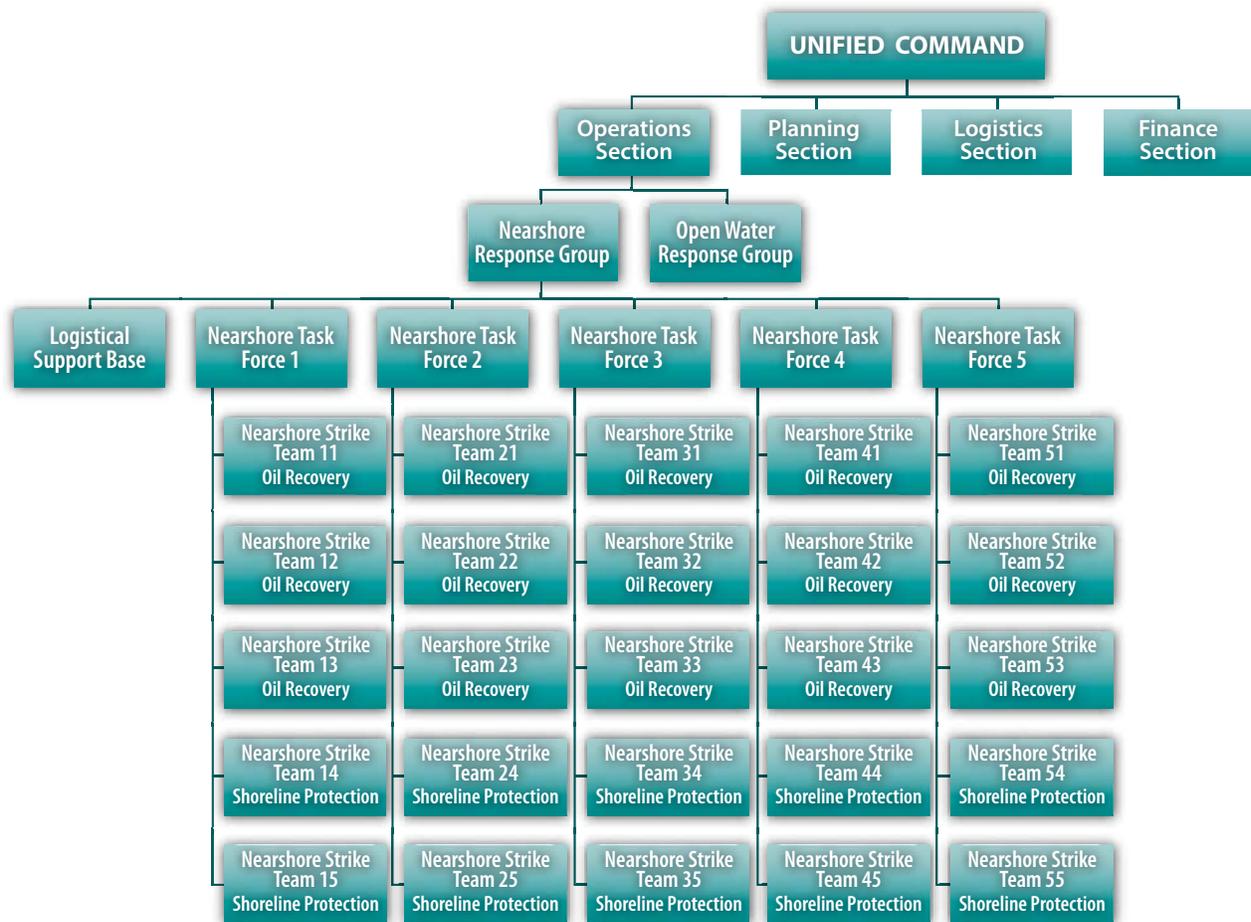


Figure NORS-1. Nearshore Response Group (NRG).

