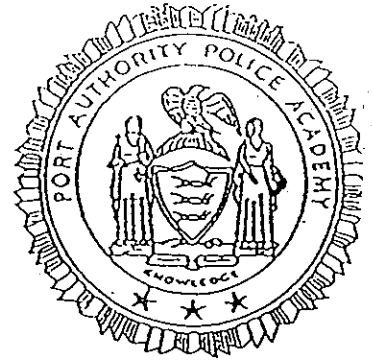


PORT AUTHORITY POLICE ACADEMY



LESSON PLAN



SECTION : MARINE

LESSON TITLE : BOAT NOMENCLATURE AND TERMINOLOGY

TRAINEE LEVEL : BASIC

OBJECTIVES : Trainee will be able to demonstrate their ability to use correct nautical terms when;

1. describing the generic nomenclature of a vessel
2. describe the two main types of boat hulls and their characteristics.

METHOD OF INSTRUCTION : Lecture

TRAINING AIDS : Overheads and Handouts

CLASSROOM REQUIREMENT : Classroom, Overhead Projector

TIME : 60 minutes

REFERENCES : USCG Boat Crew Seamanship Manual, Chapmans Piloting

PREPARED BY : Sgt. William Oorbeek

DATE: 1/03/94

APPROVED BY :

DATE: _____

SIGNATURE

I. INTRODUCTION

Name, Background, Training, Experience

II. MOTIVATION

Knowledge of general boat construction and the use of proper nautical terminology is crucial in the understanding and conveying of information aboard the Port Authorities Rescue Vessels.

III. STATEMENT OF OBJECTIVES

Upon completion of this course the trainee will be able to demonstrate their ability to use correct nautical terms when;

1. describing the generic nomenclature of a vessel
2. describe the two main types of boat hulls and their characteristics.

Instructor Notes:

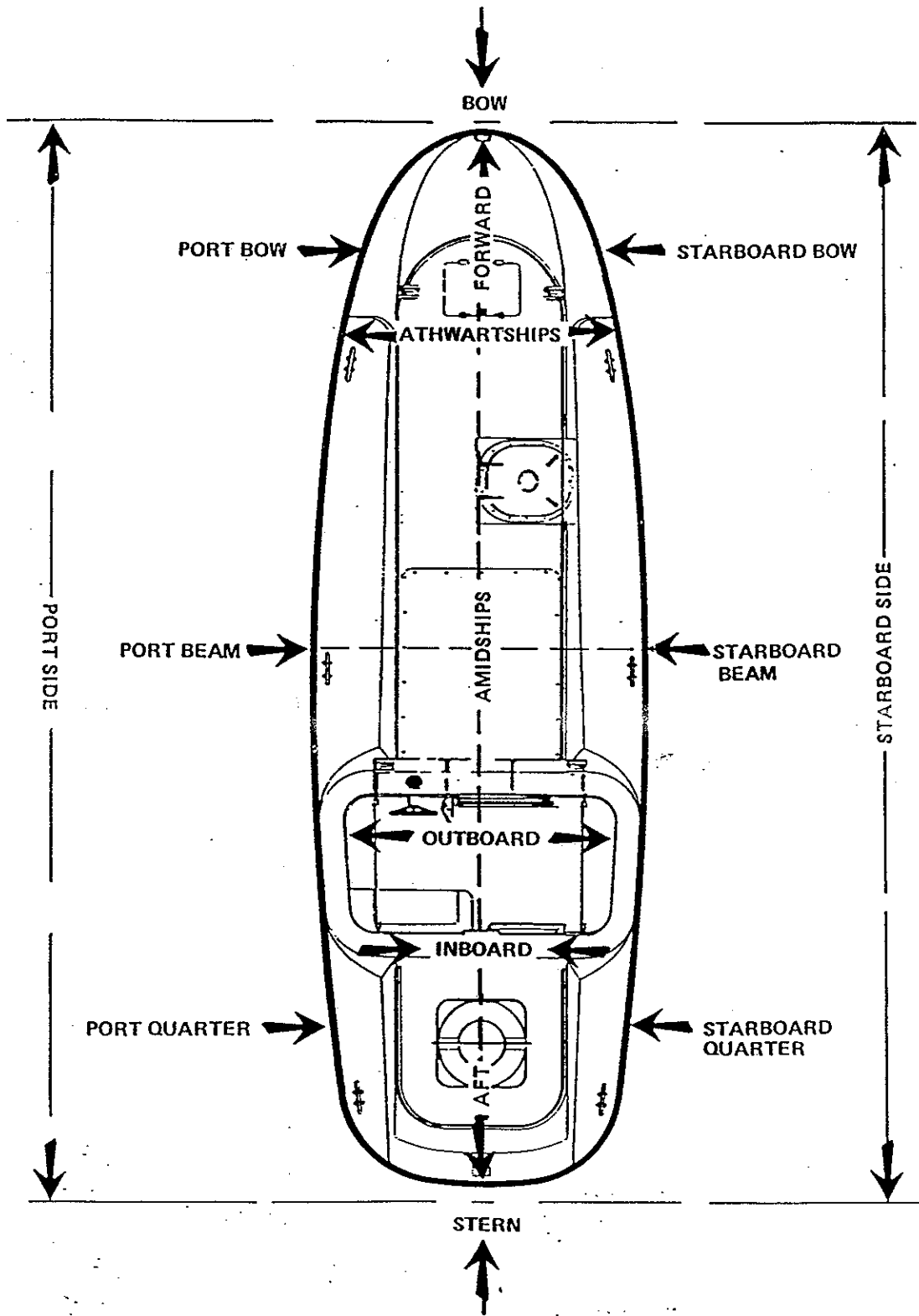
Content Activity:

