CHAPTER 13

AIRCRAFT AND SHIP IDENTIFICATION

As you learned in previous chapters, lookout duties are some of your most important duties. As a part of your lookout duties you must be able to identify aircraft, ships and, on occasion, submarines. This chapter covers the basics in identification procedures.

AIRCRAFT IDENTIFICATION

LEARNING OBJECTIVE: Explain the procedures for the identification of aircraft, including aircraft type, aircraft measurement, and other identification aids.

Aircraft identification is a very important asset to the Signalman on watch, so you must learn as much as you can to assist in the identification of aircraft.

Although this chapter will familiarize you with the most frequently used aircraft, you should guard against making positive identification hastily. The identity of every aircraft must be checked by even the most knowledgeable interpreter. You should study unidentified aircraft carefully, using all available references on recognition and identification. The dimensions and characteristics of all known aircraft are available from many sources, including *Aircraft of the World, Aircraft Armament Handbook (Characteristics and Performance) Eurasian Communist Countries,* and probably the most popular, *Jane's All the World's Aircraft,* just to name a few.

AIRCRAFT TYPES

When the scale or quality of imagery makes it difficult to identify the type of aircraft (jet or prop), you must rely on distinguishing characteristics to aid in identification. A single-engine jet, as opposed to a single-engine propeller-driven aircraft (fig. 13-1), has one or more of the following recognition characteristics:

- The wings are farther back from the nose.
- The widest part of the fuselage is near the center.
- The wings are usually angled back, inboard to outboard.

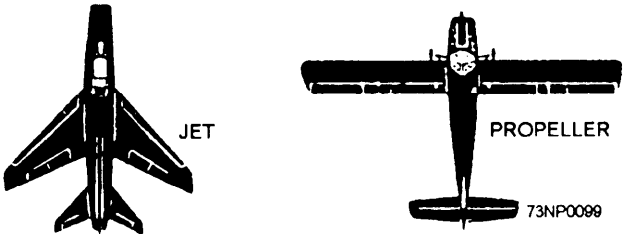

Figure 13-1.—Single-engine aircraft recognition characteristics.

- The wings usually have less surface area.
- The distance from the wings to the horizontal stabilizer is less than that from the wings to the nose.

There are fewer visible differences between multiengine jet aircraft and multiengine propeller aircraft than between the single-engine types. However, the twin and multiengine jets (fig. 13-2) usually have one or more of the following characteristics.

- The wings are usually angled back, inboard to outboard.
- The engines are usually suspended from the wings.
- The wings have less surface area.

AIRCRAFT MEASUREMENTS

The two major characteristics in aircraft interpretation are the size of the image and the shape of various components. Accurate measurements are vital because the general appearance of certain aircraft often may be so similar that only the difference in

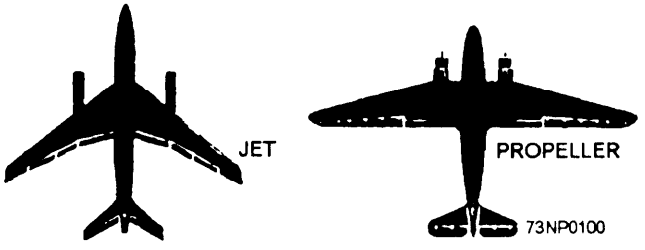

Figure 13-2.—Twin and multiengine aircraft recognition characteristics.

wingspan provides the final clue for identification (fig. 13-3).

IDENTIFICATION AIDS

The study of aircraft shadows can often lead to identification. Since shadows tend to overemphasize aircraft features, it is sometimes better to study the shadow rather than the aircraft itself. Wing shadows, however, are misleading because of their relation to the direction of light, upsweep of the wings or dihedral, and the ground angle of the aircraft. Nose shadows are helpful; even transparent noses will cast a shadow where there is rear light. Under the conditions of rear lighting, the shadow of the nose, engine, nacelles, and gun turrets are well defined. Fin and rudder shadows also should be carefully studied since they provide important recognition features.

Wing Characteristics

Because of their size and shape, the wings of aircraft are perhaps the easiest aircraft component to identify. The wings constitute the most important identification feature on vertical imagery. The identification features of the wings are their overall shape (fig. 13-4) and the shape of their tips (fig. 13-5). Wing shapes are generally classified according to their taper, amount of sweepback, design of leading edge, symmetry, or delta configuration, as shown in figure 13-5. Wing sweepback is measured as shown in figure 13-3. Recent technological advances have developed a unique ultraforward-swept wing (fig. 13-6), which may lead to a new line of super-fast tactical fighters with enhanced maneuverability.

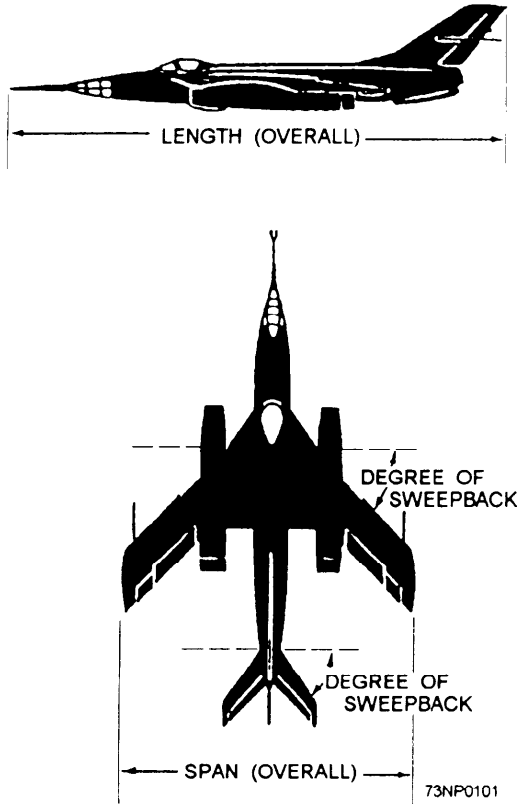

Figure 13-3.—Aircraft measurements.

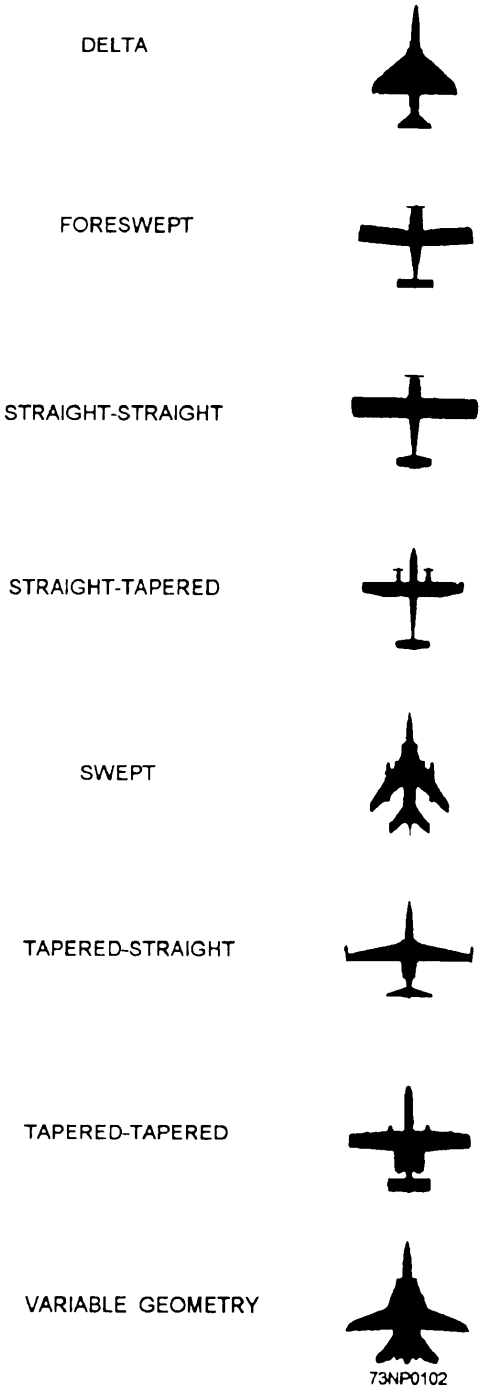

Figure 13-4.—Wing shapes.

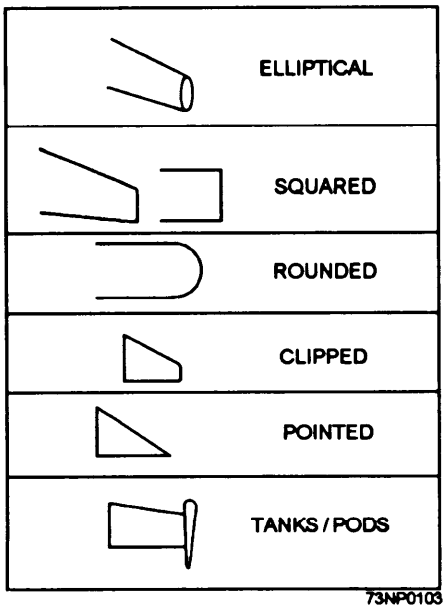

Figure 13-5.—Wingtip shapes

Engine Criteria

The methods of determining engine type (jet or prop) were previously discussed under Aircraft Types. Identification of the type, number, and location of engines, used in conjunction with two keys, will help you identify aircraft. For example, the Soviet TU-95 BEAR is the only turboprop-powered heavy bomber in the world. The wing mounts four turboprop engines with coaxial, contrarotating propellers. As shown in figure 13-7, all of the engine nacelles protrude forward of the wing, but only the inboard engines have landing gear nacelles that extend aft of the wing.

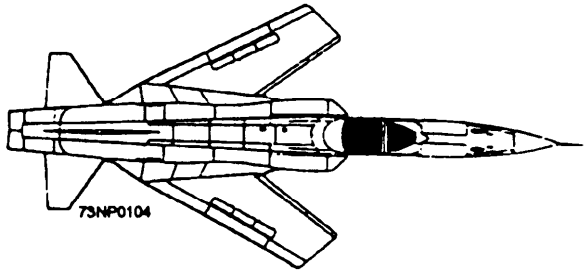

Figure 13-6.—Ultraforward-swept wing.

Figure 13-7.—Silhouette of the TU-95 BEAR

Fuselage Types

Use of the fuselage in aircraft recognition is primarily restricted to its size and shape (fig. 13-8) and the shape of the nose section (fig. 13-9). Nose sections may also be glazed or have a shock cone. In some jet models, the air intake may be located if the imagery is of satisfactory quality. Seaplanes have very distinct features in their fuselage design, but such design characteristics are often difficult to determine on vertical imagery. Shadows can be of great help in this regard.

Tail Surfaces

Recognition characteristics of tail surfaces are generally the shape and location of the horizontal stabilizer, since the vertical stabilizer is difficult to analyze in vertical imagery. The basic features recognizable in the horizontal stabilizer are very similar to those used for identifying wing surfaces: shapes and tip shapes.

Another feature that can be of help is the position of the horizontal stabilizer. For example, the horizontal stabilizer may be located (1) on the axis (centerline) of the fuselage, (2) below the centerline, (3) above the centerline, or (4) on the vertical stabilizer, above the fuselage. (See fig. 13-10.)

HELICOPTER IDENTIFICATION

Helicopters are among the most easily recognizable military equipment. The term *rotary-wing aircraft* includes those aircraft that depend primarily on lift from their rotary-propulsion systems. Also, the maneuverability and the forward thrust are controlled either by the rotor system or by an auxiliary engine system. For our discussion, aircraft meeting this criteria are called helicopters.

The primary recognition features used in helicopter identification are the rotor system and the number of rotor blades (never less than two). After determining the type of rotor system and the number of blades, you should refer to the appropriate aircraft book for final determination of the model. *Military Aircraft of the World* is a good source.

Other factors that will assist you in helicopter identification are the shapes of the fuselage and tail boom and the presence or absence of wings.

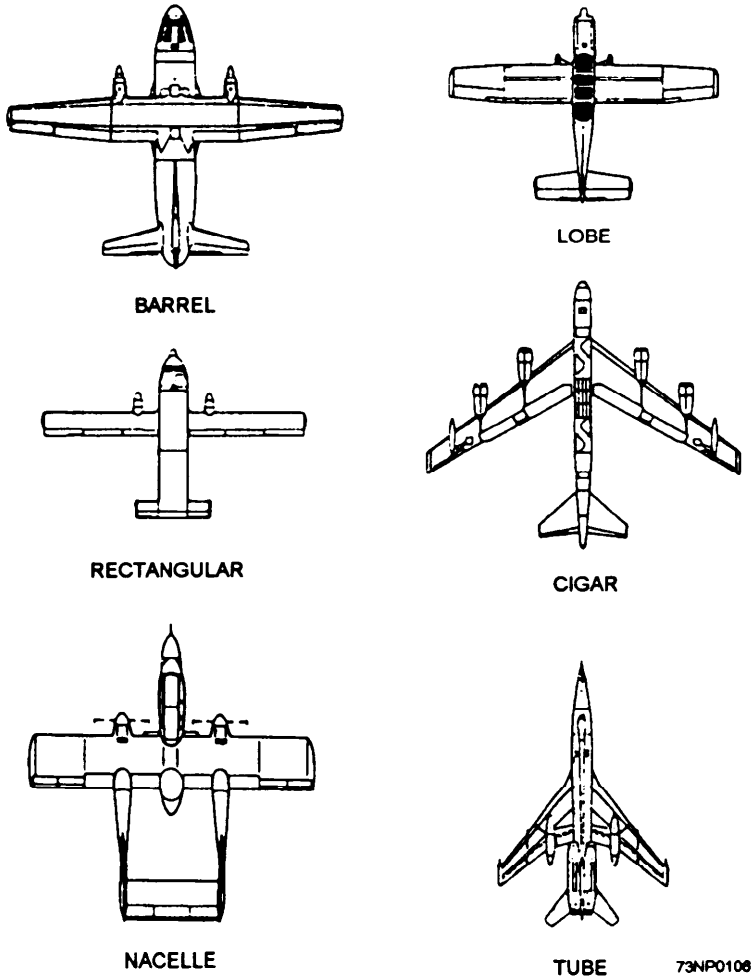

Figure 13-8.—Fuselage shapes

Figure 13-9.—Nose shapes.

