

PART TWO – GENERAL PROTECTION/RECOVERY TACTICS

This section contains generalized oil spill response tactics that were used to develop the specific strategies contained in Section 3. Each general tactic description contains objectives, implementation instructions, response resources required, and deployment considerations and limitations. These general tactics are shown as symbols on the GRS maps and the required resources have been adapted to the specific site and listed in the GRS tables in Section 3. Equipment classifications are taken from the *World Catalog of Oil Spill Response Products*.


















VESSEL CLASSIFICATION

The following table contains vessel classifications used in this document.

1	Class 1 vessels are large, deep draft, steel hull vessels generally longer than 150 ft. and over 1,500 HP. These vessels are capable of providing all offshore services required during a response, i.e.: major skimming systems, berthing, command vessel hauling cargo, etc. They generally have large open rear decks, elevated wheelhouses and are USCG inspected. They can be used in any offshore region of Alaska. These vessels may be able to provide limited support services to other vessels in the fleet, i.e.: berthing, meals, fuel, water, repair, etc. They are not restricted by seasonal or most sea ice constraints.
2	Class 2 vessels are slightly smaller than Class 1 vessels, typically less than 150 ft. in length. All are steel hulled with drafts generally less than 12 ft. They have forward or aft houses, (can include larger LCMs), and have adequate deck space for deployment/operation of VOSS systems, boom deployment/towing, and barge assist. They may have limited accommodation space. These vessels may be able to provide limited support services to other vessels in the fleet, i.e.: fuel, water, repair, etc. They are not restricted by seasonal or most sea ice constraints.
3	Class 3 vessels are the largest of the fishing fleet, including large seiners, longliners, gillnet boats and tenders. They may have steel, aluminum or fiberglass hulls. Deck space is adequate for small skimming system deployment/operation. HP is generally over 400, allowing them to tow boom up to ocean size. These vessels have accommodations, but are usually limited to the vessel crew plus 1 or 2. They are not restricted by seasonal use, but will be restricted in sea ice concentration over 70% ice cover.
4	Class 4 vessels are smaller fishing vessels, including seiners, longliners and gillnet boats. They have limited deck space and accommodations. They can be used for towing ocean boom in areas of lower current speed, but are well-suited for towing protected-water or calm-water boom. These vessels work best in nearshore areas with support from Class 1, 2 or 3 vessels. They are perfect for bays and protected waters. They are shallow draft vessels, made of aluminum or fiberglass and usually have no additional accommodations space. They may be limited by seasonal constraints and are not expected to work in sea ice concentrations over 50% ice cover.
5	Class 5 vessels are small, generally less than 30 ft., with no accommodations. These day-use vessels are used for placing and towing protected-water or calm-water boom in nearshore areas or river mouths. They may be used for scouting, wildlife hazing/capture, and miscellaneous assignments within various on-water task forces. These vessels may be limited by seasonal constraints.
6	Class 6 vessels are work boats or skiffs, open small boat type vessels, generally with outboard motors and no accommodations. They may be used to handle protected-water or calm-water boom in nearshore areas or river mouths and other miscellaneous assignments within on-water task forces. Class 6 vessels are generally not suited for transport/towing/working in exposed waters or handling long arrays of boom.
7	Class 7 vessels are passenger charter vessels designed and licensed to carry passengers such as supervisors, media, or regulatory agency representatives. They are generally for day use and can also be used to support safety staff, wildlife hazing/capture, and logistics support.
8	Class 8 vessels are inspected or uninspected towing vessels, designed and equipped for towing large or small vessels.
9	Class 9 vessels are dive vessels, designed or equipped to support diving operations.
10	Class 10 vessels are salvage vessels, designed or equipped to support marine salvage operations.
11	Class 11 vessels are tank barges or tank vessels designed and equipped to carry liquid cargoes.