II BOAT NOMENCLATURE AND TERMINOLOGY:

A. GENERAL (fig.1)

1. Bow- front end of boat
2. Foward- when you move toward the bow you are going foward.
3. Ahead- when the boat is going forward you are going ahead.
4. Port and Starboard bow- when facing the bow the front left is port bow and front right is starboard bow.
5. Amidships- the central or middle area of a boat
6. Starboard and Port beam- right center is starboard beam and left center is port beam.
7. Stern- the rear of a boat.
8. Aft- when you move in the direction of the stern.
9. Astern- when the boat moves in the direction of the stern.
10. Port and Starboard Quarter- when your facing foward the right rear is the starboard quarter and the left is the port quarter.

D.K. 21



(fig.1)

Instructor Notes:

Content Activity:

11. Other terms;

a. fore-and-aft anything running parallel to the center of the boat.

b. athwardships- anything running parallel from side to side

c. outboard- from centerline to either starboard or port.

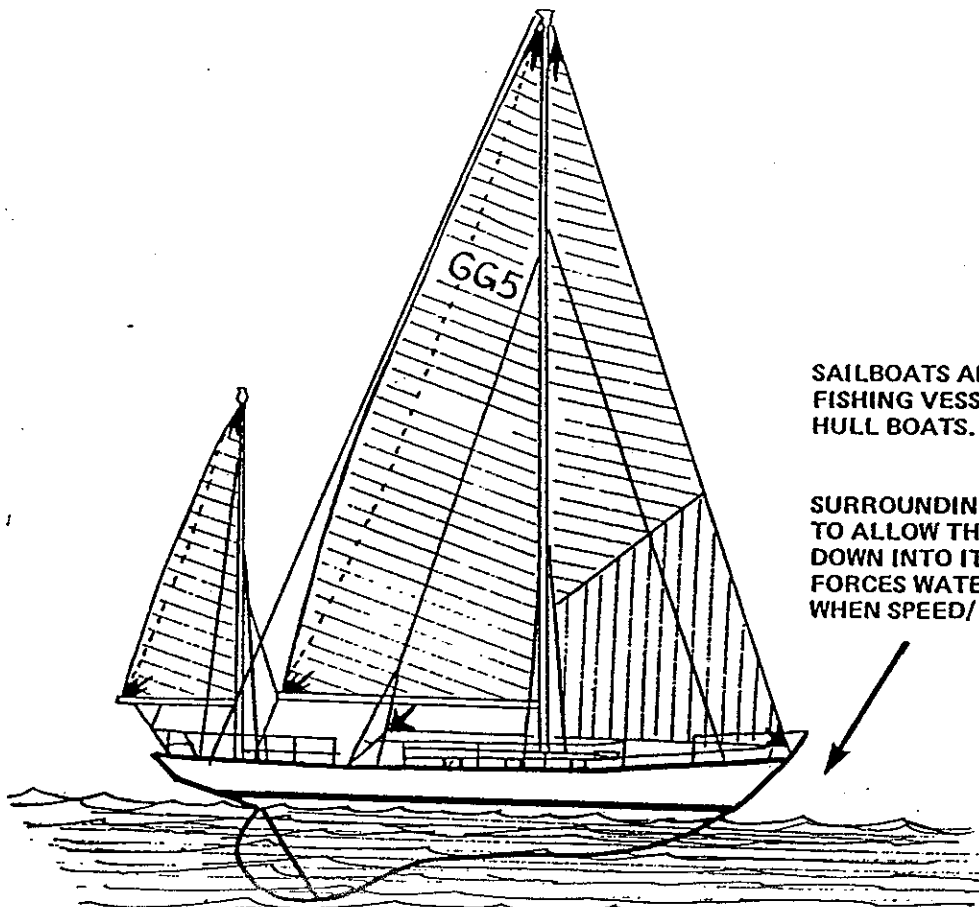
d. inboard- from either port or starboard to centerline.