Part VI.  
NORS





## Logistics Support Base

The logistical support for a NRG should include the following functions:

- Forward staging area for assembling NSTF and NSST
- Secondary storage for recovered oil
- Waste management for solid and sanitary wastes
- Supplies and consumables (including fuel) for the NRG
- Berthing and food for personnel not berthed onboard response vessels
- Transportation, storage, and deployment of response assets, such as skimmers, boom, anchor systems, and storage devices
- Decontamination of responders, vessels, and equipment
- Aerial support to detect oil slick and direct resources to the highest priority concentrations

In remote areas, all of these functions will have to be provided by marine vessels without direct support from shore. When practical, these functions could be supplemented from shore, but for planning purposes we assume that only marine-based support will be used.

There are two options for logistical support vessel/barge configuration: a single all-in-one vessel/barge may support the NRG logistics in their entirety, or a series of smaller vessels/barges may provide logistical support responsibilities.

The first type of all-in-one nearshore staging platform has been employed in Prince William Sound by Alyeska Ship Escort and Response Vessel Service and has proven capable of supporting and sustaining nearshore recovery operations. Support services would need to be developed elsewhere.

A second option is the use of several vessels of opportunity to serve as a NRG logistical support fleet. This option would create a more significant logistical burden and would increase the size of the fleet required to support the entire NRG. However, this may be a more realistic option for developing a NRG in remote areas without pre-spill capitalization.

## Nearshore Task Force

A NSTF is comprised of up to five NSST tailored to their operational objectives: free-oil recovery or shore line protection. Strike teams are composed of marine vessels used to accomplish group objectives. Free-oil recovery requires vessel platforms to deploy skimmers, tow boom, and manage oil storage devices (e.g mini-barges). Shoreline protection task forces typically transport boom, place anchoring systems and boom arrays, set out passive recovery systems, and recover oil collected by booming tactics.



Figure NORS-2 shows one possible configuration of a NSTF. For planning purposes it is assumed that each task force will have three oil recovery strike teams and two shoreline protection strike teams. (Actual composition will be determined by the circumstances of the spill.) Equipment in the NSTF is generally smaller than equipment used in open water recovery operations. Vessels typically have shallower drafts and are more maneuverable than those used for open water operations. The boom can also be smaller near the shore and therefore easier for smaller vessels to tow.