SYMBOLS

The following are the symbols used in the GRS maps to depict a general strategy:

Tactical Information	
A. Deflection Booming	
 Deflection Booming	
 Deflection Booming, River Mouth	
 Deflection Booming, Live	
B. Diversion Booming	
 Diversion Booming, Fixed	
C. Exclusion Booming	
 Exclusion Booming	
D. Shoreside Recovery	
 Shoreside Recovery, Marine Access	
 Shoreside Recovery, Land Access	
E. Marine Recovery	
 Marine Recovery	
F. Free-oil Recovery	
 Free-oil Recovery, Shallow Water	
 Free-oil Recovery, Open Water	
G. Passive Recovery and Debris Removal	
 Passive Recovery and Debris Removal, Marine Access	
 Passive Recovery and Debris Removal, Shoreside Access	
 Passive Recovery, Marine Mammal Haulout	
H. Cold Water Deluge	
 Cold Water Deluge, Marine Access	
 Cold Water Deluge, Shoreside Access	
I. Dam	
 Dam	
 Underflow Dam	

A. DEFLECTION BOOMING

Objective & Strategy

The objective of deflection booming is to direct spilled oil away from one location to another or to simply change the course of the slick. The two alternatives for this technique are Fixed Deflection and Live Deflection.

In fixed deflection, boom is anchored to the shoreline or bottom. This technique consists of oil spill boom placed at an angle to the current and uses the movement of the current to assist in response operations. One basic deployment technique for fixed deflection is to secure/anchor one end of the boom up-current from the selected deflection site. Then place additional anchor systems to the boom to achieve the desired deflection angle with the least amount of entrainment or escapement. Boom arrays may have to be cascaded in short sections to prevent entrainment.

In live deflection, the boom is attached to vessels and held in position by the power of the vessels or one end of the boom is anchored and the other end held in position with a vessel. Live deflection is a very difficult tactic to execute. It should only be utilized where fixed deflection can not be achieved, usually because deep water precludes anchoring.

Deflection Boom (single boom): Boom is deployed from a site at an optimum angle to the current and anchored to deflect the oil away from a location.

Deflection Boom (cascade): Several booms are deployed in a cascade configuration when a single boom cannot be used because of fast current or because it is necessary to leave openings in the boom for vessel traffic, etc. This configuration can be used in strong currents where it may be impossible to effectively deploy one continuous section of boom. Shorter sections of boom used in a cascade deployment are easier to handle in faster water, thereby increasing efficiency. Additional equipment may be required to set and maintain this system as compared to the single boom configuration.

Resources for this module have been defined as an increment of 200 ft. of boom with associated support equipment. Quantity of units required will be determined by site, and resource sets may need to be refined as site specific requirements dictate.

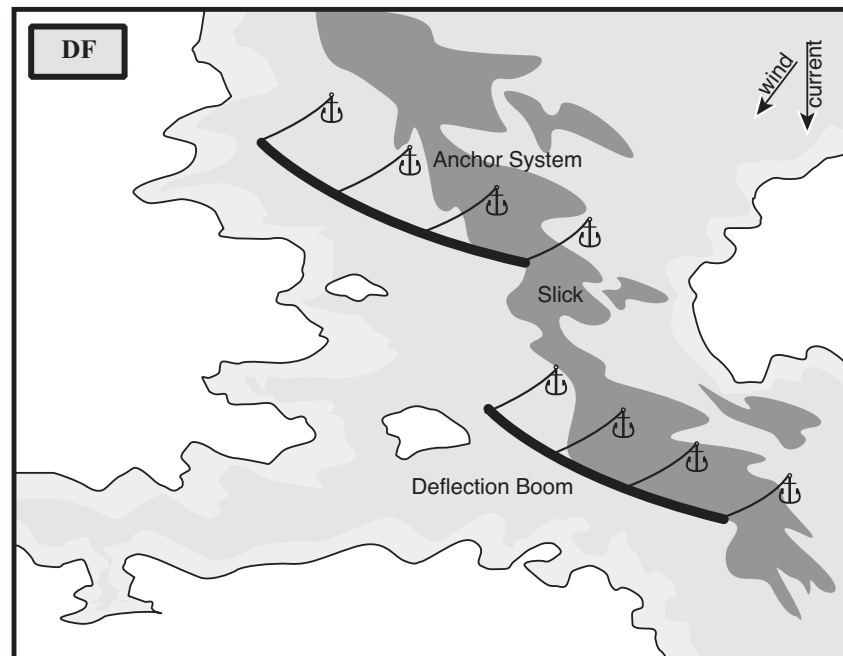


Figure G-2-1. Deflection booming, fixed cascaded array.