B. HULL CONSTRUCTION

13
The hull is the main body of a boat and can have a considerable affect on the power and speed ratio of the boat. The hull consists of a structural framework and a skin or shell plating. The three types are;

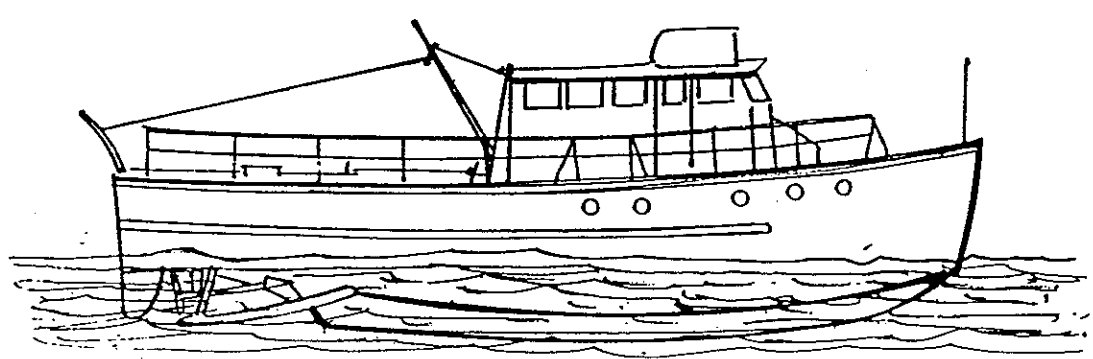
1. Displacement Hull- the surrounding water is displaced to allow the hull to settle into it. A displacement hull is actually pushed through the water. Trainee's to see(fig.2)

2. Planning hull- reacts in the same fashion as the displacement hull when it initially gets underway, but external forces at a certain point lift the hull up onto the surface of the water. This happens because of its shape. Once "on top" of the water the power/speed ratio is altered, very little power results in a (fig.3)



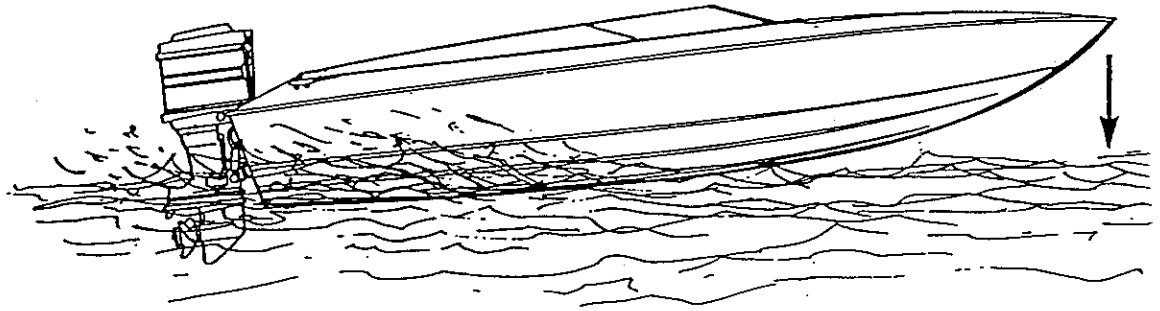
SAILBOATS AND MOST COMMERCIAL FISHING VESSELS ARE DISPLACEMENT HULL BOATS.

SURROUNDING WATER IS DISPLACED TO ALLOW THE BOAT'S HULL TO SETTLE DOWN INTO IT. DISPLACEMENT HULLS FORCE WATER AROUND THE HULL WHEN SPEED/POWER IS APPLIED.

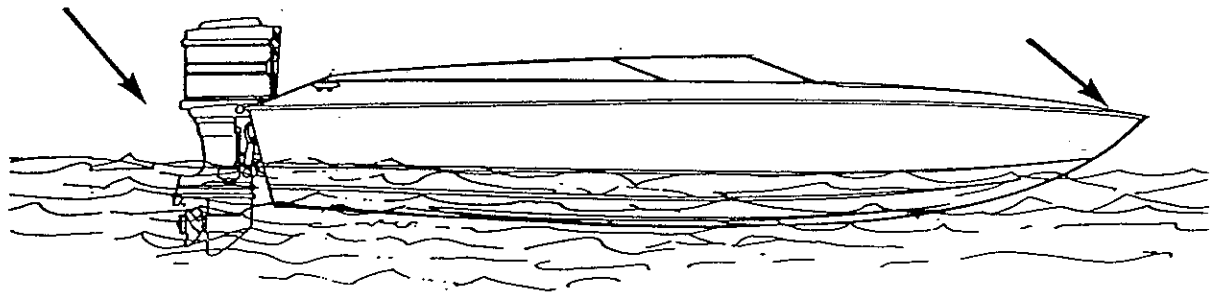


(fig. 2)

WHEN SPEED/POWER IS APPLIED THE PLANING HULL SKIMS ALONG THE SURFACE OF THE WATER



AT REST THE PLANING HULL AND DISPLACEMENT HULLS ARE BASICALLY THE SAME; OTHER THAN SHAPE



(fig. 3)

large increase in speed.