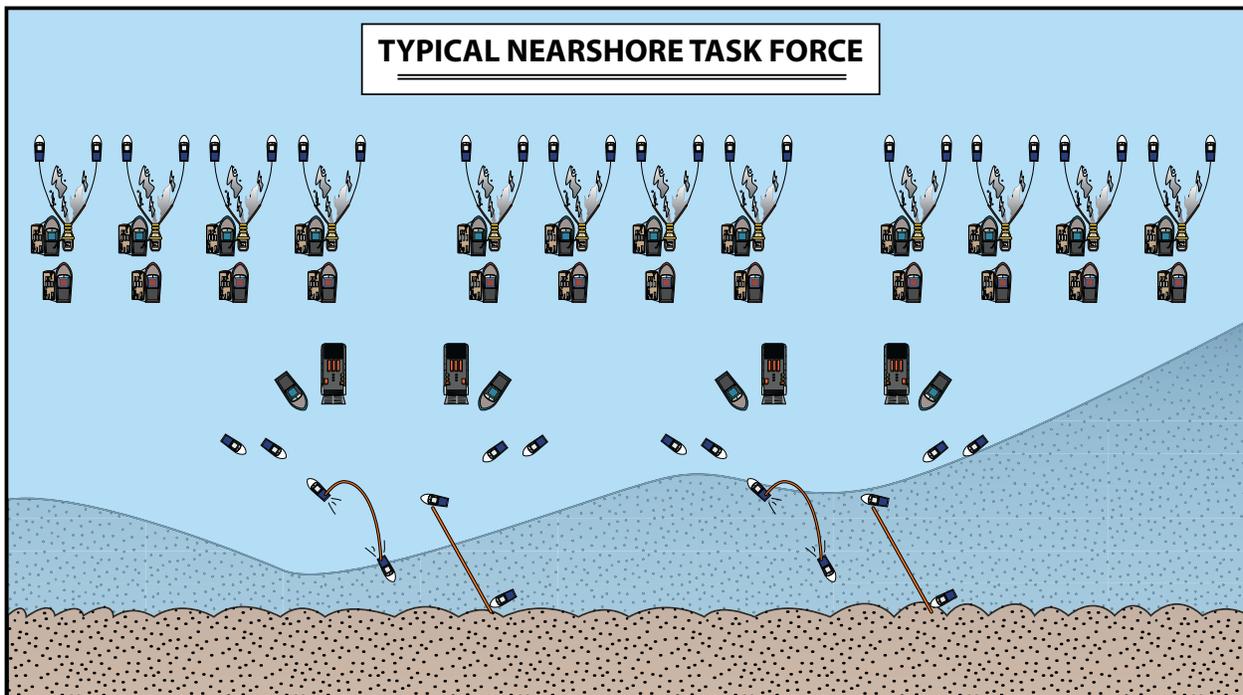


Figure NORS-2. Typical Nearshore Task Force.

### Nearshore Strike Team – Free-oil Recovery

Containing and removing free-floating oil from water is central to the NORS strategy. A NSST is designed to find, intercept, contain, and skim oil in to a primary storage device. An oil slick is constantly moving and spreading from the forces of winds and tides. Locating and tracking the slick with aerial support is the first step in the recovery process. Aerial support is covered in the Aerial Observation Supporting Nearshore Operations Tactic in Section B-II of the STAR Manual.

The NSST must be mobile enough to intercept the oil slicks. Vessel speed dictates the area of coverage. Typically vessels are dispatched from the support base, travel to the slick, deploy containment and recovery systems, and commence skimming operations. At the end of the operating period, the strike team must decontaminate and return to the logistics base or other anchorage.

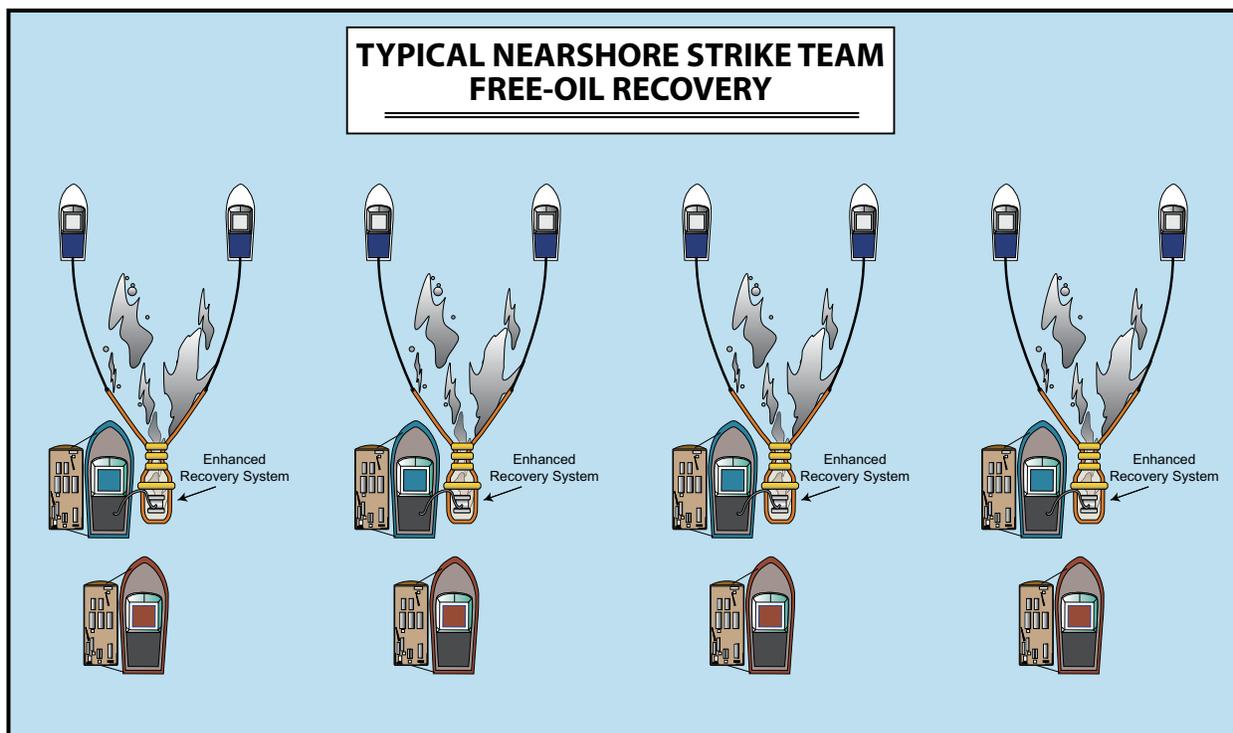


Figure NORS-3. Typical Nearshore Strike Team – Free-oil Recovery.

