

SS&S Chapter 7 Instructor Guide

Your “Highway” Signs

The PowerPoints (PPT) slides for this SS&S chapter were copied from the BS&S-13th Ed PPT because they are identical. Only the chapter numbers have been changed. Therefore, the Instructor Guide notes remain in the same format as published for the BS&S which are slightly different from the sailing chapters.

Slide 1: Title Slide

Instructor:

Student:

Slide 2: Lesson Objectives

Instructor:

Student:

(click to show bullets)

Review the objectives

Slide 3: ATONS

Instructor:

Student:

(click to show bullets)

Ask why Aids to Navigation (ATONS) essential for boaters?

Answers should include:

- A sign post
- Gives information
- Helps find location
- Plots safe course to destination
- Shown on chart

Slides 4: ATONS

Instructor:

Student:

(click to show bullets)

Discuss bullets

Short range includes: buoys, day beacons, minor lights, light houses

Long range includes: loran, satellite beacons, GPS.

Slide 5: ATONS

Instructor:

(click to show bullets)

Have the students name some other landmarks that will help a boater locate his position.

Student:

Answers should include:

- Church spires
- Radio towers
- Water Tanks
- Mountain Peaks

Stress that all should be visible and on chart.

Slide 6: Buoyage Systems

Instructor:

(click to show bullets)

Ask students how ATONS are grouped in the buoyage system.

Student:

Answers should include:

- U.S. Aids to Navigation System
- Intracoastal Waterway Marking System (ICWMS)
- Western River System
- Uniform State Waterway Marking Sys.(USWMS)

Slide 7: U.S. ATON System

Instructor:

(click to show bullets)

Ask students to name six types of U.S. ATONS.

Student:

Answers should include:

- Lateral Marks including Preferred Channel Marks
- Safe Water Marks
- Isolated Danger Marks
- Range Marks
- Regulatory Marks
- Special Marks

Slide 8: Intracoastal Waterway (ICW)

Instructor:

Student:

.(click to show bullets)

Discuss Bullets

- Runs from New Jersey to Florida Keys along Gulf of Mexico to Brownsville, TX.
- Marks preferred channel, safe water and ranges.
- Has small yellow triangle symbol.

Slide 9: Western Rivers

Instructor:

Student:

(click to show bullets)

Discuss bullets

- Includes Mississippi River and tributaries
- Only need to know if you boat on lower Mississippi River
- ATONs maintained by Coast Guard

Slide 10: Uniform State Waterway Marking System

Instructor:

Student:

(click to show bullets)

What is the difference in the USWMS and the U.S. Aides to Navigation System?

Answers should include:

- Similar to US ATONs
- Began converting to US Aids to Navigation in 2003 but not all buoys are changed yet.

Slide 11: Waterway Marks/Buoys

Instructor:

(click to show bullets)

Ask the students to name some of the characteristics.

Student:

Answers should include:

- Comes in various sizes and shapes.
- May or may not have lights
- Marks channels, dangers, obstructions or shoals

Slide 12: Waterway Marks/Pillar Buoys

Instructor:

Discuss based on graphic on slide

- Vary in shape/function
- Large or small
- May have lights
- May produce sounds
- Multi-functional and may have weather information

Student:

Slide 13: Waterway Marks/Spherical Buoy

Instructor:

Discuss based on graphic on slide

- Spherical shape
- Red/white striped
- Used as a fairway marker or in Traffic Separation Schemes

Student:

Slide 14: Waterway Marks/Nun and Can Buoys

Instructor:

What are some differences between the Nun and Can buoy?

Student:

Answers should include:

- Color
- Shape
- Numbering
- Use

Slide 15: Waterway Marks/Spar Buoy

Instructor:

(click to show bullets)

Ask a student to describe a spar buoy.

Student:

Answers should include:

- Short small telephone pole
- Red
- Even numbers; green odd numbers

Stress – no longer used, but still may be seen on state controlled waters.

Not under US ATON sys.

Slide 16: Waterway Marks/Cautions

Instructor:

(click to show bullets)

Discuss with class

Student:

Caution students against anchoring to buoys.

Slide 17: Waterway Marks/Daybeacons

Instructor:

(click to show bullets)

Discuss with class

Student:

Daymarks are geometrical shapes often called dayboards;

- triangles
- squares
- octagons
- diamonds
- rectangles

Daybeacon is a daymark plus the pile or dolphin (three or more piles fastened together)

Slide 18: Waterway Marks/Triangular/Square Daymarks

Instructor:

Student:

(click to show bullets)

Discuss based on graphic on slide

- Equilateral triangle resting on base generally red with even numbers
- Square generally green and have odd numbers

Slide 19: Waterway Marks/Diamond Shaped Daymark

Instructor

Student

(click to show bullets)

Ask: What are the differences in the U. S. System diamond-shaped daymark and the crossing daymark on Western Rivers?

Answers should include:

- Used on ICW, Western Rivers and other navigable waters; 2 smaller diamonds (red, green or black) are on the principle diamond; have no lateral significance; marks where you are on chart.
- Crossing daymark indicate upbound and downbound traffic

Slide 20: Waterway Marks/Light Structures

Instructor:

(click to show bullets)

Discuss chart with students

Student:

- Light structures vary in size; same function as buoys but used where they are more appropriate
- Minor light may mark mouth of channel; stationary
- Daymarks equipped with
 - Red lights – triangle, even number
 - Green lights – green square, odd number
 - White light – diamond or octagonal, may have a letter

Slide 21: Waterway Marks/Informational/Regulatory

Instructor:

(click to show bullets)

Ask a student to describe an Informational and Regulatory mark.

