SECTION V - BRIDGE LIGHTING AND FENDER SYSTEMS

INTRODUCTION:

The Coast Guard relies on mariner notification of discrepancies in BRIDGE LIGHTING AND BRIDGE FENDER AND PROTECTION SYSTEMS as well as other hazardous and non-standard bridge conditions. In this regard, prior to May 1981, the Coast Guard annually inspected navigational lighting, fender and protection systems that were situated over the navigable waters of the United States. Subsequently, it was determined that an adequate high level of compliance could be achieved in response to reports of complaints or violations by professional and private mariners. The Auxiliary plays an important part in Bridge discrepancy notification in conjunction with the ATON/CU Program.

OBJECTIVE:

1. To acquire a general knowledge of the different types of Bridges, and the responsibilities of the Auxiliary in reporting Bridge discrepancies.

2. To become familiar with the requirements for Bridge lighting, fender and protection systems.

3. To become familiar on how to determine discrepancies on Bridges.

INFORMATION:

There are six basic types of Bridges: fixed, double-opening swing, single-opening draw, pontoon, bascule and vertical lift.

In Bridge construction, the Coast Guard District Commander having jurisdiction over the area in which the Bridge is built, prescribes lights and other signals that are to be displayed for the protection of navigation. When construction is completed, permanent lights and other signals approved by the District Commander, must continue to be displayed.

• BRIDGE AND PIER LIGHTING: Periods of operation require that Bridge lights be displayed from sunset to sunrise or at other times when visibility is reduced to less that one mile. Bridge lights are not required for bridges over waters that are not open to navigation. (Vessels transiting such waters do so at their peril with complete liability.) Information describing the minimum lighting requirements for the type Bridges of interest is listed at the end of this Section.

• BRIDGE FENDER AND PROTECTION SYSTEMS: The Bridge fender and protection systems are designed to protect the Bridge from vessels transiting under or in the vicinity of the bridge. The fender system is made up of heavy wooden timbers lashed and/or
bolted together along with lights and other aids that are prescribed by the Coast Guard District Commander.

• Examples of the other aids to navigation associated with Bridges are:

  a. RETRO-REFLECTIVE PANELS on BRIDGE PIERS  High intensity red or green retro-reflective panels on bridges or piers.

  b. DAYMARKS and LATERAL LIGHTING  - Markings of the margins of navigation channels through Bridges with appropriate marks and lights installed on the superstructure or channel piers.

  c. RADAR REFLECTORS AND RACONS  - Radar reflectors and RACONs on bridge structures, stakes or buoys to mark the edges and centerline of the navigation channel.

  d. FOG SIGNALS  - On waterways where visibility is frequently reduced due to fog or other causes. One or more fog signals may be installed.

  e. PAINTING OF BRIDGE PIERS  - The painting of the sides of Bridge channel piers below the superstructure facing traffic. (May be painted white or yellow when they have become significantly darkened by weather.)

  f. VERTICAL CLEARANCE GAUGES  - When necessary for reasons of safety of navigation, clearance gauges may be installed. Clearance gauges must meet the prescribed requirements.

• BRIDGE DISCREPANCIES:

Bridge discrepancies, which could pose a hazard to navigation, include the following:

  a. Clearance gauges, missing, not legible or numbers not readable from 1/2 mile minimum distance.

  b. Unreadable drawbridge regulation signs.

  c. Bridge signals not functioning, e.g., horn, whistle or siren.

  d. Vertical lift bridge not equipped with height indicator.

  e. Cables hanging below bridge structure.

  f. Net or gondola hanging below bridge structure.
g. Scaffolding hanging below bridge structure.

h. Pier protection cells, planks, or coatings missing, steel sheathing protruding, cell damage.

i. Pile or dolphin cluster broken off, leaning into channel, debris protruding from cluster, or top of cluster wrapped with other than wire cable.

j. Ladders, platforms or rails protruding into channel.

• BRIDGE FENDER SYSTEMS DISCREPANCIES:

Discrepancies in Bridge fender systems, which could pose a hazard to navigation, include the following:

a. Bolts, washers, corner plates, steel members, wales (rub rails), etc., protruding beyond the face (vessel side) of the wooden wales, pilings, sheathing or any other part of the system. (EXAMPLE - Right fender downstream side has bolts protruding approximately 3” from face of wales.)

b. Damaged steel plates and wales (rub rails) - used at corners and other places where heavy wear may be encountered.

c. Collection of mass debris wedged in or behind fender systems.

d. Protrusion of dolphins on the fender side.

e. Steel wales (rub rails) not coated with non-sparking material instead of wood.

f. Torn or loose ice protection or pier repair items - loose and subject to present a hazard to navigation. (EXAMPLE - Steel plates around the fourth stone pier from the right bank on the upstream side are loose and are extending into the channel.)

g. Fender system damaged due to fire, collision, natural deterioration and or rotting. (EXAMPLE - Left fender upstream side is partially collapsed due to vessel collision and badly rotted wood members. Right fender on the downstream side has been partially destroyed due to fire.)

• REPORTING DISCREPANCIES: Upon discovering a bridge discrepancy, which includes the Bridge, lights, fender protection, etc., the Auxiliary member should complete a CG-5474 (marked "BRIDGE" at the top) or other respective Coast Guard District developed reporting form and forward to the respective District (oan) via established distribution procedures. Such reports should be in specific detail such that
the District (oan) can provide sufficient information to the owner to complete proper repairs. A sample bridge report is illustrated in the following.

Some districts have adopted an annual bridge lighting and fender system survey program, using an individual printout of each bridge from the District Commander (oan-br) database.