Recovered oil must be shuttled to secondary storage, which can complicate adequate primary storage capacity at the skimming vessels if distances to the support base are too great.

The best available technology for nearshore free oil recovery uses enhanced recovery devices and high efficiency disc skimmers. The Nearshore Free-oil Recovery Tactic in Section B-III of the STAR Manual provides further details on the tactic and resources required.

A free oil recovery strike team deploys four skimming systems and associated concentration boom or enhanced recovery devices. Depending on the volume recovered, an entire strike team may be tasked with shuttling storage devices between the skimming strike team and the secondary storage vessel.

### **Nearshore Strike Team – Shoreline Protection**

Protecting sensitive areas is a critical element of environmental protection during an oil spill. Not all nearshore sensitive areas can be protected during a spill due to timing and equipment limitations, so sites that can be protected become even more important.

Booming is the primary method to protect sensitive areas. Booming either excludes oil or deflects it away from sensitive sites. Other

methods include Beach Berms, Inlet Dams, Sorbent Barriers, and use Geotextiles to protect beaches. Having equipment in place before oil arrives is the key to successfully protecting these sensitive areas. Once a shoreline protection strike team has deployed boom, that boom must be tended to ensure it maintains the proper configuration as tides and weather change.

A Shoreline Protection NSST, as shown in Figure NORS-4, is composed of up to 10 small vessels and two landing craft. These vessels and crew should be able to transport boom and anchoring systems to the site, deploy anchors and boom arrays, and tend boom. Each strike team should be supplied with up to 5,000 feet of protected water boom, 50 anchor systems, 500 feet of shore-seal boom, and 5,000 feet of snare boom. The Shoreline Protection Tactics in Section B-III of the STAR Manual provides detailed information on the tactics and resource requirements.

Nearshore sensitive area protection may be accomplished by deploying Geographic Response Strategies (GRS) where they have been developed. GRS are site-specific plans to protect environmentally sensitive areas from oil spill impacts, and they have been developed for many of Alaska's coastal areas. More information about GRS can be found at <http://dec.alaska.gov/spar/perp/grs/home.htm>.