Figure 13-11 shows these and other less important recognition features.

AIRCRAFT IDENTIFICATION CONCLUSION

The different types of aircraft presently in use by military and naval powers are so numerous that only an expert can be expected to know and recognize them all. Bombers, fighters, fighter-bombers, and reconnaissance planes may be propeller-driven or jet; single- or multiengine; straight-wing or delta-wing; or a combination of these.

Instruction in identification of aircraft should consist primarily of classroom lectures, slides, and motion pictures, together with on-the-job instruction when aircraft are operating in the ship's vicinity.

Determination of the friendly or unfriendly character of aircraft is a prime mission of the ship's

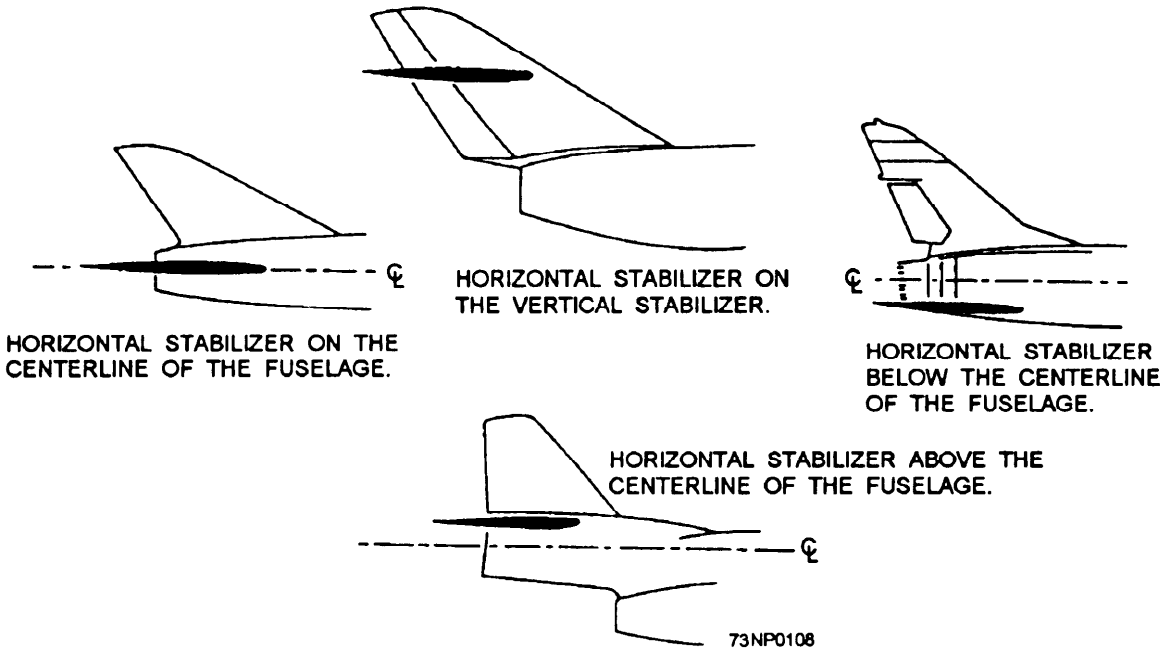

Figure 13-10.—Position of the horizontal stabilizer.

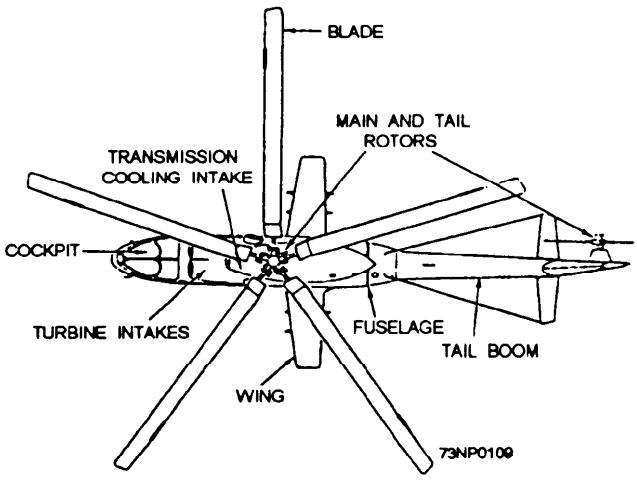

Figure 13-11.—Helo recognition features

installed IFF (identification friend or foe) system, which can be used to interrogate aircraft long before the aircraft is in visual range. Exact names and designations of aircraft not only may be hard to get but also may prove unimportant. Personnel should be taught to distinguish between the various classes of aircraft: bombers, fighters, transports, and so forth.

SHIP IDENTIFICATION

LEARNING OBJECTIVE: Explain the procedures for identifying naval ships, including combatants, auxiliaries, and amphibious ships.

Ship identification requires the same type of instruction as for aircraft identification. It is possible here to place more emphasis on on-the-job training, because wide variations in ship types are encountered in normal operations on the high seas.

Recognizing ships at sea is as important as recognizing airborne aircraft. Since surface vessels travel in two dimensions and are slower than aircraft, they are much easier to identify visually. Ships normally should be identified while they are still distant enough to present only a silhouette to the observer. The type/classes of ships should be determined from their silhouette long before their hull numbers or names can be distinguished. The first determination to be made is whether the vessel is a naval or merchant ship.

In general, naval ships do not appear as bulky as merchant ships. The naval ships have flowing lines and usually have less deckhouse and superstructure. Virtually all maritime powers paint their naval ships some shade of gray or blue-gray that blends easily with the ocean background. When close enough for colors to be distinguishable, merchant ships can easily be identified because they are painted in a variety of colors. During peacetime another indication of naval-merchant character of a vessel is the presence of visible weapons. The absence of guns may have little significance, but their presence almost certainly indicates a naval vessel. Merchant ship identification will be covered later in this chapter.

SURFACE SHIPS

There are many types of surface ships, such as combatants, auxiliary ships that support combatants, and auxiliaries called special-purpose ships (they perform specific functions), and amphibious. For example, replenishment ships and repair ships are auxiliary ships, and icebreakers and intelligence collectors are special-purpose ships. The *Glossary of Naval Ship Types* is a guide to the classification and typing of non-U.S. Navy ships and craft. *Jane's Fighting Ships* is also a good reference for the identification of non-U.S. and U.S. Navy ships.

COMBATANTS

The purpose of combatants is to engage enemy ships in naval warfare. Combatants are assigned various missions, depending primarily on their armament and secondarily on characteristics such as size, speed, and maneuverability. The following ships fall into the combatant category: aircraft carriers, battleships, cruisers, destroyers, and frigates.

Aircraft Carriers

Aircraft carriers (CV/CVNs) are generally the largest warships afloat and are the major offensive surface ships of the U.S. fleet. Aircraft are their chief weapons, and missions are determined by the type of aircraft carried. The high freeboard and expansive, uncluttered flight deck give the aircraft carrier a distinctive appearance. On many carriers, the superstructure or island (usually offset to the starboard side of the flight deck) is the only prominent feature of the flight deck. Figure 13-12 shows examples of different classes of aircraft carriers.

Cruisers

Cruisers are multimission antiair (AAW), antisubmarine (ASW), antisurface (ASUW) surface combatants capable of supporting carriers, battle groups, and amphibious forces or of operating independently. They usually measure about 550 to 700 feet in length and displace from 7,000 to 15,000 tons. The trend in modern cruisers features tall, solid towers amidships instead of separate pole masts and cylindrical stacks. These midships towers often incorporate masts, stacks, and other superstructure elements in various combinations. See figure 13-13 for examples of cruisers.

The bow and forward superstructure of the modern helicopter cruiser (fig. 13-14) resemble those found on cruiser warships. The stern section consists of level, uncluttered deck space used for launching and landing operations. The bow section contains weapons and electronics equipment. The primary mission of the helicopter cruiser is ASUW.

Destroyers

Destroyers (DD/DDGs) are versatile, multipurpose warships of moderate size (3,000 to 8,000 tons and 400 to 600 feet long) and are equipped to perform ASW operations, while guided-missile destroyers are multimission and perform AAW and ASUW operations. Modern U.S. destroyers and guided-missile destroyers are called upon to perform primarily in a battle force combatant role. They operate in support of carrier or battleship battle groups, surface action groups, amphibious groups, and replenishment groups. Destroyers typically have two large stacks with considerable rake, light mast, superimposed gun mounts forward, ASW gear aft, and torpedo tubes topside. Figure 13-15 shows examples of destroyers.

Frigates

Frigates (FF/FFGs) fall into the general category of smaller major combatants whose offensive weapons and sensors are used for a particular warfare role, such as screening support forces and convoys. Frigates range in length from 300 to 400 feet and displace 1,500 to 4,000 tons. They usually have only one gun mount forward, while the aft armament often consists of ASW and/or AAW weaponry. A helicopter pad frequently is present in the stern area. (See fig. 13-16.)

MINOR COMBATANTS

There are numerous types of minor combatants, such as minesweepers and patrol boats. Many countries that either do not require or cannot afford larger ships use these smaller combatants for river and coastal defense patrol.

Many of the newer patrol boats are armed with missiles, and some are equipped with hydrofoils, or air cushions, which greatly increase their firepower, speed, and maneuverability. Figure 13-17 is an example of a minor combatant.

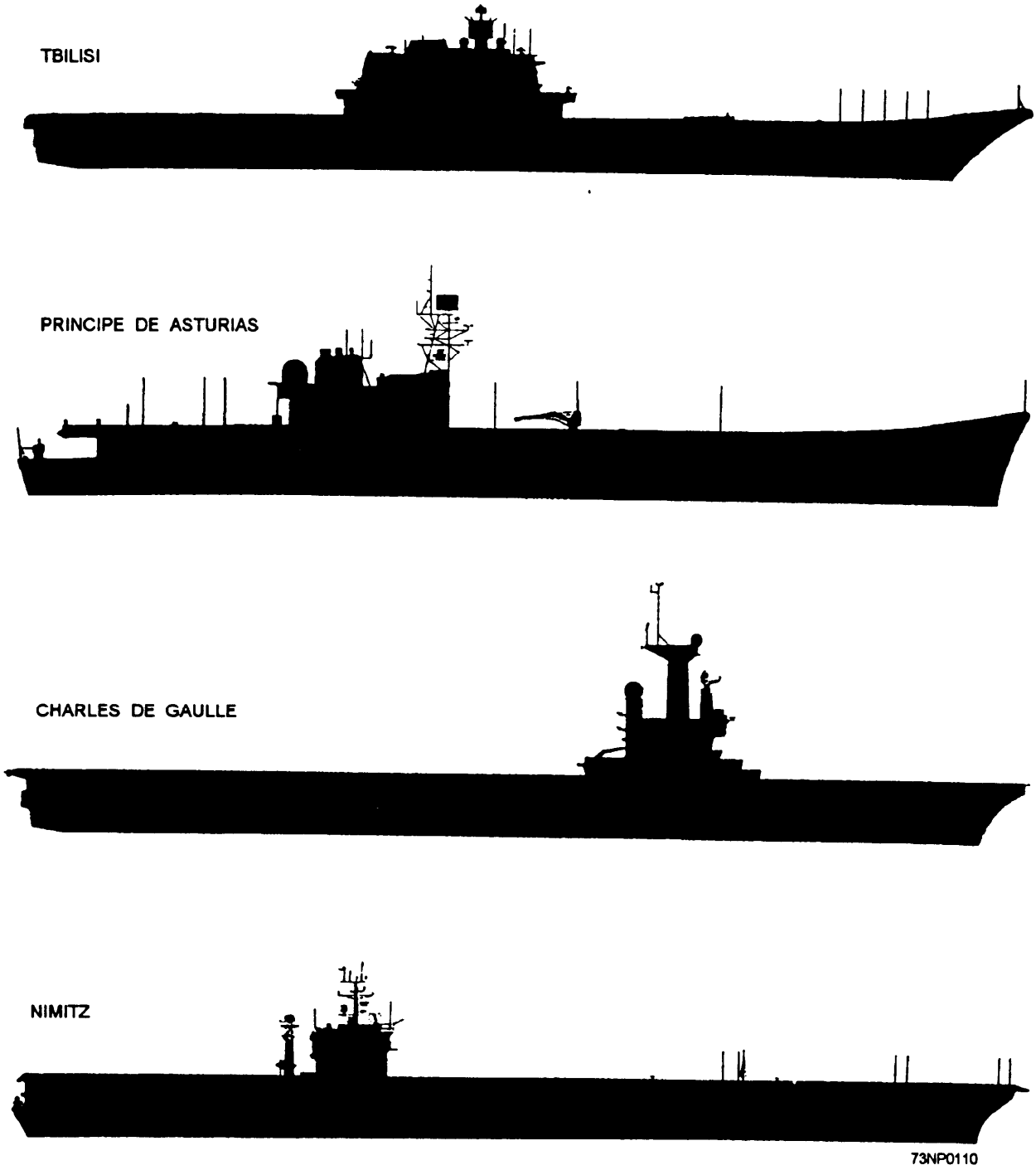

Figure 13-12.—Classes of aircraft carriers.

AMPHIBIOUS SHIPS

Amphibious ships are designed to move combat personnel and equipment ashore. With the exception of shore bombardment, the armament of amphibious ships is usually intended for defensive purposes only. We will discuss a few of the amphibious ships in the following paragraphs.