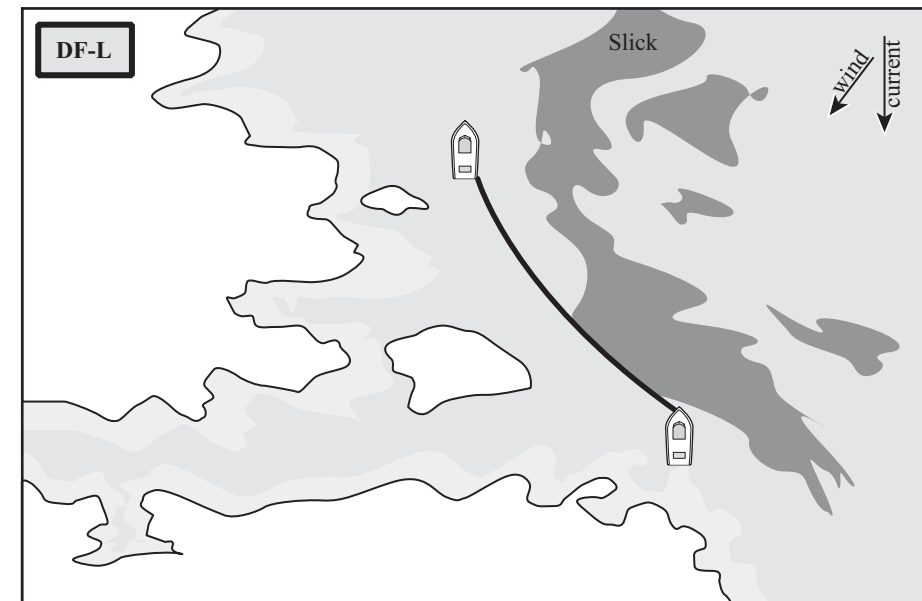


Figure G-2-2. Deflection booming, live.

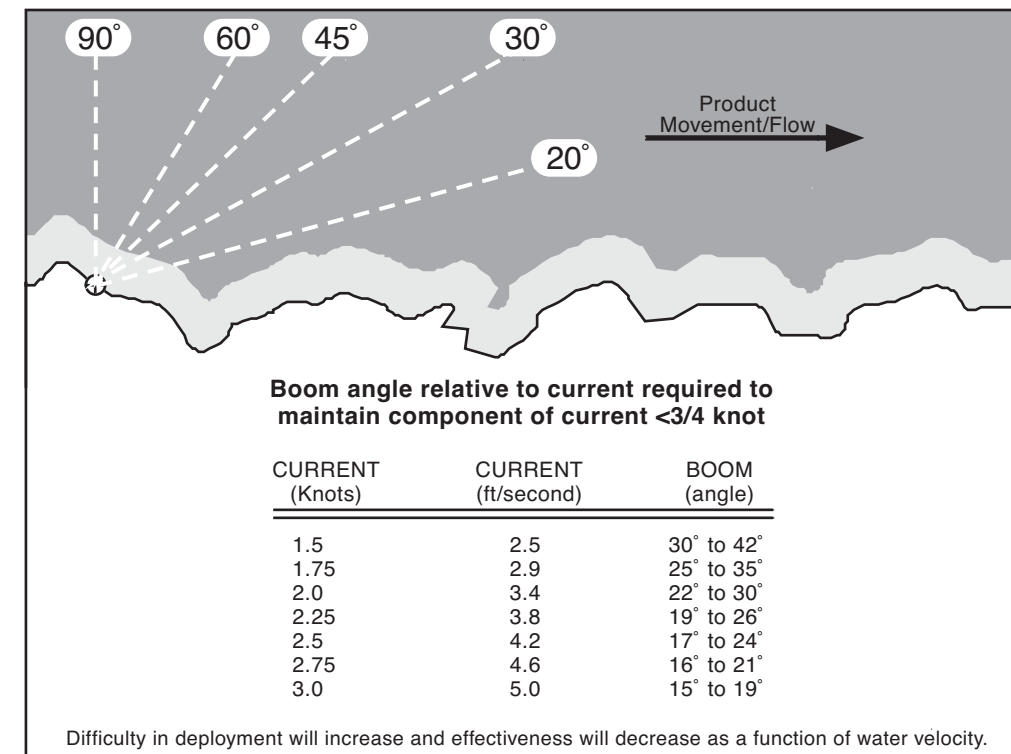


Figure G-2-3. Deflection booming deployment configurations.

Note: Some of the figures in this section were taken from the Alaska Clean Seas Technical Manual with Alaska Clean Seas' permission.

Resources

Deflection Booming, River Mouth DF-R

Direct Resources

Description	Type	Function	Quantity
Boom	Calm/Protected water	Deflection booming	200'
Anchor systems	40 lbs.	Securing boom	2
Rigging/Tackle	Misc.		