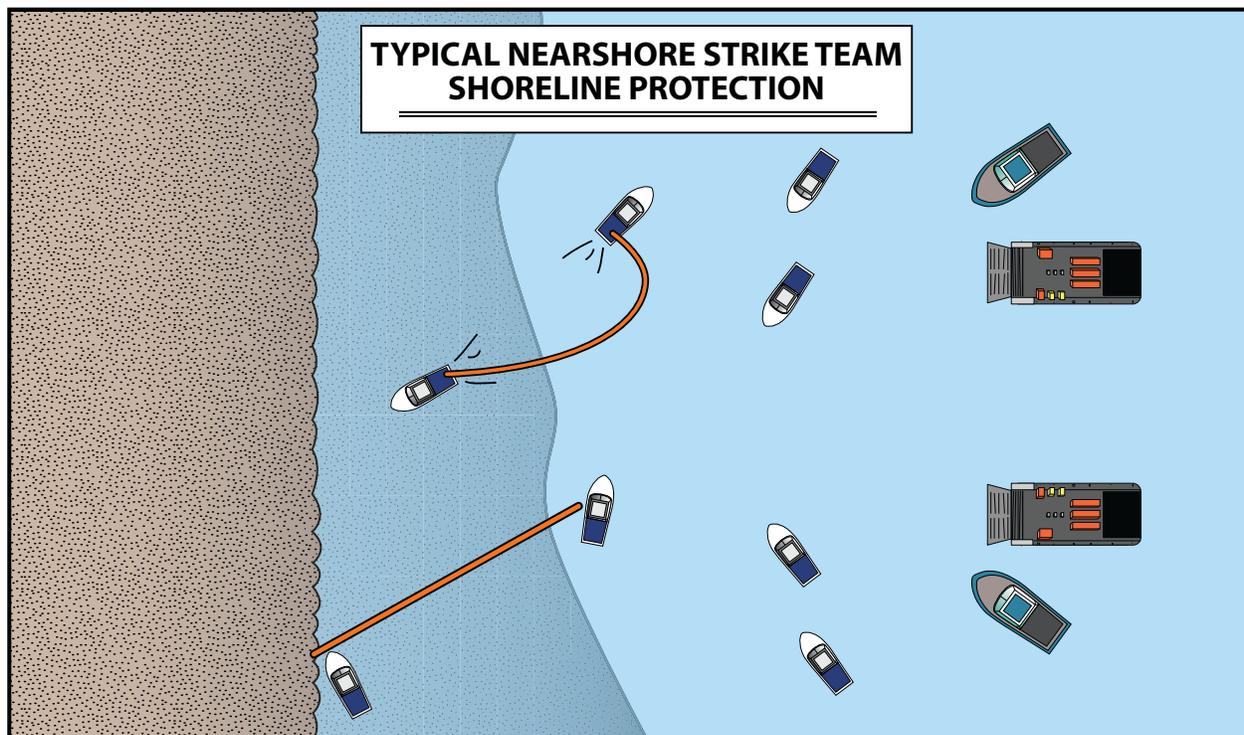


Figure NORS-4. Typical Nearshore Strike Team – Shoreline Protection.



## CAPACITY

Defining the capacity of a NRG is challenging, because the group's objective is to protect sensitive resources, not necessarily to maximize oil recovery. However, understanding the capability of a NRG is useful for planning purposes.

**Free-oil Recovery** – The volume of oil recovered depends on many variables, including: type of oil, environmental conditions, type of response equipment, and the crew's experience and skill. The most important variable is the amount of time oil since the spill, because oil will spread and weather. Considering best available technology and the most favorable assumptions, an oil recovery strike team with three skimmers could recover and transport 4,275 bbl each 12-hour operational period. A NSTF with three such NSST could recover 12,825 bbl and a NSRG with five NSTF could recover 64,125 bbl in this period. It should be stressed that this is the most favorable estimate of capacity; in reality, the amount recovered would likely be far less, especially if oil has spread and weathered. Knowing this, secondary storage for the Logistics Base is assumed to be 50,000 bbl when a NSRG is utilized.

**Shoreline Protection** – The capacity to implement shoreline protection is also very situation dependent, but a shoreline protection NSST with 12 vessels should be able to deploy and maintain three GRS or the equivalent. Correspondingly, a NSTF with two NSST could implement priority site protection strategies for 6 high priority protection sites and a NRG with five NSTF could protect 30 sites.

## DEPLOYMENT CONSIDERATIONS AND LIMITATIONS

- A NRG will be supported by a marine-based Logistics Base that will allow responders to safely remain in the response area while providing:
  - Command and control
  - Recovered fluid and solid waste transfer and storage
  - Personnel support, berthing, meals, etc.
  - Aircraft, vessel, and equipment maintenance and support
  - Equipment storage

This Logistics Support Base is further described in the Nearshore Logistics Base Tactic in Section B-VI-2 of the STAR Manual.

- A NRG will be supported by a minimum of one aircraft to provide oil spill tracking and observation for oil recovery strike teams. This is further described in the Aerial Observation Supporting Nearshore Operations Tactic in Section B-II of the STAR Manual.





## Planning & Implementation

- A NRG is generally intended to operate in seas of less than 3 feet and winds of less than 25 knots, or otherwise as appropriate based on regional variation in conditions. Vessels should be able to transit safely in 6-foot seas and 30-knot winds.
- Vessels assigned to a NRG should be capable of housing and feeding their own crew, but will receive fuel, food, and consumables from the Logistics Support Base.
- The Group Supervisor and Logistics Base personnel will be housed at the support base. The support base should have additional berthing and food capabilities to accommodate all personnel assigned to the NRG.
- There may be impacts to coastal communities due to the influx of responders, a temporary reassignment of community members to the response, and logistical support needs (housing, food, other services) for numerous responders.
- Large quantities of resources may be required to sustain the nearshore response. Regulatory approvals, trans-boundary issues, and financial limitations may impact how quickly resources and equipment can be brought into the response. Pre-planning should facilitate these processes.
- Pre-planning for NORS should be addressed at the Subarea Contingency Plan level.