The largest amphibious ships (LHDs, LHAs) can be identified by the large boxlike superstructure. They measure from 800 to 850 feet and displace 28,000 to 40,000 tons. Amphibious command ships (LCC) can be identified by their visible electronic gear; they measure 620 feet and displace 19,000 tons. Amphibious transport docks (LPDs) can be identified by their having weaponry forward and a flight deck

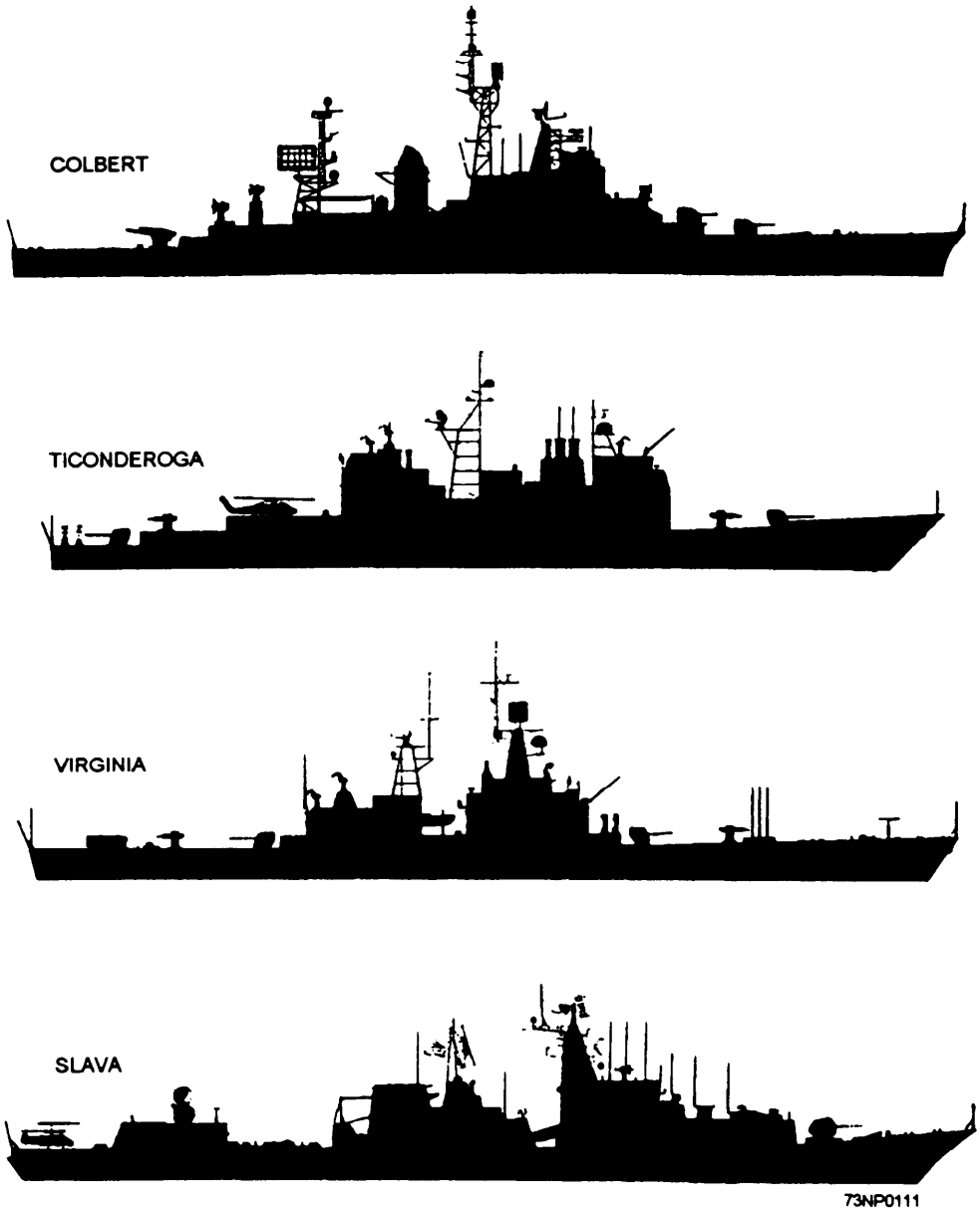

Figure 13-13.—Classes of cruisers.

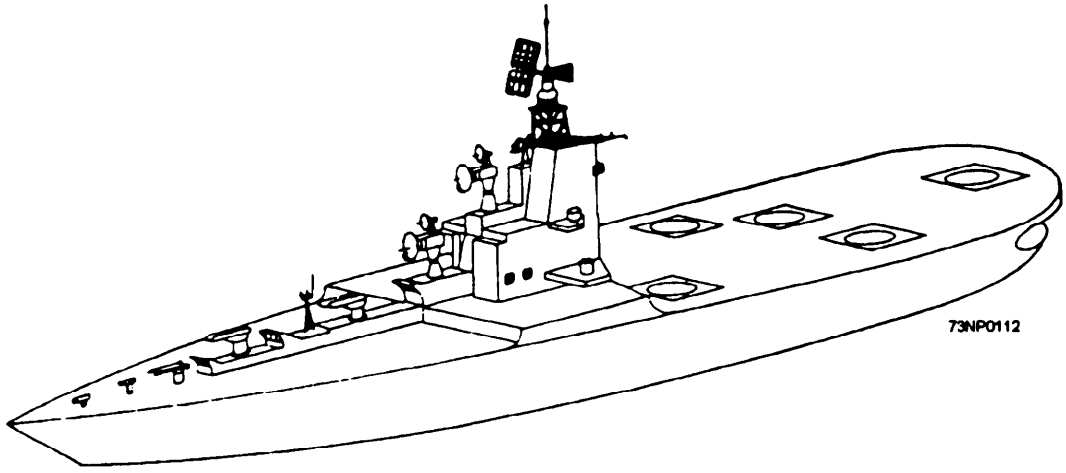

Figure 13-14.—Helicopter cruiser.

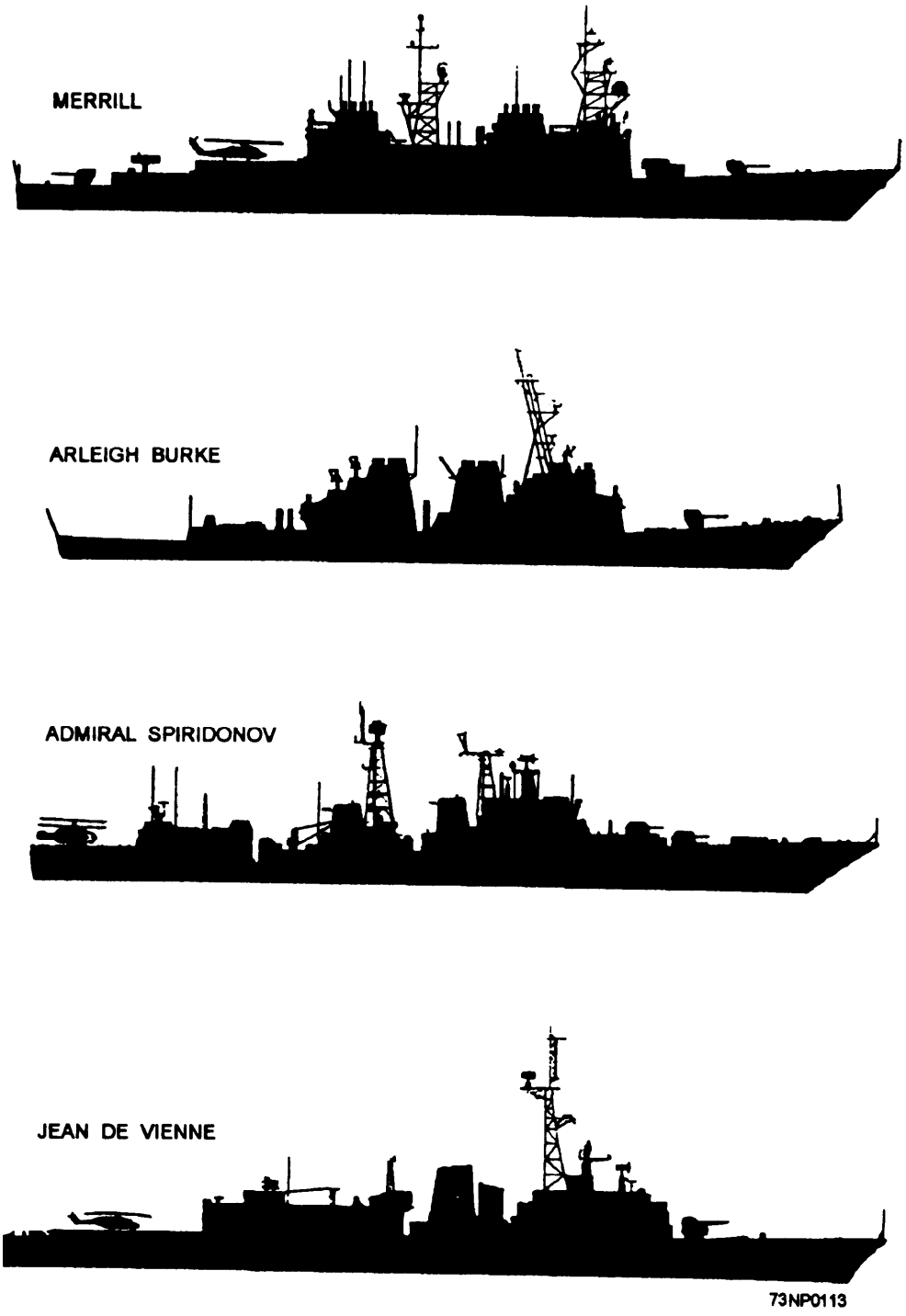

Figure 13-15.—Classes of destroyers.

aft. They include two helicopter landing pads, a fold-down ramp gate at the stern, and topside cranes and other machinery. They measure 570 feet and displace 17,000 tons. Small amphibious ships (LSTs) are characterized by the ramp extending from the forward part of the ship. They measure about 520 feet and displace 8,450 tons. Small Soviet ships are usually characterized by a superstructure aft and a long, open deck area forward. Figure 13-18 shows examples of amphibious ships.

AUXILIARY SHIPS

There are many types of auxiliary ships that perform various duties. They range from oilers to repair ships. They are usually lightly armed for

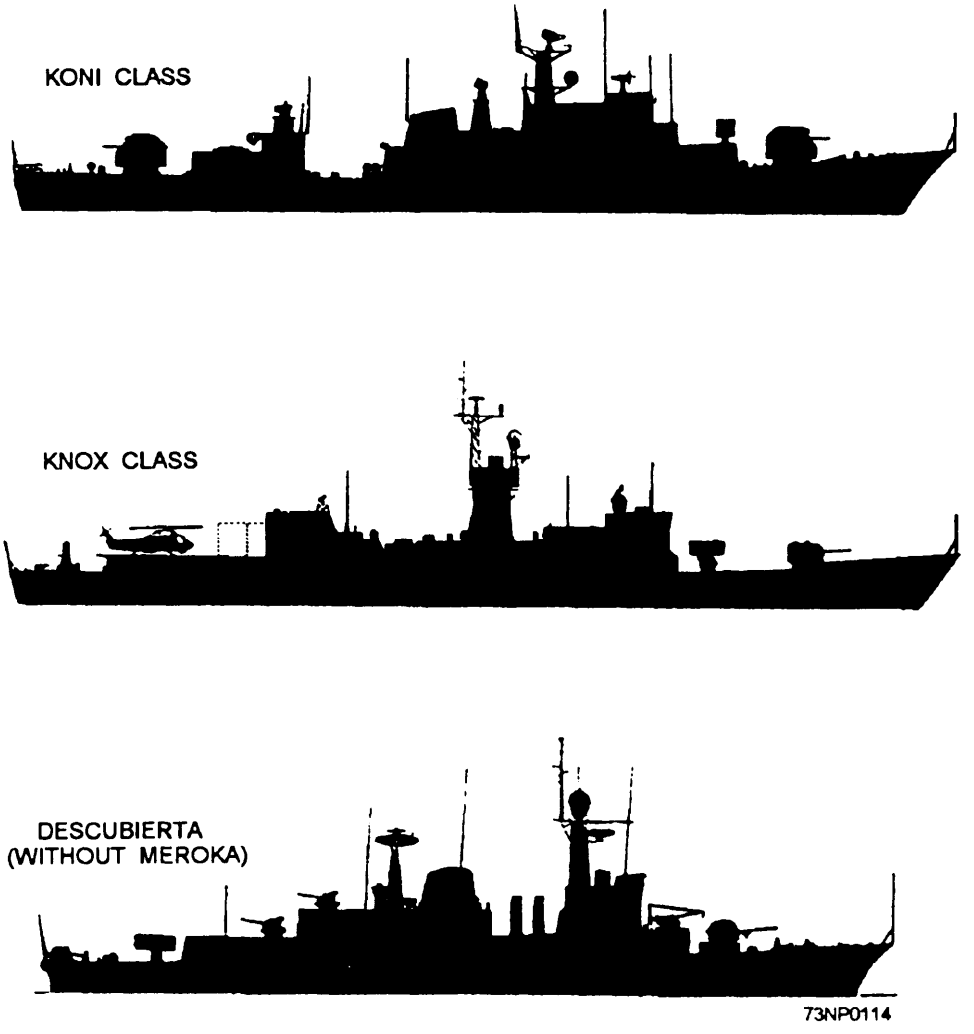

Figure 13-16.—Classes of frigates.