Student:

Answers should include:

- White buoys or day marks
- Orange markings
- Buoys are white cylinders with orange band near its top and another just above the water line.
- Open diamond warns of danger
- With lines connecting opposite corners boats stay out.
- Open circle – slow, no wake
- Caution Manatee – slow to idle speed

Slide 22: Waterway Marks/Special Purpose

Instructor:

(click to show bullets)

Ask someone in class to describe a special purpose marks.

Student:

Answers should include:

- Yellow
- Letters
- Amber lights
- May be nun or can buoys, diamond
- Daymarks, floating structures
- Mark things like fish net and anchorage areas, spoils, intakes traffic separation schemes

Slide 23: How Waterways are Marked/Marks on Navigable Waters

Instructor:

(click to show bullets)

Discuss

Ref. to fig. 7-1, pg 153

Student:

Slide 24: How Waterways are Marked/Red Right Returning

Instructor:

(click to show bullets)

Discuss

Student:

When returning from sea, keep red (nun) buoy on starboard side.

When you go clockwise around the US you are returning from sea.

Even numbers on right

Use chart for final arbiter.

Slide 25: How Waterways are Marked/Lateral Marks on Navigable Waters

Instructor:

(click to show bullets)

Ask the class what the characteristics are of lateral marks.

Student:

- Mark sides of channels
- Have lighted/unlighted buoys
- Day beacons
- Minor lights

Slide 26: How Waterways are Marked/Numbers on Lateral Marks

Instructor:

(click to show bullets)

Ask what the students remember about lateral marks

Student:

Answers should include:

- Numbers are in sequence increasing towards land
- Even numbers – red nuns
- Odd numbers – green cans
- Numbers may be missing on one side due to hazards
- Letter after number indicates that ATON has been added at a later time
- One or two letter prefix may denote the name of the waterway

Slide 27: How Waterways are Marked/Regulatory Markers

Instructor:

(click to show bullets)

Discuss:

- Both are white with orange marking
- Letters black
- Shows boat exclusion, danger, controlled areas
- Gives information

Student:

Slides 28: How Waterways are Marked/Safe Water ATONs

Instructor:

(click to show bullets)

Ask what the characteristics are.

Student:

Answers should include:

- Spherical buoys
- Floating structures with balls attached at top
- Octagonal day beacons
- Red and white vertical stripes
- When lighted – white lights
- May have letters but never numbers

Slide 29: How Waterways are Marked/Preferred Channel Marks

Instructor:

(click to show bullets)

Discuss characteristics

- At junction of navigable channels
- Shows preferred channel
- Sometimes marks wrecks and obstructions
- Pass on either side – preferred channel indicated by top color
 - Red/green horizontal bands
 - May have letters, but not numbers
 - If lighted, same color as top color.

Student:

Slide 30: How Waterways are Marked/Ranges

Instructor:

(click to show bullets)

Discuss characteristics

bring a chart with range marks on it to show appearance on chart. Point out that front marker will move in opposite direction of where you are veering. To correct course steer toward the direction of the lower mark.

Lights – red, green or white.

Student:

Slide 31: How Waterways are Marked/ICW Marks

Instructor:

Student:

(click to show bullets)

Discuss chart:

- Yellow triangles, squares, bands
 - reflective material
 - red daymarks, buoys and minor lights usually have yellow triangles
 - squares usually go on green lateral marks
 - yellow bands on non lateral ATONs
- Dual purpose marks
 - used to mark US ATON and ICW
 - sometimes yellow triangle on square day mark and yellow square on triangle day mark
 - if following ICW, use yellow marks
 - if following original waterway, follow (red or green) lateral marks

Slide 32: Light Characteristics/Light Patterns

Instructor:

Student:

(click to show bullets)

Bring a flashlight or a laser pointer

Demonstrate the different light patterns

Stress:

- Fixed – on continuously from sundown to sunup
- Occulting – on more than off; blinks off
- Flashing – flashes on, off more than on
- Quick flash – 60 times per minute
- Isophase – on for equal time it is off

Slide 33: Light Characteristics/Preferred Channel Lights

Instructor:

Student:

(click to show bullets)

Describe:

- Color – red or green, color matches color of top band on ATON
- Light pattern – 2 flashes followed by darkness, then single flash; dark period after single flash is no longer than one following the 2 flashes.

Demonstrate pattern using flashlight or laser pointer

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Slide 34: Chart Symbols

Instructor:

(click to show bullets)

Discuss bullets

These help you identify ATONs

Bring charts, preferable of the local area, and show the symbols on the charts. Break students into groups of three to work together to locate for each. Have students explain notations on charts by symbols (for example what G"9"FI G 4s means)

Student:

Slide 35: Light Structures

Instructor:

(click to show bullets)

Discuss heights, light characteristics, sound characteristics of light houses.

Student:

Slide 36: Lights on Bridges

Instructor:

(click to show bullets)

- Discuss horizontal and vertical clearance.
- Discuss position of bridge lights.
- Discuss lights on a draw bridge.

Student:

Slide 37: Electronic ATONS

Instructor:

(click to show bullets)

Ask who can recall some of the characteristics of the Loran C and the GPS

Student:

Answers should include:

Loran:

- Mainly replaced by GPS
- Accurate within 100-200 feet
- Notable for repeatability

GPS

- Uses 24 satellites
- Accurate within 15 meters

Slide 38: Navigation Publications

Instructor:

(click to show bullets)

Student:

Bring as many of the publications as available to class for students to see.

Use pages of Local Light List to show local information