Support Resources*

Description	Type	Function	Quantity
Vessels	Vessel Class 5/6	Booming support	2
Personnel***	Crew & Tech./Shift		3 to 10

Deflection Booming, Exposed Shoreline DF

Direct Resources

Description	Type	Function	Quantity
Boom**	Protected water	Deflection booming	200'
Anchor systems	≥ 60 lbs.	Securing boom	2
Rigging/Tackle	Misc.		

Support Resources*

Description	Type	Function	Quantity
Vessels	Vessel Class 3/4/6	Booming support	2
Personnel***	Crew & Tech./Shift		3 to 10

Deflection Booming, Live DF-L

Direct Resources

Description	Type	Function	Quantity
Boom	Protected water	Deflection booming	200'
Anchor Systems	–	–	–
Rigging/Tackle	Misc.		

Support Resources*

Description	Type	Function	Quantity
Vessels	Vessel Class 3/4	Booming support	2
Personnel***	Vessel Crew/Shift		4 to 6

Deployment Considerations and Limitations

- Calm/Protected water boom (6" x 24" / 18" x 42") are most commonly used for this tactic.
- Do not assume 100% efficiency with one boom system.
- Readjust angles and widths between boom sections as necessary to meet changing conditions (tides, currents, and winds).
- Constant monitoring of system efficiency is required.
- Deployment planning should be based on average high tidal conditions.

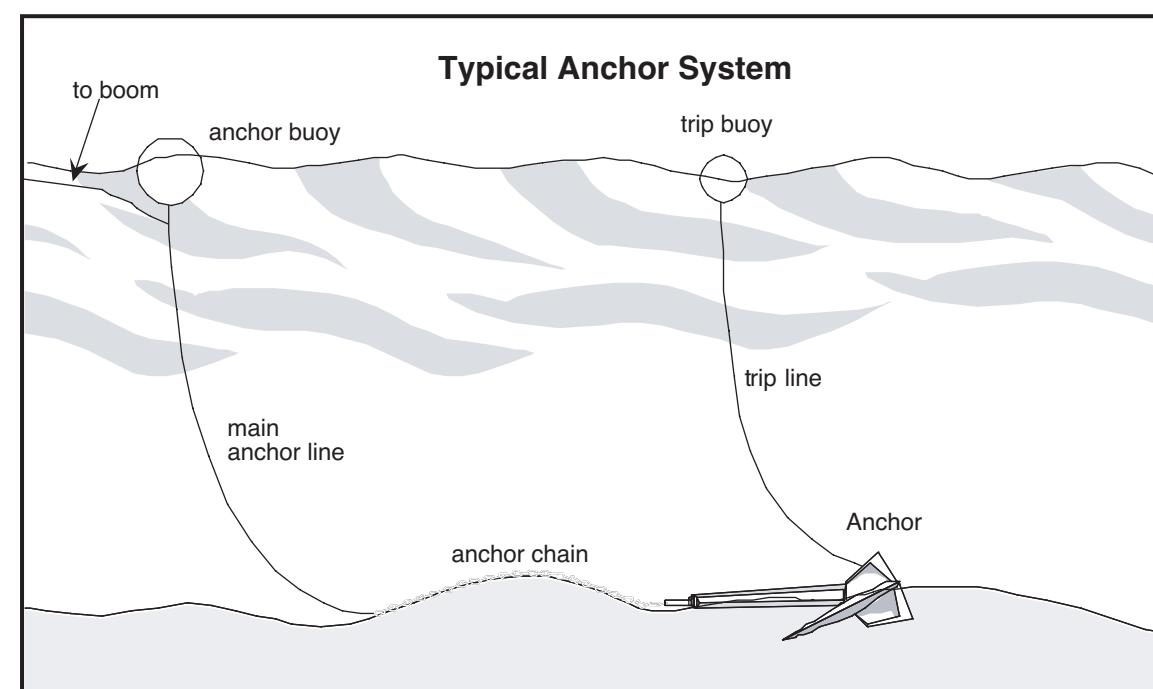


Figure G-2-4. Boom angle relative to current.

* Support resources may need to be re-evaluated, and in most cases decreased, when deploying multiple units or tending the systems after deployment.

** Boom types are defined in the World Oil Catalog.

*** Personnel includes vessel crew.