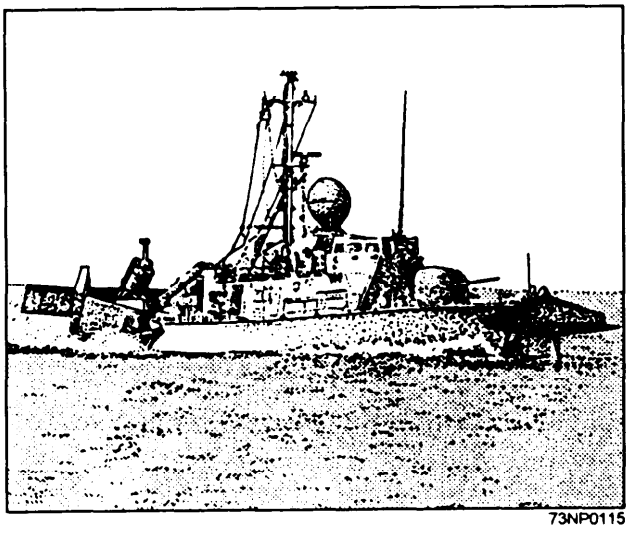

Figure 13-17.—Pegasus-class hydrofoil.

self-defense and rely mainly on combatants for protection. They are constructed in various sizes and configurations unique to their role. Many auxiliary ships, especially those used for replenishment and repair, have cranes and booms on deck that are used for transferring equipment, supplies, and fuel to the fleet.

SHIP IDENTIFICATION CONCLUSION

The need for rapid and accurate identification of Soviet ships is important with the number of Soviet naval sightings throughout the world. Figure 13-19 shows the silhouettes of the most commonly sighted Soviet warships. To help you translate Russian ships' names, figure 13-20 is a transliteration table to convert the Russian alphabet into the English alphabet. You must familiarize yourself with both the silhouettes and the transliteration table to be able to identify, on sight, ships of the Soviet Navy.

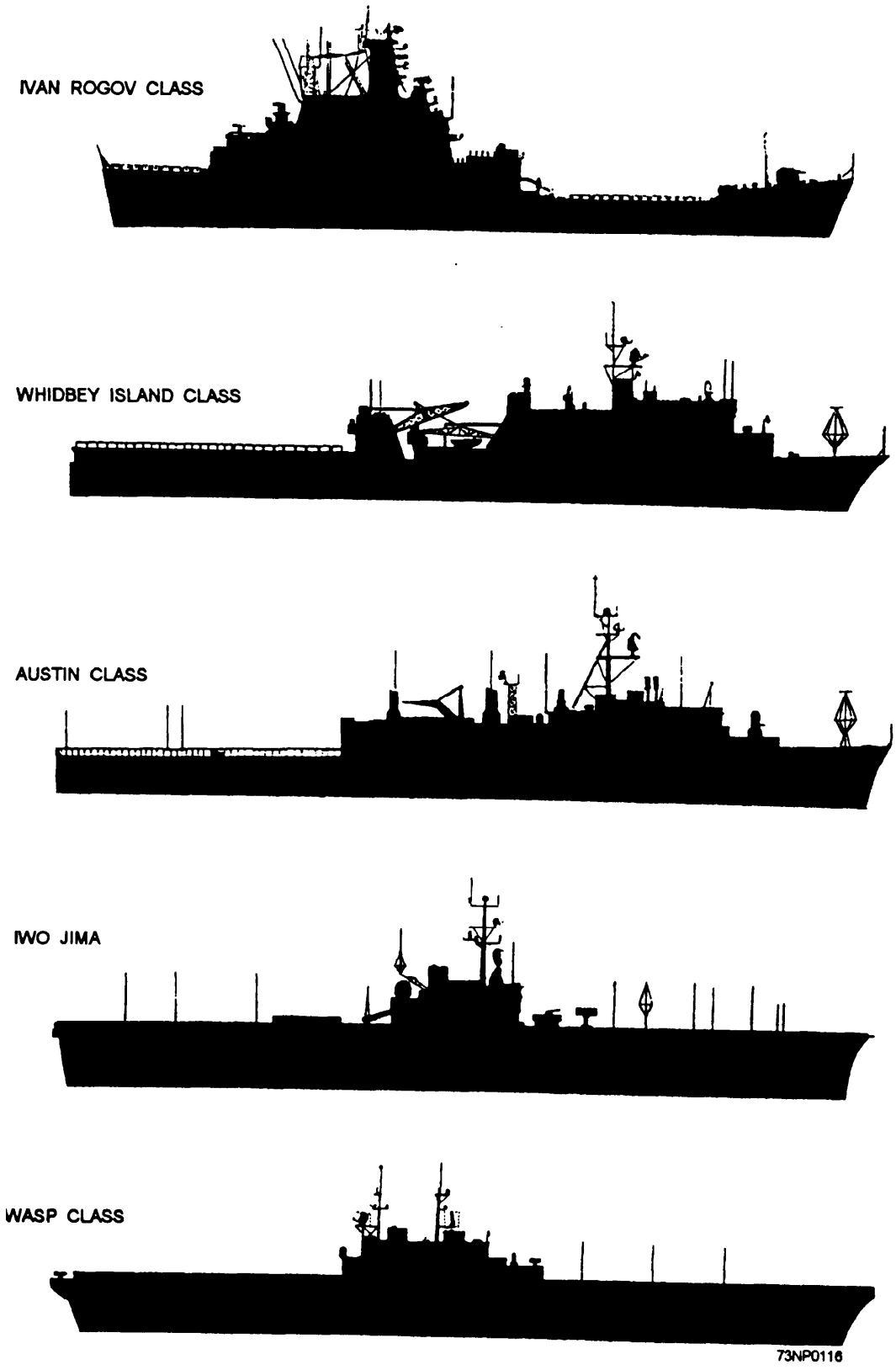

Figure 13-l8.—Classes of amphibious ships.

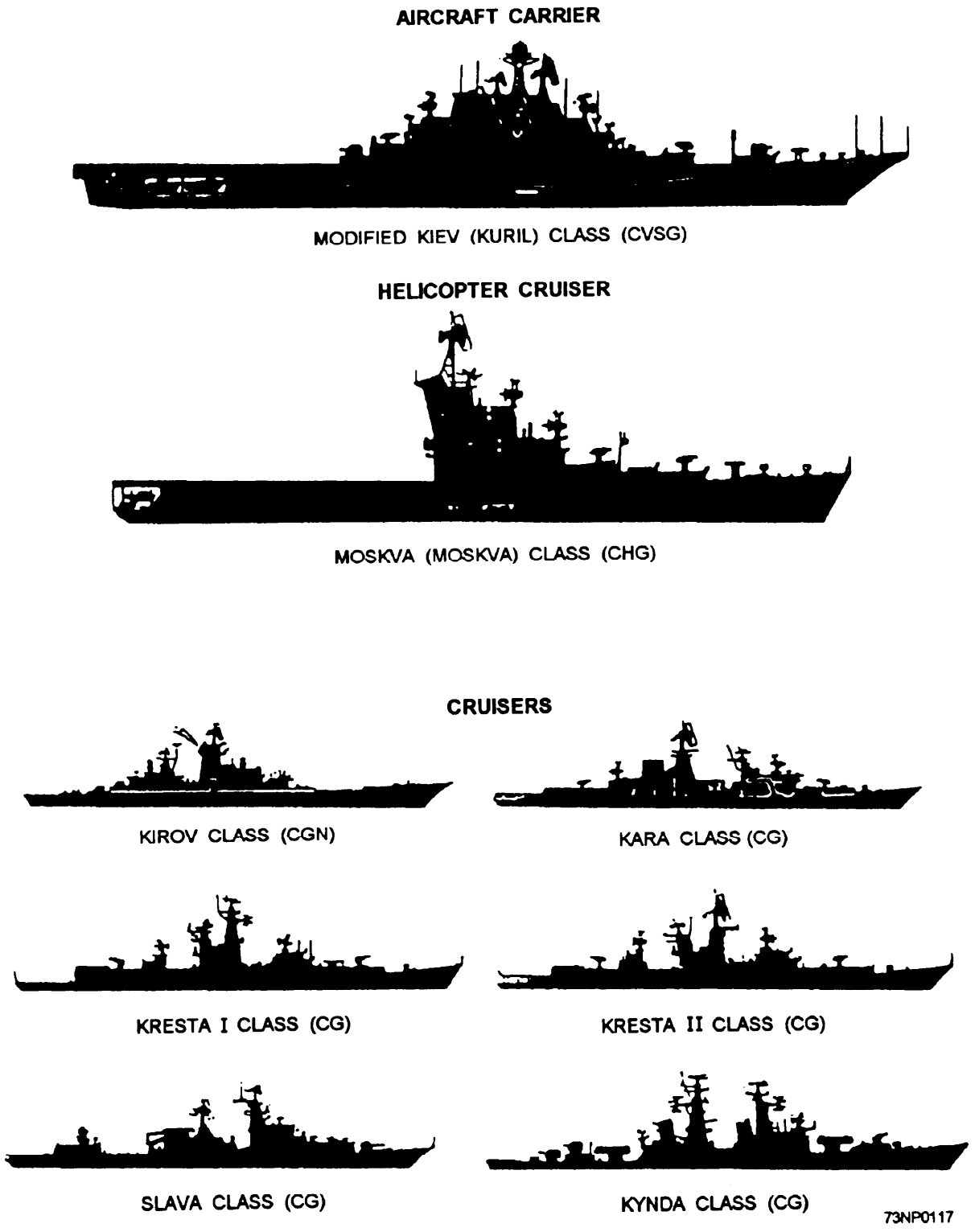

Figure 13-19.—Recognition silhouettes of Soviet ships page 1 of 3.

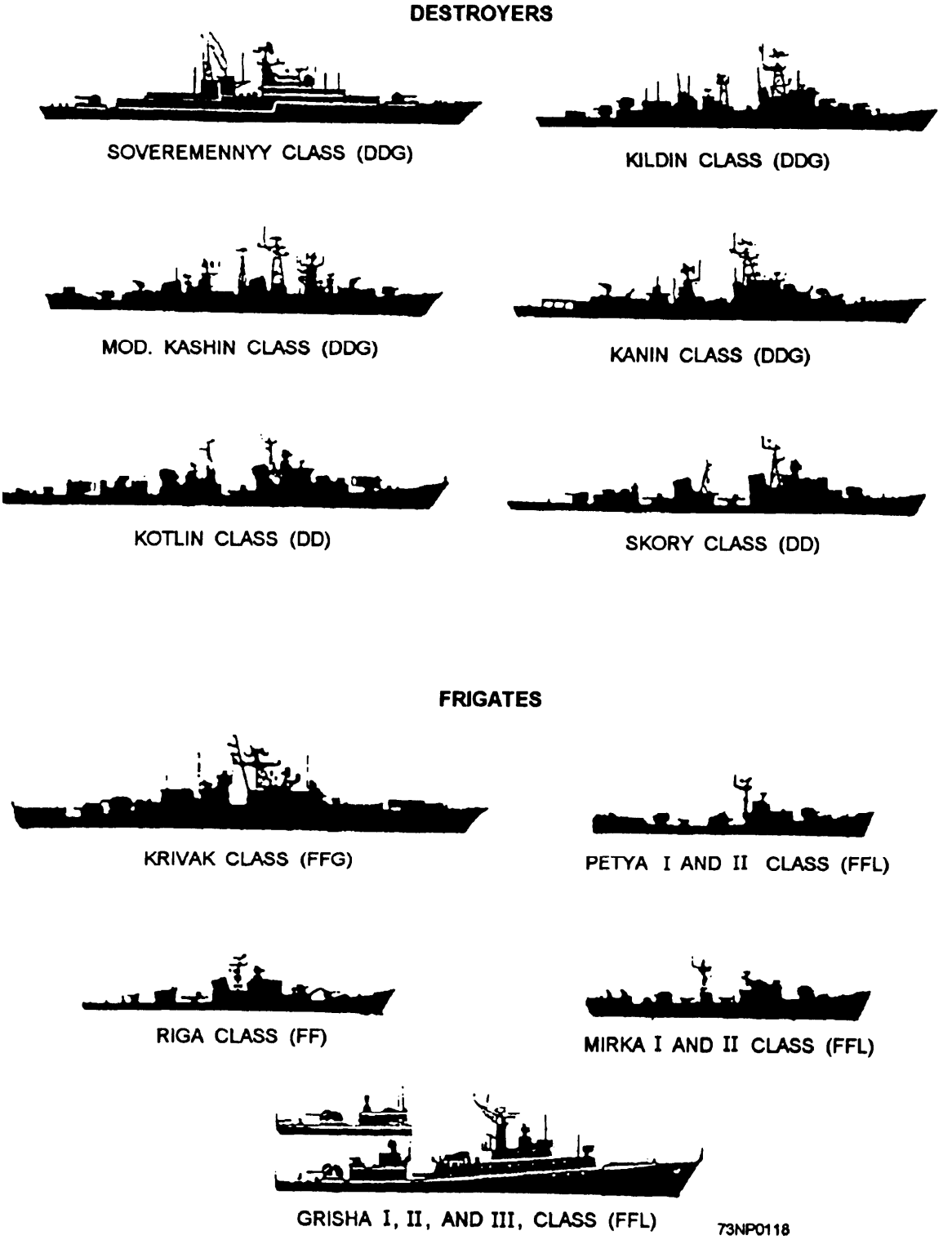

Figure 13-19.—Recognition silhouettes of Soviet ships, page 2 of 3.