Auxiliary members and their units submitting CG-5474 reports are awarded points, refer to Section XII.
SAMPLE - BRIDGE REPORT

AIDS TO NAVIGATION REPORT - BRIDGE

SECTION I: OBSERVER'S IDENTIFICATION DATA

MEMBER NUMBER: 076151027Q
LAST NAME: JONES
FIRST NAME AND INITIAL: JOHN P

OBSERVER'S MAILING ADDRESS:
PO BOX 123
CITY: CLEARWATER
STATE: FL
ZIP CODE: 34483
TELEPHONE NUMBER: 813-791-0161

SECTION II: COAST GUARD UNIT NOTIFIED

COAST GUARD UNIT NOTIFIED: CGG7 (CGU - BRIDGES)
DATE OBSERVED: 02/12/92
DATE REPORTED: 02/13/92
METHOD OF REPORTING: RADIO
TIME REPORTED: 11:39 AM

SECTION III: DESCRIPTION OF DISCREPANCY

PLANT: DUNEDIN BRIDGE
LATITUDE: 26° 03' 04"
LONGITUDE: 82° 47' 36" W
MILE MARKER: 189.0

TYPE OF DISCREPANCY: BUOY  STRUCTURE  LIGHTED  SOUND  ELECTRONIC
STRUCTURAL COLOR: WOOD  METAL  OTHER
LIGHT COLOR: RED  GREEN  WHITE  YELLOW  HORN  WHISTLE

COMMON DISCREPANCIES & COMMENTS REQUIRED:
- DAMAGED BY COLLISION
- DAMAGED
- OBSCURED
- PEELING
- FRAYED
- BATTERY BOX VACANT
- MILE MARKER
- BELL MISSING
- LIGHT DIM-REDUCED INTENSITY
- NUMBER OBSERVED
- NUMBER OBSERVED
- NUMBER OBSERVED
- TAPER MISING
- GONG MISSING
- OPERATING CONTINUOUSLY

THE FIXED WHITE CLEARANCE GAUGE LIGHT ON THE SOUTHEAST PILL OF THE BRIDGE IS EXTINCHED DURING PERIODS OF DARKNESS

SIGNATURE OF OBSERVER: JOHN E. JONES
DATE: FEB. 12, 1992

NOTE: DISTRICT FORMS MAY BE USED

EXAMPLE – BRIDGE DISCREPANCY REPORT (CG-5474)
A GUIDE TO BRIDGE LIGHTING
MINIMUM LIGHTING FOR SINGLE-OPENING DRAW BRIDGES

GUIDE TO BRIDGE LIGHTING – SINGLE-OPENING DRAW BRIDGES
A GUIDE TO BRIDGE LIGHTING
MINIMUM LIGHTING FOR VERTICAL LIFT BRIDGES

GUIDE TO BRIDGE LIGHTING – VERTICAL-LIFT BRIDGES

LIGHT COLORS AND HORIZONTAL ARCS OF VISIBILITY

LIFT SPAN: 360° GREEN when lift span fully open for navigation. 180° red for all other positions of lift span. Lift green and red permitted on bridges lighted prior to Jan. 1, 1965, until lights are repaired or replaced.

BLINDING PROJECTION PIER 180° RED

AXIS 180° RED

Pier 180° RED

AXIS 180° RED

Pier 180° RED

GUIDE TO BRIDGE LIGHTING – VERTICAL-LIFT BRIDGES

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COAST GUARD AUXILIARY - NATIONAL ATON-CU STUDY GUIDE

A GUIDE TO BRIDGE LIGHTING
MINIMUM LIGHTING FOR FIXED BRIDGES

SINGLE-SPAN FIXED BRIDGE

MULTIPLE-SPAN FIXED BRIDGE

LIGHT COLORS AND HORIZONTAL ARCS OF VISIBILITY

- CHANNEL CENTER—360° GREEN (180° GREEN ON BRIDGES LIGHTED PRIOR TO JAN. 1, 1987 UNTIL LIGHTS ARE REPAIRED OR REPLACED).
- CHANNEL MARGIN—120° RED.
- PIER—180° RED.
- MAIN CHANNEL—120° WHITE. 3 LIGHTS IN VERTICAL LINE (60°-180°) ON BRIDGES LIGHTED PRIOR TO JAN. 1, 1983. UNTIL LIGHTS ARE REPAIRED OR REPLACED.

GUIDE TO BRIDGE LIGHTING – FIXED BRIDGES

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COAST GUARD AUXILIARY - NATIONAL ATON-CU STUDY GUIDE

A GUIDE TO BRIDGE LIGHTING
MINIMUM LIGHTING FOR DOUBLE-OPENING SWING BRIDGES

GUIDE TO BRIDGE LIGHTING – DOUBLE-OPENING SWING BRIDGES
A GUIDE TO BRIDGE LIGHTING
MINIMUM LIGHTING FOR BASCULE BRIDGES

LIGHT COLORS AND
ARES OF VISIBILITY

LIFT SPAN - 180° GREEN WHEN LIFT SPAN IS FULLY OPEN FOR NAVIGATION, 180° RED FOR ALL OTHER POSITIONS OF LIFT SPAN (OR OTHER COLORS AND BERE PERMISSIBLE ON BRIDGES LIGHTED PRIOR TO JAN. 1, 1949, UNTIL LIGHTS ARE REPAIRED OR REPLACED).

PIER - 180° RED

AXIS - 180° RED MAY BE OMITTED WHEN DRAW AND PROTECTION PIER ARE STRAIGHT ON THEIR CHANNEL FACES.

GUIDE TO BRIDGE LIGHTING – BASCULE BRIDGES

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