3. Semi-Displacement Hull- is a combination of some characteristics of the displacement hull and some characteristics of the planning hull. When speed is increased the boat will never go "on top" of water but will have a better power/speed ratio than a displacement hull.

NOTE: Rapid re-entry of either a planning hull or a semi-displacement hull will result in rapid deceleration.

C. KEEL

The keel is the backbone of the boat. It runs longitudinally, fore-and-aft, along the center bottom of the boat.

1. Bar Keel- is vertical or upright members for increased strength. Disadvantage is it extends below the bottom of the boat which increases the boat's draft.

2. Flat Plate or Flat Keel- may consist of an "I" beam fastened to the flat plate, or may be built up from a rider plate. This design is built within the boat's hull and does not increase draft.

D. Bow

Front of the boat which includes the forward portion of the hull.

1. The bow hull construction determines hull resistance as

Instructor Notes:

Content Activity:

the boat ~~as the boat~~ advances through the water.

2. Hull resistance develops from friction and wavemaking.

3. Wavemaking resistance depends on boat speed.

E. Stern

The rear portion of the boat.

1. profile, form and construction affects the way water is forced to the propellers.

F. Rudders

Control the direction of the boat.

1. vary widely in size, design and method of construction.

2. classified as balanced, unbalanced and semi-balanced.

3. the shape of the stern, the number of propellers, and the characteristics of the boat determine the type of rudder.

G. Propellers

Boats are driven by one or more propellers which move in spirals somewhat like the threads on a screw.

1. consist of blades and a hub with the area of the blade down at the hub called the ROOT and its outer edge called the TIP.

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2. the edge of the blade that strikes the water first is called the LEADING EDGE. the opposite is called the FOLLOWING EDGE.

3. the diameter of the screw is the diameter of the circle made by its tips and its circumference is called the TIP CIRCLE.

4. each blade has a degree of twist from the root to tip called PITCH.

5. single screws are referred to as "right-handed", and twin screws turn in opposite directions. port left-handed and the starboard right-handed.

H. Frames

The framing is what gives the hull its strength. There are two types.

1. transverse frames- form the ribs of the hull and extend athwartships and are perpendicular to the keel.

a. vary in size from bow to stern and give boat hull its distinct shape when skin is attached.

b. numbered from bow to stern for for easy reference.

2. longitudinal frames- provide hull strength and run fore-and-aft.

I. Decks

Instructor Notes:

Content Activity:

Is the seagoing floor of the boat.

1. adds to the strength of the hull by reinforcing the transverse frames and deck beams.

2. top of deck referred to as weather deck.

3. the "U" shape or angled plane is called the SHEER.

4. the the rounded athwardship curve is called the CAMBER.

J. Scuppers

Place where water flows overboard through holes on the port and starboard sides of deck.

K. Hatches

Are the seagoing doors of boat.

1. must be water tight if located on a seagoing wall (BULKHEAD).

2. on waether deck watertight by sealing to into a raised framework called COAMING.

L. Interior

The interior of a boat is divided by bulkheads, decks and hatches into a number of compartments.

1. watertight compartments are extremely important on boat and give boat water integrity.

2. the more water tight compartments on a boat the better.

Instructor Notes: _____ Content Activity: _____

the water tight integrity.

M. Boat Measurements

1. Overall Length- called LOA and is the distance from the foremost to the aftermost points on the boat's hull.

2. Waterline Length- the plane where the surface of the water touches the hull when a boat is normally loaded.

3. Beam and Breadth- measures of a boats width.

a. beam- distance between outside hull plating on one side to the plating on the other.

b. breadth- distance between the outside edge of a frame on one side to the outside edge of the same number frame on the opposite side.

N. Displacement

The amount of weight a boat can SAFELY carry. It is determined by gross tons, net tons, and deadweight tons.

1. gross tons- refers to the entire cubic capacity of a boat expressed in tons of 100 cubic feet.

2. net tons- expressed in tons of 100 cubic feet and is arrived by measuring the cubic content of cargo and passenger spaces.

3. deadweight tons- expressed