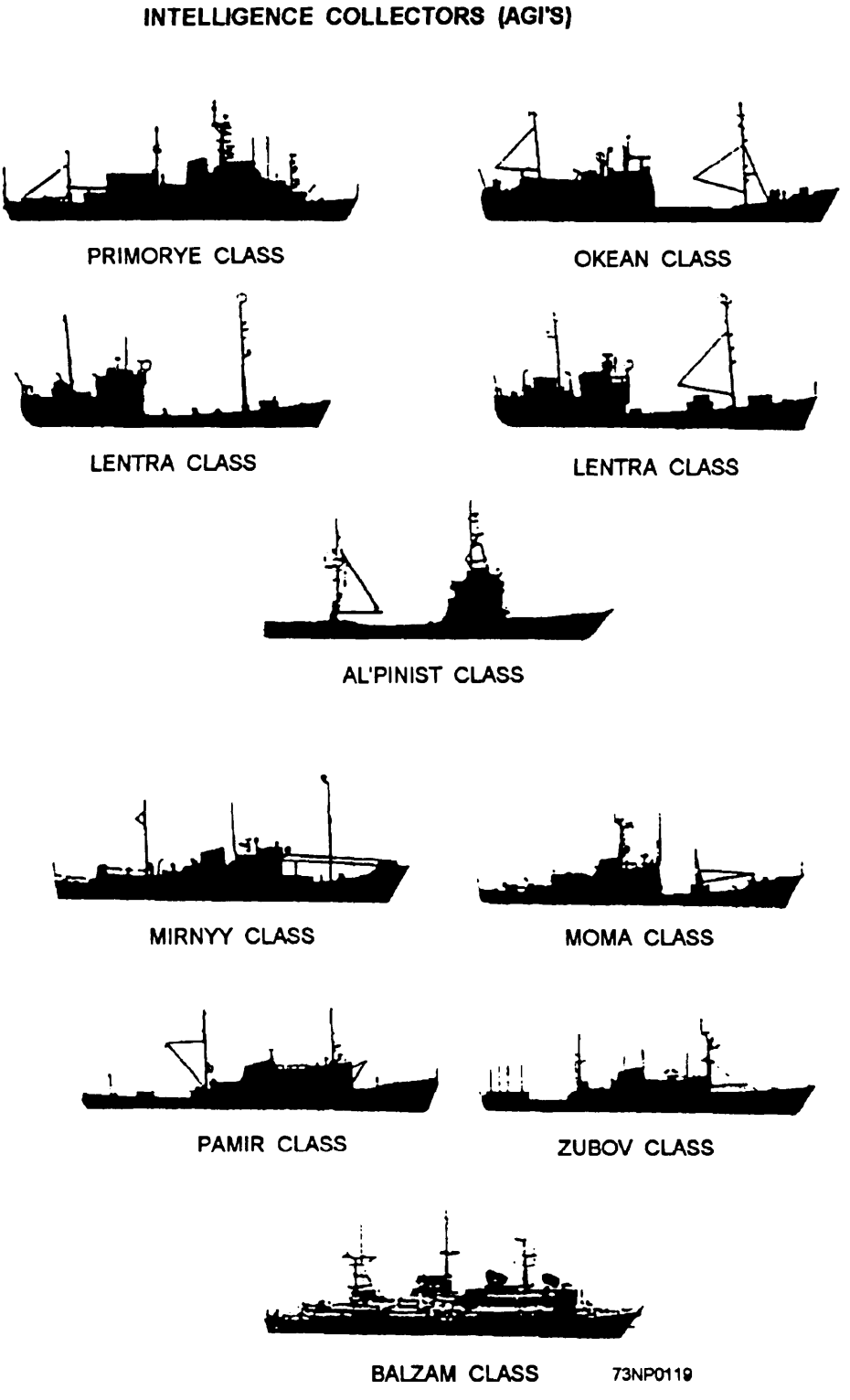

Figure 13-19.—Recognition silhouettes of Soviet ships page 3 of 3.

CAPITAL LOWER CASE	ENGLISH TRANSLITERATION	PRONOUNCED	CAPITAL LOWER CASE	ENGLISH TRANSLITERATION	PRONOUNCED	CAPTIAL LOWER CASE	ENGLISH TRANSLITERATION	PRONOUNCED
А а	A	like *a* in father	Л л	L	like *l* in well	Ц ц	TS	like *ts* in mats
Б б	B	like *b* in bell	М м	M	like *m* in stem	Ч ч	CH	like *ch* in check
В в	V	like *v* in vent	Н н	N	like *n* in pen	Ш ш	SH	like *sh* in shine
Г г	G	like *g* in get	О о	O	like *o* in more	Щ щ	SHCH	like *sh-ch* fresh cheeks
Д д	D	like *d* in debt	П п	P	like *p* in pet			
Е е	E	like *e* in debt or yet	Р р	R	like *r* in error	Ы ы	Y	like *i* in hit
			С с	S	like *ss* in mess	Ь ь	(none)	(none) (soft sign)
Ж ж	ZH	like *s* in measure	Т т	T	like *t* in tell	Э э	E	like *e* in bet
З з	Z	like *z* in lazy	У у	U	like *oo* in boot	Ю ю	YU	like *u* in mute
И и	I	like *ee* in meet	Ф ф	F	like *f* in effect	Я я	YA	like *ye* in yard
Й й	Y	like *y* in boy	Х х	KH	like *ch* in Scottish word *loch*			
К к	K	like *c* in calf						

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Figure 13-20.—Transliteration table of the Russian alphabet.

SUBMARINE IDENTIFICATION

LEARNING OBJECTIVE: Explain the procedure for identifying submarines, including recognition features and the recognition coding system.

Submarines are the most elusive of all naval ships. To locate and prosecute (track) a submarine successfully is a formidable task, one to which a good portion of our Navy is devoted. In this section we discuss submarine recognition features, including nomenclature and profiles.

RECOGNITION FEATURES

The exterior view of submarines presents a very low silhouette; this is because submarines have a low center of gravity and, therefore, are normally two-thirds submerged while on the surface (fig. 13-21). The exterior or hull of submarines is cylindrical and gradually tapers forward and aft to become the bow and stern respectively.

On older conventional submarines, the superstructure deck (called the main deck) extends virtually from the tip of the bow to near the stern. The deck is generally level. Beginning near the midships section, the deck rises gradually in the direction of the bow to a height of about 10 feet above the waterline. The freeboard of the after end of the main deck is about 4 feet.

Modern submarines still retain most design features developed and proven over the years, but new external styling is evident (fig. 13-22). The basic hull shape resembles a torpedo, with a rounded nose and control planes at the stern set at right angles to each other. Other surfaces show streamlined fairing.

RECOGNITION CODING SYSTEM

Most submarine recognition manuals use a visual coding system based on a general profile appearance (sail shape being the primary factor), sail placement

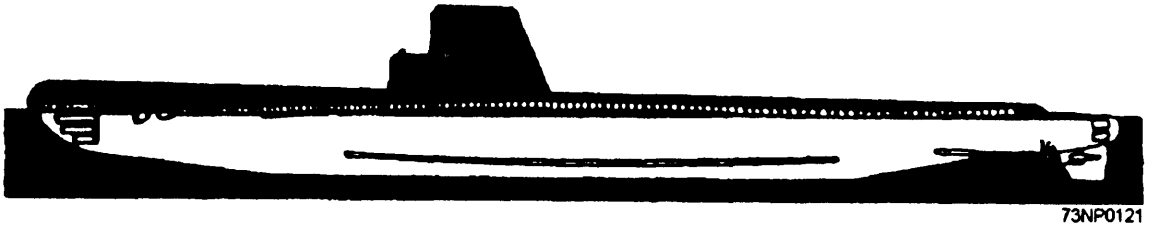

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Figure13-21.—Profile of a submarine.

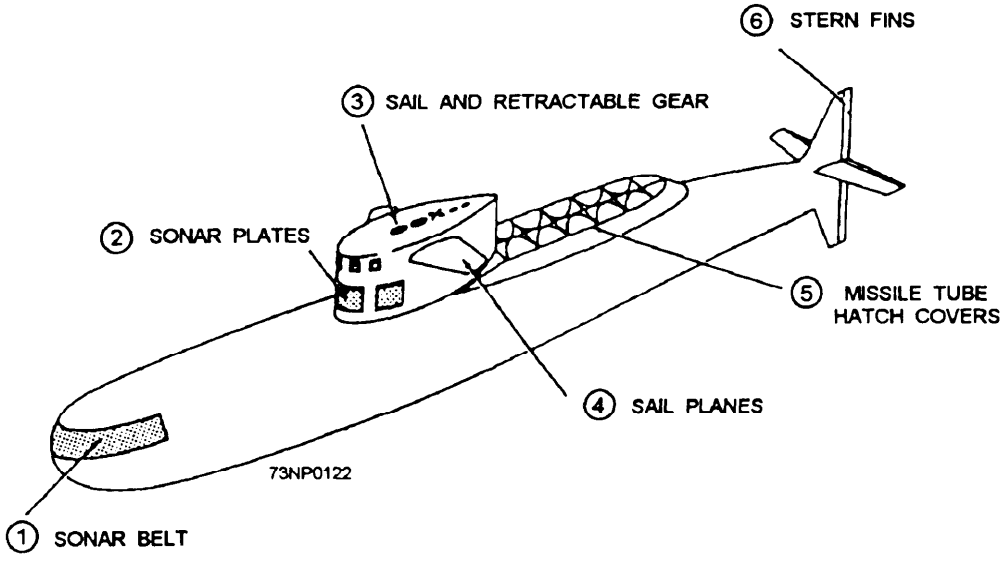


Figure 13-22.—Modern submarine.

on the hull, and bow profile. The visual coding approach is based on examining the profile appearance of a given submarine and assigning numerical values that best correspond with illustrated examples appearing in selected appearance group coding. Three factors are usually sufficient to identify a class; thus each submarine class has a three-digit number. In cases where several submarines possess the same appearance code number, their profile and photographs should be carefully compared to distinguish between them.

General Appearance Coding

Surface submarines and partially submerged submarines are best identified by their sail configuration; hence, the sail shape is the most important factor in coding the general appearance of submarines. (See fig. 13-23.)

Sail Placement Coding

The system for coding the sail placement parallels and reinforces the system outlined under General Appearance Coding. Generally, the sails of newer submarines are placed closer to the bow than those of older designs. In examining the five basic sail positions (fig. 13-24), you should choose the example that best shows the position of the sighted sail in relation to the hull. Using this system, you should be within two or three silhouettes in confirmation of submarine class and type.

Bow Profile Coding

Bow profiles (fig. 13-25) are assigned numerical values in an ascending order that coincides with the severity of the angle at which the stem or deck line approaches the waterline. On the newer submarines, the bulbous bow is seldom seen; when the submarine is surfaced, the deck line forward of the sail appears to slope gently into the water. On the older submarines the bow has a definite terminal point, and the angle of the stem is either raked or sheer. Note that in the coding of bow profiles, structures atop the bow are not considered as part of the bow shape. Bow shapes are often difficult to see because of observation angle or water wave action; but this should not constrain you from identifying a particular submarine based on the first two codes.

General Recognition Factors

The principal Soviet innovation is the streamlined *turtleback* sail, which has a curved topline that merges with the after trailing edge of the sail. For classification, the new *turtleback* sail is assigned appearance group code 1. (See fig. 13-23.)

Rectangular sails are so numerous that they must be broken down into subdivisions as to how they appear in relation to other features. The new SSBNs usually have a rectangular sail with sail planes. They also have a bullet-shape bow, a stern fin, and a prominently raised and broken deck line aft of the sail. The SSBN classes largely constitute appearance group 2 (fig. 13-25).

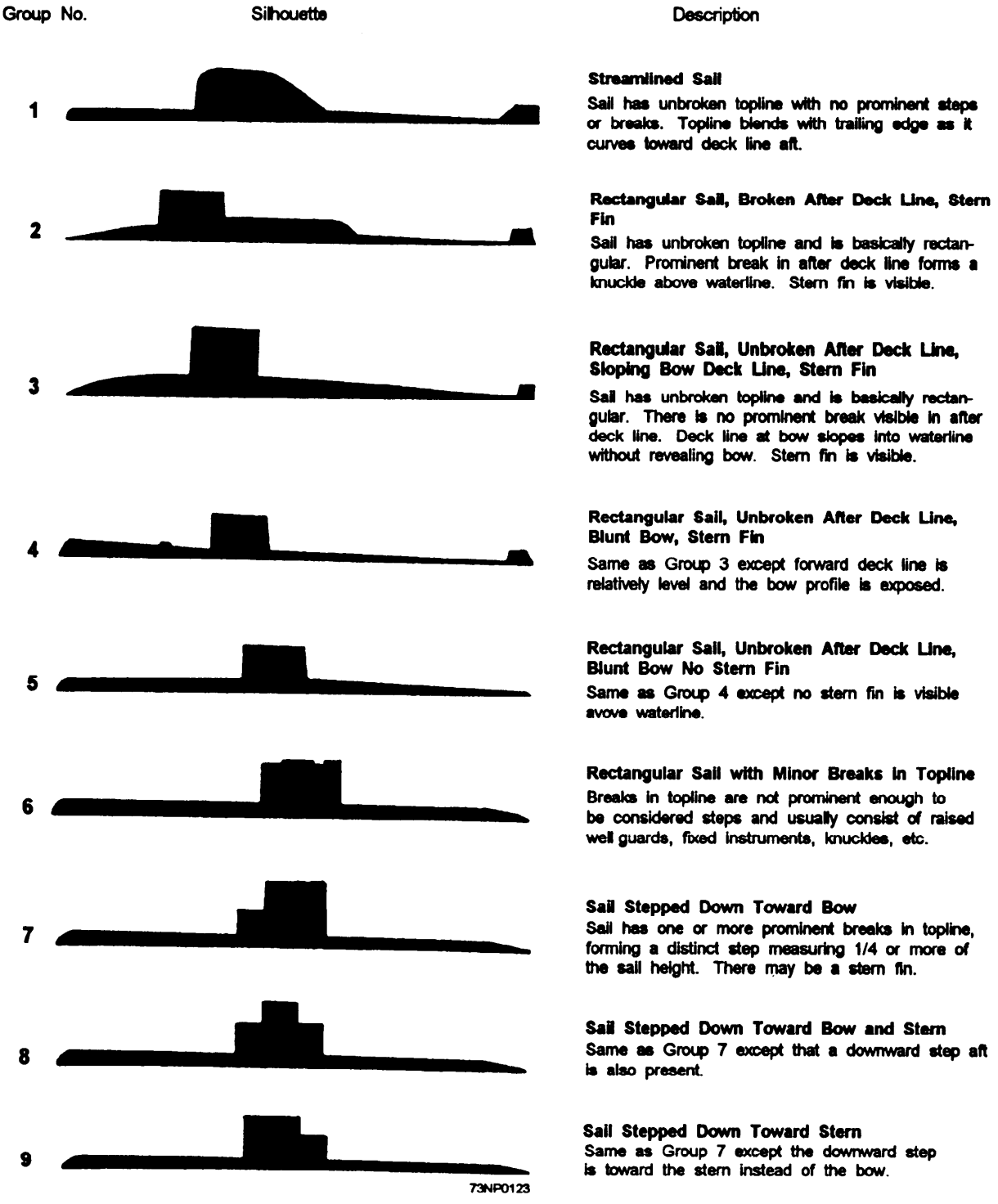


Figure 13-23.—General profile appearance of submarines.