### REFERENCES TO OTHER TACTICS

The NRG will utilize many tactics from other sections of the STAR Manual to accomplish their operational objectives. These tactics include but are not limited to:

-  Nearshore Response Group Logistics Base
-  Aerial Observation Supporting Nearshore Operations
-  Nearshore Free-oil Recovery
-  Exclusion Boom
-  Deflection Boom
-  Marine Recovery
-  Shoreside Recovery
-  Passive Recovery
-  Marine-based Storage and Transfer of Oily Liquids
-  Staging Area
-  Towing Alongside
-  Vessel Decontamination





## VESSEL, EQUIPMENT, AND PERSONNEL REQUIREMENTS

Preparation for nearshore response operations should be undertaken as early as possible. The scope and scale of these operations pose significant logistical challenges and resource burdens, particularly in remote areas.

Successful nearshore response implementation requires sufficient equipment and personnel to perform assigned tasks. NRG staffing will vary depending on the platforms and vessels utilized and can generally be determined by referring to the NORS-specific tactics described below as well as to other applicable tactics within this manual. Table NORS-1 contains the typical vessel, equipment, and personnel requirements for the two types of NSST.

### Nearshore Strike Team Requirements

	Free-oil Recovery Strike Team <sup>1</sup>	Shoreline Protection Strike Team
<b>Vessel Platforms</b>	8 - Class 3 or 4 Boom Towing Vessels 4 - Class 2 or 3 Skimmer Tending Vessels 4 - Class 3 or 4 Primary Storage Tending Vessels	10 - Class 3 or 4 Boom Deployment Vessels 2 - Class 2 or 3 Support Vessels (Class 1 or 2 Landing Craft or equivalent)
<b>Containment</b>	4 - Enhanced Recovery Systems	5,000-ft Protected Water Boom 500-ft Shoreseal Boom 5,000-ft Snare Boom 50 ea. Anchor Systems
<b>Skimming</b>	4 - High Efficiency Oleophilic Skimmers (Crucial 13 disc or equivalent)	1 - Small Skimming System
<b>Primary Storage</b>	8 - 249-bbl Primary Storage Devices (mini barges or equivalent towable bladders)	1 - 50-bbl Primary Storage Device
<b>Personnel</b>	1 - Strike Team Leader 16 - Tow Boom Vessel Crew 12 - Skimmer Tending Vessel Crew 8 - Storage Tending Vessel Crew	1 - Strike Team Leader 20 - Tow Boom Vessel Crew 6 - Support Vessel Crew

### Nearshore Logistic Base Requirements

	Free-oil Recovery Strike Team <sup>2</sup>
<b>Vessel Platforms</b>	2 or more - Class 1 Berthing Vessels 2 or more - equipment, consumable, solid waste storage vessel/barge
<b>Secondary Recovered Oil Storage</b>	50,000-bbl Oil barge and attendant tug (or equivalent)
<b>Staging Area</b>	Equipment, consumable, solid waste storage capability
<b>Berthing and Feeding Capability</b>	80 Personnel
<b>Personnel</b>	1 - Group Supervisor 30 - Recovered Oil Transfer Crew 15 - Decontamination and Waste Management Crew 8 - Deck Crew 11 - Other Crew





## Planning & Implementation

A NSTF with three free-oil recovery strike teams and two shoreline protection strike teams could require up to:

- 96 vessels
- 12 enhanced recovery devices
- 10,000 feet of protected water boom
- 14 skimming systems
- 26 primary storage devices
- 165 trained response personnel

A NRG with five NSTF could require up to:

- 483 vessels
- 60 enhanced recovery devices
- 50,000 feet of protected water boom
- 70 skimming systems
- 130 primary storage devices
- 50,000 bbl secondary storage
- 832 trained response personnel
- 73 support personnel
- Associated consumables and ancillary equipment





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