Other appearance types with rectangular sails comprise groups 3, 4, and 5 (fig. 13-25). In these groups, hull features such as stern and bow type are the differentiating factors.

Appearance group 6 includes a small group of transitory types of design. In this group, the overall appearance of the sail is rectangular, but the topline is broken with mirror knuckles, protuberances, and fixed or semiretractable equipment. If a small step occurs, it measures less than one-fifth of the sail height and usually indicates a shield, a raised well cover, or a fixed snorkel exhaust casing. Generally speaking, this

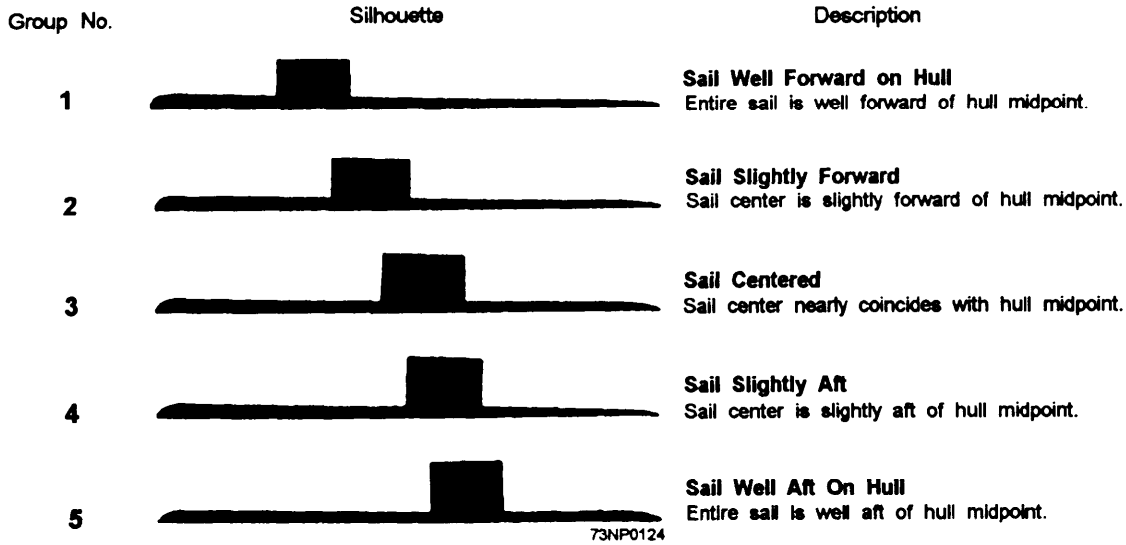


Figure 13-24.—Sail placement

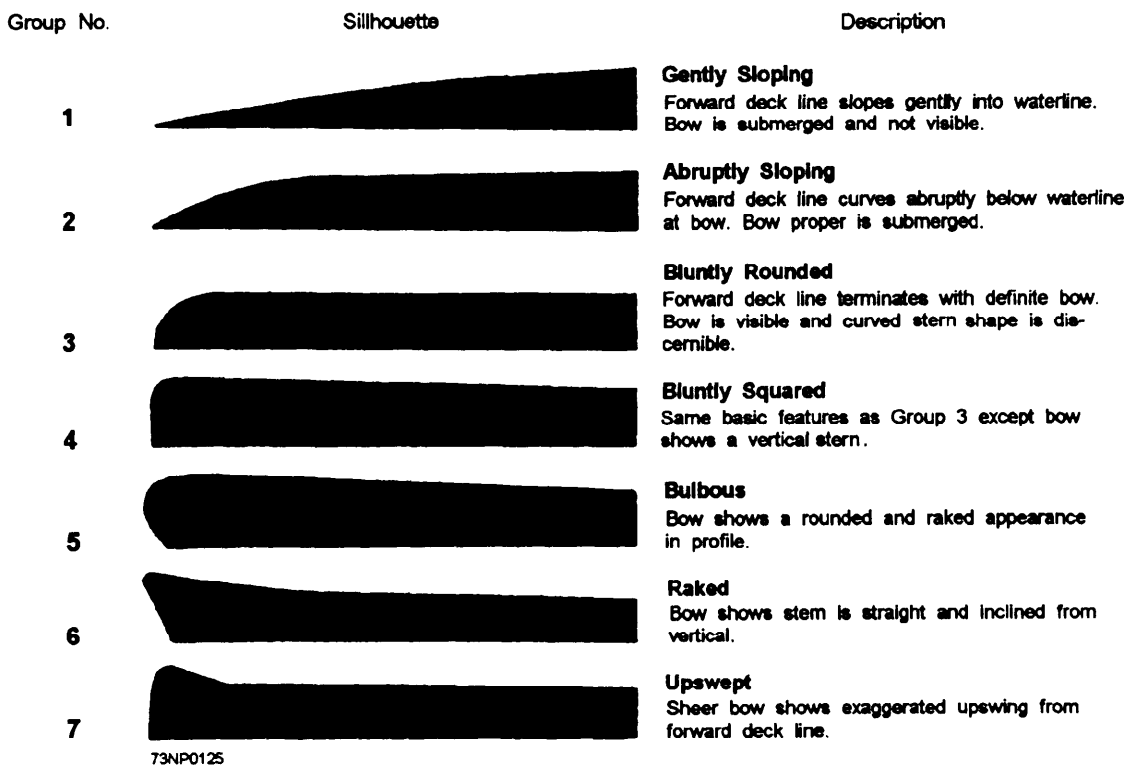


Figure 13-25.—Bow profiles.

group is composed of conversions and experimental prototypes that bridge the gap between the irregular shapes of World War II versions and the streamlined sails of the nuclear age. If the sail topline is broken and has an obvious step measuring one-fourth of the group sail height or more, it falls within groups 7 through 9 (fig. 13-23), depending on the position of the sail.

TYPES OF SUBMARINES

For the purpose of our discussion, we will categorize submarines into three distinct groups: attack, cruise missile, and ballistic. All three groups can be either conventionally powered (diesel/electric) or nuclear-powered.

Attack Submarines

Attack submarines (SS and SSN) are used primarily against shipping, both surface and subsurface. These submarines are designed for speed and maneuverability. Attack submarines use torpedo tubes, usually located forward and aft, to launch torpedoes, mines, and missiles.

Cruise Missile Submarines

Cruise missile submarines (SSG and SSGN) are designed primarily to attack surface ships. Their armament usually consists of surface-to-surface antiship missiles, torpedoes, and mines.

Ballistic Missile Submarines

Ballistic missile submarines (SSB and SSBN) are probably the most notorious of all submarines. Ballistic missile submarines usually maintain constant patrols that place their long-range surface-to-surface missiles within range of intended targets, such as major military and industrial installations.

MERCHANT SHIP IDENTIFICATION

LEARNING OBJECTIVE: Explain the procedures for the identification of merchant ships, including appearance groups, hull types, and sequence of uprights.

As a Signalman, you must be able to identify and report the various types of merchant ships. The purpose of this section is to acquaint you with the primary identification features unique to merchant ships. The two primary publications that will help you in your identification of merchant ships are *Merchant Marine Identification Guide—World* and the *Communist Merchant Marine Identification Guide.*

Any system used for identifying and reporting merchant ships during peacetime must be adaptable to wartime as well. Such ordinary aids to identification as stack markings, hull and superstructure paint combinations, striping, and house flags (all of which are of great assistance in peacetime identification) are easily camouflaged or painted over. Consequently, we must rely on those physical characteristics that are readily seen and difficult to alter or disguise.

IDENTIFICATION PROCEDURES

To identify a merchant ship, you must classify it by appearance group, hull type, and upright sequence. The appearance group is determined by the size, shape, and location of the superstructure. The hull type is determined by the shape of the hull and the number and location of islands. The upright sequence includes the identification and location of the masts, gantries, king posts, cranes, and funnels. Using these features and consulting *Merchant Marine Identification Guide—World* and *Communist Merchant Marine Identification Guide*, you can identify a merchant ship quickly and accurately.

APPEARANCE GROUP

The size, shape, and location of the superstructure on merchant ships depend on the functions of the ship. This identification feature is used to place the ship in one of three appearance groups (fig. 13-26.)

Group 1

Group 1 is the large superstructure appearance group. The superstructure exceeds one-third the overall length of the ship. Passenger ships generally belong in this group.

Group 2

Group 2 is the composite superstructure. The composite superstructure is located amidships and is less than one-third the overall length. These ships generally have a small blocklike superstructure with deck spaces devoted to cargo-handling equipment and hatches.

Group 3

Group 3 is stack aft. Stack aft means ships with funnels located within the after-third of the ship. However, if the superstructure exceeds one-third the overall length, the ship will be in appearance group 1.

HULL TYPE

Ships in appearance group 1 are placed under hull type 1. The determination of hull type for ships in appearance groups 2 and 3 is based on hull profile. Table 13-1 is a matrix of hull profiles and appearance groups that reflects hull-type numbers.

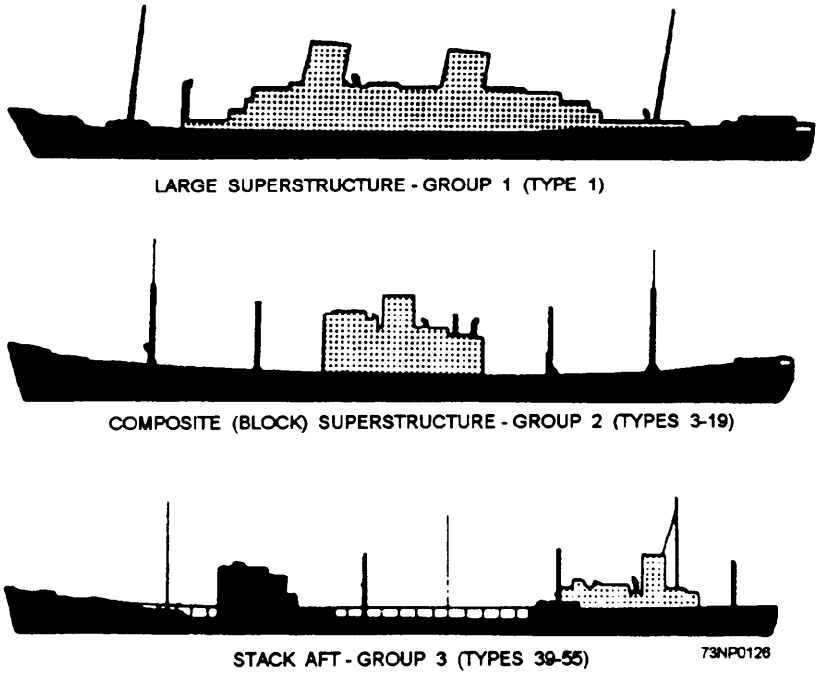


Figure 13-26.—Appearance groups.

Table 13-1.—Hull Types

Hull Profile	Group 1	Group 2	Group 3
Large Superstructure	1	---	---
Flush Deck	---	3	39
Raised 1	---	5	41
Raised 2	---	7	---
Raised 1-2	---	9	43
Raised 1-3	---	11	45
Raised 1-2-3	---	13	47
Raised l-long 2-3	---	15	---
Raised 12-(3)	---	17	49
Raised 1-23	---	19	51
Raised 2-3	---	---	53
Raised 3	---	---	55

Figure 13-27 is a display of all profile variations and lists the individual hull-type numbers. Note that appearance group 1 contains only one hull type. Within the remaining appearance groups, distinguishing hull features include the profiles of the hull and the number and location of islands.

A ship with a single weather deck extending from bow to stern is called a flush-deck ship. An additional deck spanning the breadth of the ship, but not extending from bow to stern, forms the island. Islands may be located at the bow, amidships, at the stern, or in a combination of these locations. However, any

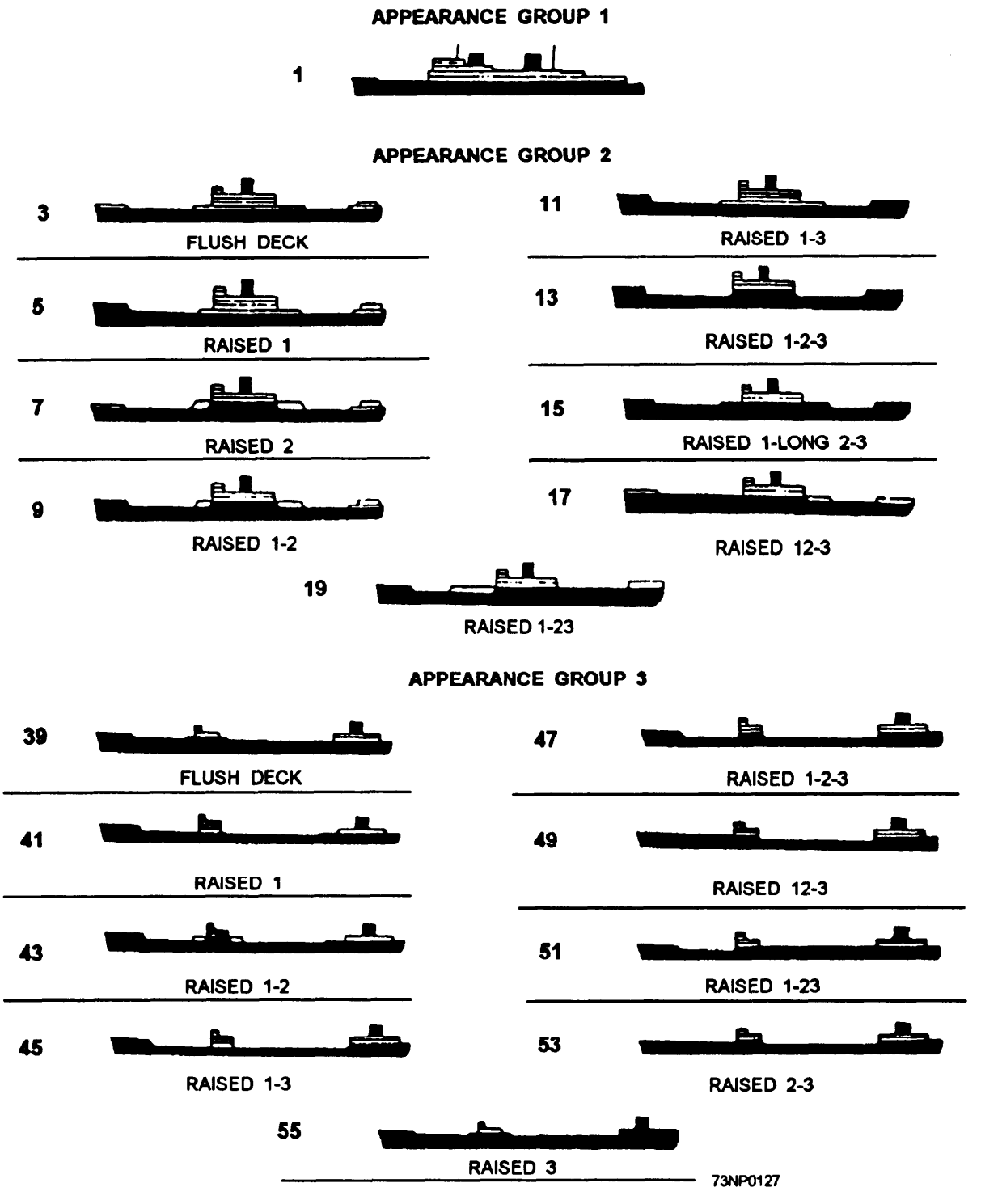


Figure 13-27.—Type selector.

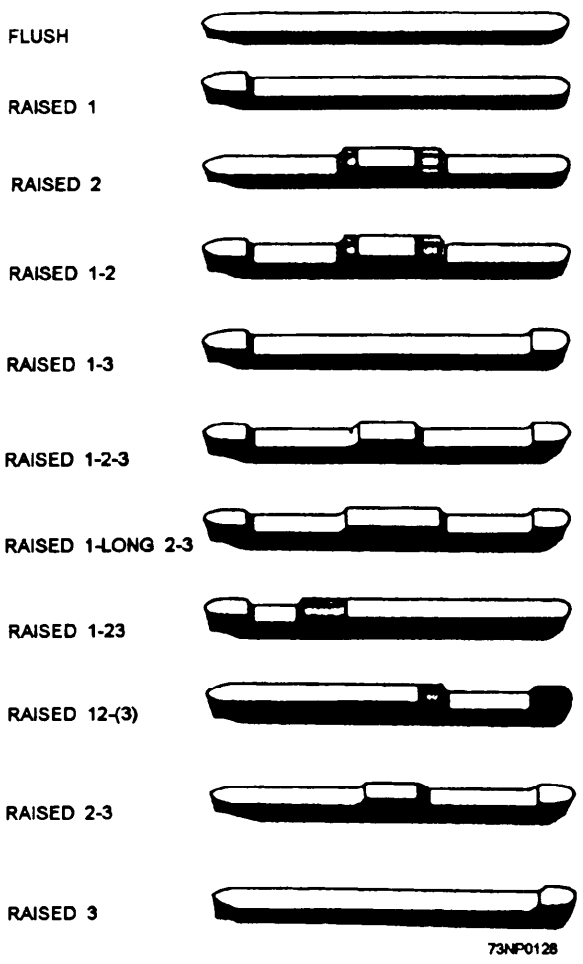


FIgure 13-28.—Variations and locations of raises.

raises in the after-third of the ship but not extending to the stern are disregarded in determining the appearance type. Figure 13-28 shows the possible variations and locations of raises.

Islands are numbered according to their position from bow to stern. For example, the hull type of a ship with an island at the bow is raised 1, and an island amidships is raised 2. A ship with an island at both the bow and amidships is a raised 1-2; a well between islands is represented by a dash. The common three-island, well-deck-type ship is a raised 1-2-3. Two islands may be combined to form a continuous deck from the bow to the after end of the superstructure. This is referred to as a raised 12. A few ships with this configuration also have a raise aft and is called a raised 12-3. On some ships with a raise astern, the deck extends into the amidships section. On these ships, the after raise is considered a raised 23. When the deck does not extend to the amidships section, it is a raised 2-3. Then there are ships that have an enclosed superstructure at the stern of the ship. The first two-thirds of the deck is flush, and the main deck is raised. Such ships are raised 3.

Deckhouses are not raised. An island extends the full width of the ship's hull. Deckhouses are structures built on deck level but do not extend the full width of the ship. At times, the distinction between the deckhouse and the island is difficult to establish. Figure 13-29 illustrates the differences.

Bulwarks are not considered raises. A *bulwark* is the stake of shell plating that is above the weather deck and is designed to keep the deck dry and guard against losing deck cargo and personnel overboard. A bulwark may occasionally be difficult to distinguish from a raised island. A raise is generally from 2 to 3 meters high; a bulwark is generally about 1 meter high Occasionally, a bulwark will be as high as a raise. It is then almost impossible to distinguish the bulwark from the raise unless there is an opening in the bulwark. This opening is a definite indication of a bulwark. A rail on top a raised section of the hull usually indicates a raise instead of an bulwark. Scuppers, or freeing ports, which permit rain and seawater to run off the deck, indicate a bulwark.

SEQUENCE OF UPRIGHTS

The coding of uprights (cranes, funnels, gantries, king posts, and masts) is the third step in identifying merchant ships. The presence of these verticals is indicated by the letters *C,* for crane; *F,* for funnel; *H,* for gantry; *K,* for king post; and *M,* for mast as they are located on the ship, starting at the bow. For example, the upright sequence for a ship with a king post, followed by a king post in the forward well, a funnel amidships, and another king post in the after deck well is coded KKFK, as shown in figure 13-30.

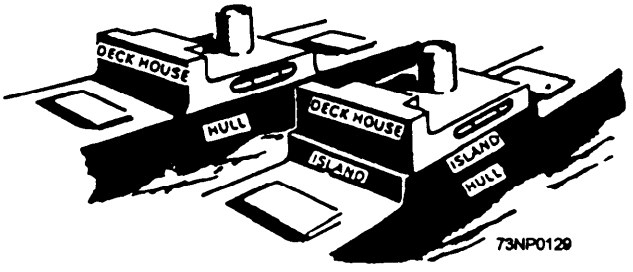


Figure 13-29.—Differences between deckhouse and island.

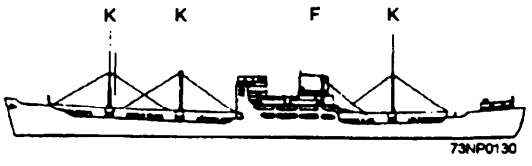


Figure 13-30.—Coding of uprights.

Masts

A *mast* is a post that has no cargo-handling gear. Masts can appear on the deck, bridge, or funnel of a ship. A mast on a king post is coded as a king post.

In all instances, masts are coded if they are heavy enough to be easily discerned. A mast installed on a funnel is coded as if it were located forward of the funnel.

A ventilator without cargo-handling gear is coded as a mast if it is prominent. Figure 13-3 1 shows the types of masts usually installed on merchant ships.

King Post

A *king post* is an upright with cargo-handling devices attached to it. Since king posts are designed for handling cargo, they are located at the forward or after end of a hatch.

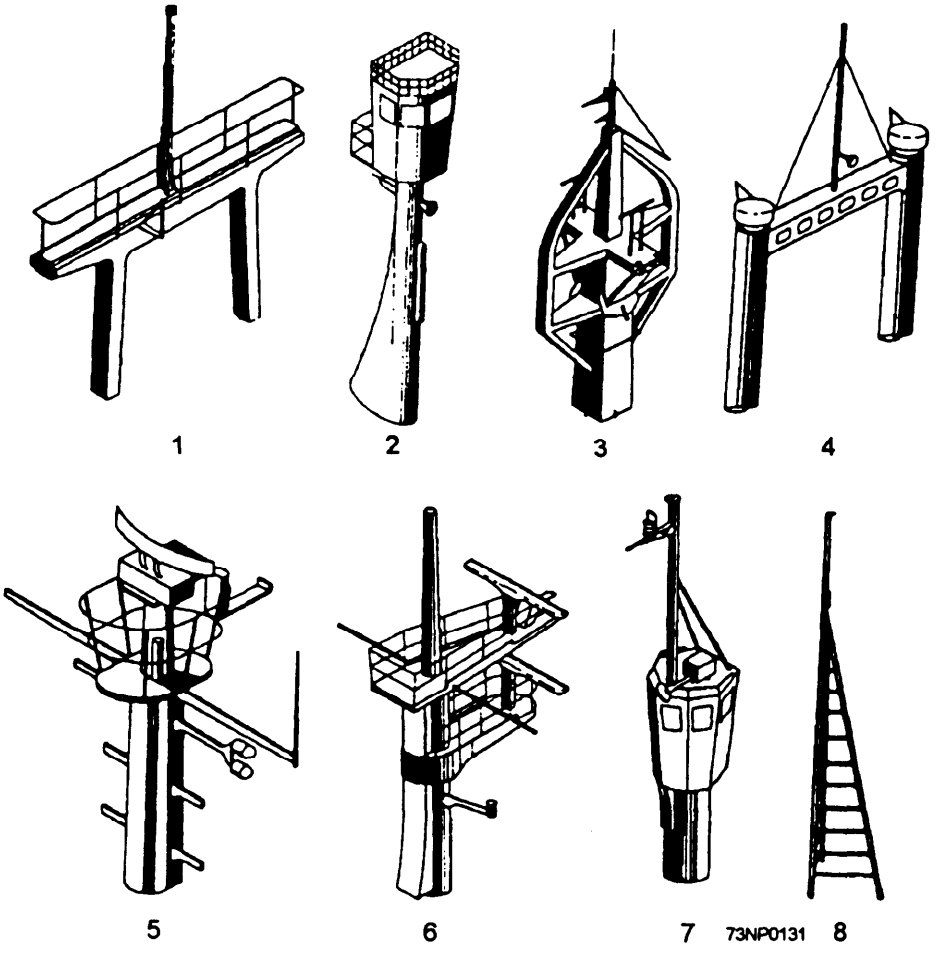
King posts may be arranged singly or in pairs. King posts located against the bridge, but not rising above it, are not coded.

A funnel serving as a king post is coded as if it were located after the king post.

A ventilator rigged for cargo-handling is coded as a king post if it is conspicuous. Figure 13-32 shows some frequently seen king posts.

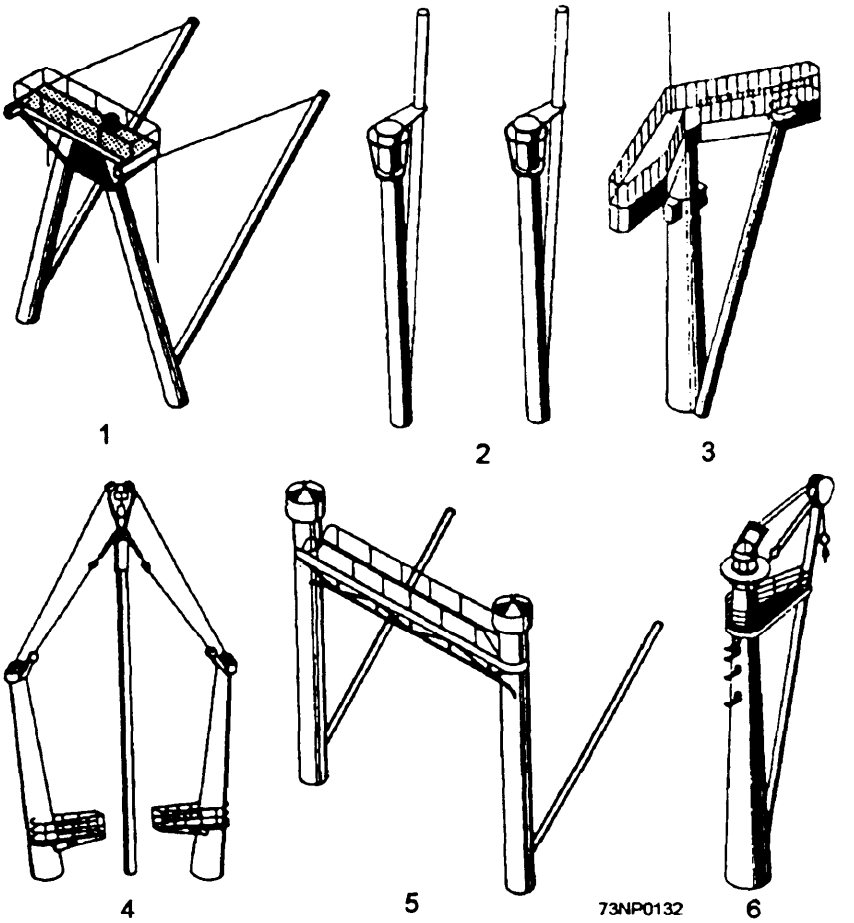
Cranes

Cranes are cargo-handling devices. The whole unit pivots about its base and is usually capable of rotating 360°. Cranes are distinctive features and, when they can be easily seen, are coded. When cranes



1. Goalpost mast
2. Crow's nest mast
3. Hallen swing mast
4. Goalpost mast
5. Radar mast
6. Radar mast
7. Topped crow's nest mast
8. Tower mast

Figure 13-31.—Types of masts.



1. Bypod king post A
2. Parallel single king post
3. Swept-back heavy-lift derrick
4. Stulcken heavy-lift
5. Goalpost king post
6. Soviet bulk heavy-lift derrick

Figure 13-32.—Types of king posts.

appear in pairs abreast, they are coded as a single crane. When located outboard from, and in line with, a mast, the crane is coded as if it were located forward of the mast. When two cranes are mounted on the same pedestal but are arranged fore and aft, they are coded as two cranes. Figure 13-33 shows examples of cranes.

Gantry

A gantry is unique in appearance and function. Typically, the gantry spans the width of a ship and has a boxlike shape. It also has the ability to traverse fore and aft along the ship's deck line, stopping over cargo holds. Figure 13-34 shows an example of a gantry.

Funnels

No distinction is made between the shapes of funnels on merchant ships. Funnels are not coded if they are so small that they are difficult to see, including the small pipes found on some motor ships.

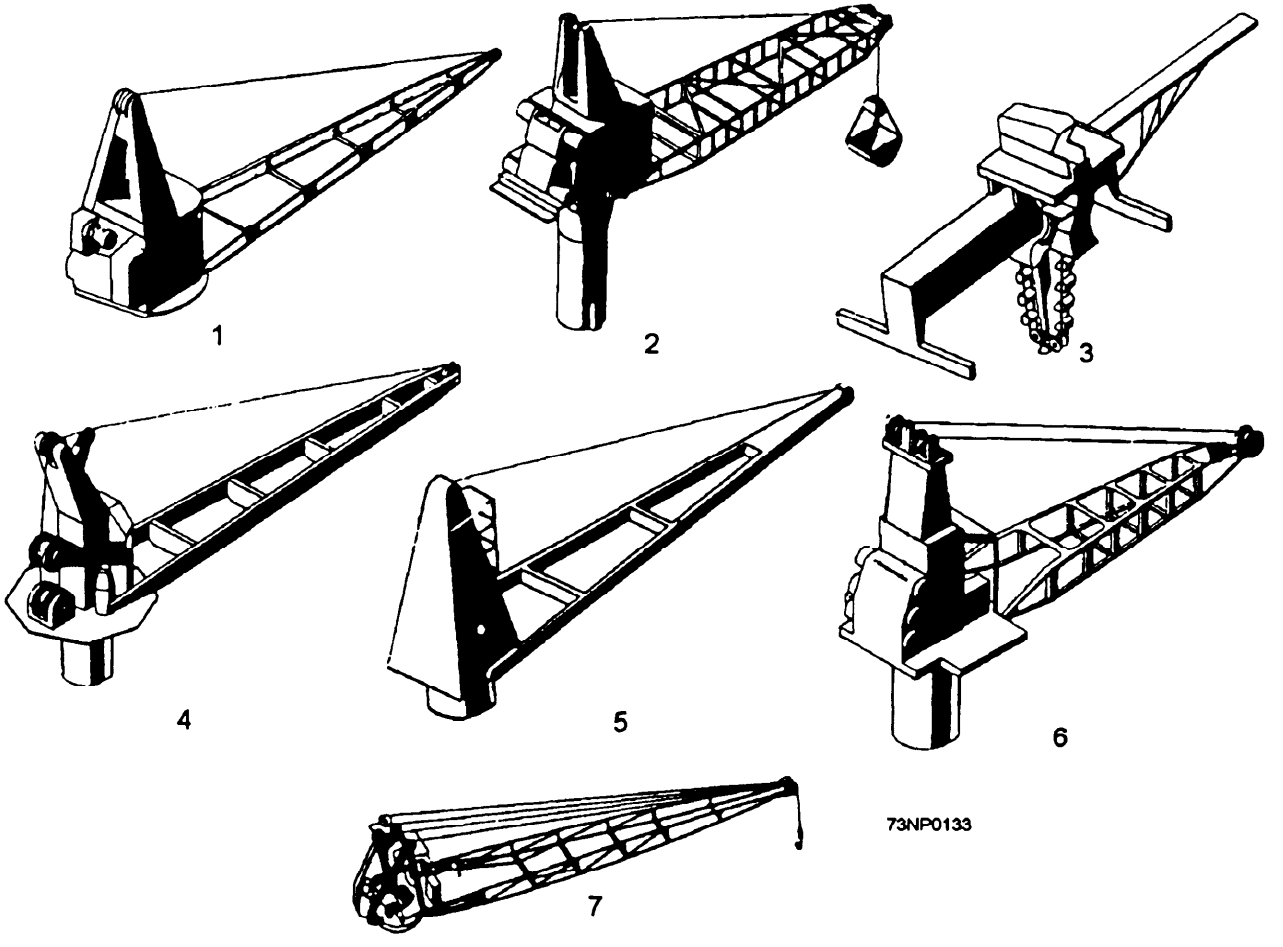
Though extremely rare, a few ships still exist with funnels that resemble king posts. Such funnels are coded if they appear after the king post.

Funnels paired athwartships are coded as a single funnel. Figure 13-35 shows examples of funnels.

BOW AND STERN

Bows and sterns can also assist in the identification of ships. Bow types (fig. 13-36) are as follows:

- Straight, plumb, or vertical—This type is the oldest type; it offers the most resistance to the sea.
- Raking or sloping, and curved and raking—Angle varies greatly. Clipper or cable bows come within this group.



1. Kampnagel deck crane
2. Kampnagel deck bucket crane
3. Conflow-continuous flow ship unloader, built in W. Germany
4. Luffing deck crane, built in W. Germany
5. Hagglund crane, built in Sweden
6. Deck crane
7. Hagglund rotary, electric deck crane

Figure 13-33.—Types of cranes.

- Maier—An outward curve, all rounded and not sitting on the water.

Stern types (fig. 13-37) are as follows:

- Counter—The stern is hooked and curved inward.
- Cruiser—The stern is butted and straight, rounding only at the bottom.
- Spoon—The stern is angled greatly. The spoon is a particular feature of German- or Russian-built ships.

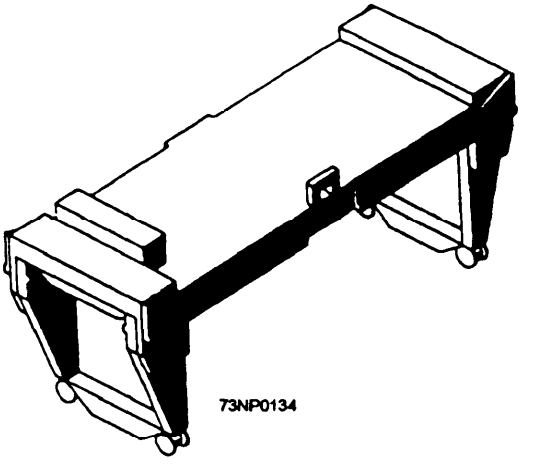


Figure 13-34.—Muckloader gantry.

MERCHANT SHIP CONCLUSION

Intelligence analysts depend on your merchant ship reports to formulate analyses relevant to both political and naval intelligence. Many countries use merchant ships for military-related functions; so, whenever a merchant ship pops up on the horizon,

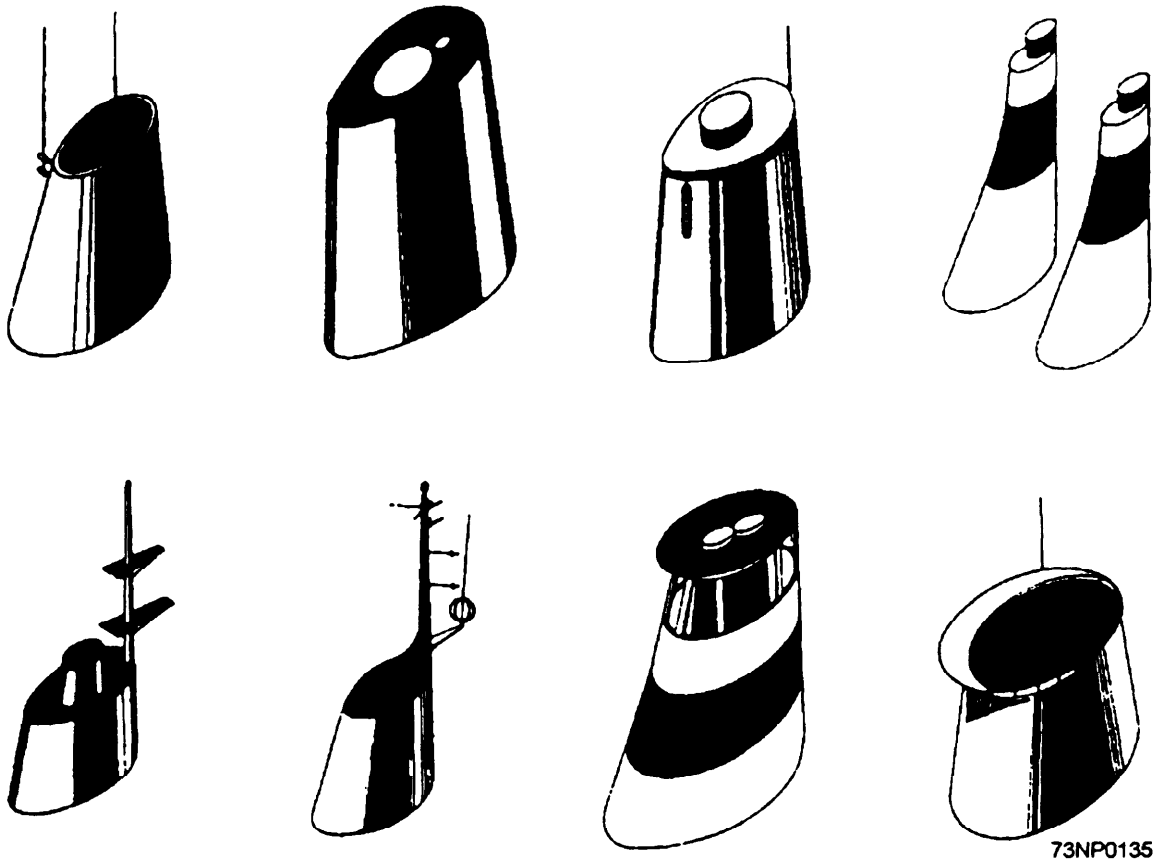


Figure 13-35.—Types of funnels.

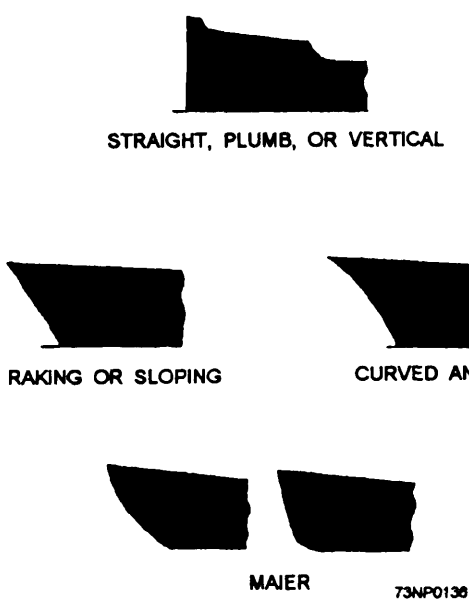


Figure 13-36.—Bow designs.

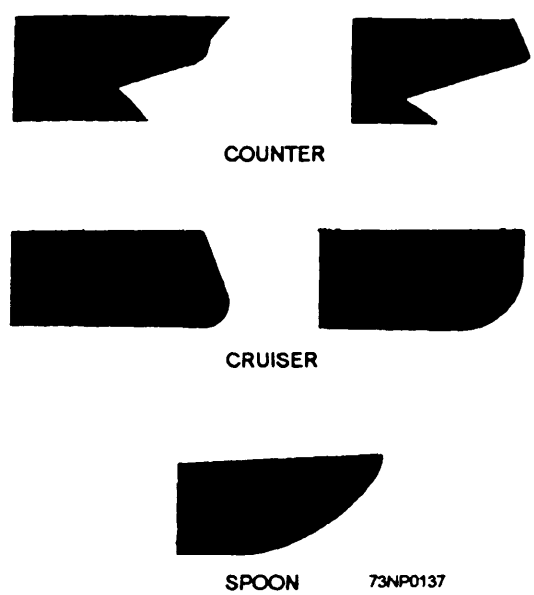


Figure 13-37.—Stern designs.

write her up and pass it to the officer of the deck or appropriate personnel.

SUMMARY

This chapter is one of the most important chapters for a Signalman. In this chapter, you learned information to help you identify aircraft, ships (both naval and merchant), and submarines. You learned that on-the-job training is a very effective way of learning the different aircraft, ships, and submarines. You also learned that aircraft, ship, and submarine characteristics are the major factors in identifying them. This chapter contains just the basics to get you started in identification. It is up to you to progress to the point that you become an expert in the identification of aircraft, ships, and submarines.