DEVELOPMENT OF SMALL-CRAFT CHARTS

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In April 1958, Rear Admiral H. Arnold KARO, Director of the Coast and Geodetic Survey, U.S. Department of Commerce, inaugurated the Bureau's small-craft chart program to promote navigational safety among the over 7 million pleasure boat operators in the United States. A special committee undertook a detailed study of the boatmen's requirements to develop a compact chart for small-craft use in inland and coastal waters. In addition to excellent comments from the boating public, this committee received a tremendous assist from the U. S. Power Squadrons, who summarized replies from 5 000 operators, and from the Coast Guard Auxiliary, who furnished complete questionnaires representing 2 000 operators.

Based on the majority of the requirements and suggestions received, in 1958 four experimental small-craft chart formats covering the Potomac River were developed. Two were folded charts and two were book type. In order to provide equal comparison, each format covered the same area and contained the same primary information. The Potomac River was selected as a representative area which would be used by small-craft. Other factors included the proximity of Bureau headquarters for economical investigations and the availability of the Bureau's photographic aircraft for revision photography. Also, our survey ship *Cowie* was based in nearby Chesapeake Bay for ready support in channel and inlet depth determination and for other chart inspection data.

Three thousand copies of each of these four experimental formats were printed in January 1959 and distributed with accompanying questionnaires. In addition, these charts were continually kept before the eyes of the boatmen by being exhibited at yacht clubs, marinas and boat shows. They were extensively publicized in numerous newspapers, yachting magazines, and broadcast over radio and television.

After methodically arranging and evaluating the replies from over twenty-three thousand boatmen, the committee concluded that user reaction to all four formats was extremely favorable, with an over 60 per cent preference going to the " folio " type (3-folded sheets, bound in cover).

Therefore, the folio format was used for the Bureau's first small-craft chart, No. 101-SC, Potomac River, Maryland, Virginia, and D. C., first edition, May 1959. This unique first edition incorporated opinions of 18 563 small-craft owners and operators. Its popularity was beyond all expectation,

FIG. 1. — City Island, New York; 1/12 000 scale; July 6, 1963.
The moored small-craft appear " like grains of wheat cast upon the waters ".

with requests being received from hundreds of boatmen throughout America for immediate coverage of their different areas.

Each inquiry received a personal reply from the Bureau, emphasizing that a program of this scope requires long-range planning, field surveying, verification of data, cartographic compilation, and reproduction. The boatmen were told that small-craft charts of their areas would be scheduled as rapidly as funds and capability would permit, with priorities being based on relative boating concentration, availability of surveys, and the physical characteristics of the area.

Figure 1 illustrates the tremendous boating concentration that is typical of thousands of recreational small-craft areas throughout the United States and its possessions. In 1963 there were an estimated 7 678 000 recreational boats in use in America, as follows : 813 000 inboard motor boats, including auxiliary powered sailboats; 4 239 000 outboard boats; 495 000 sailboats, and 2 131 000 rowboats, prams, dinghies, and other miscellaneous craft, many of which are used with small outboard motors. The phenomenal increase in recent years in the number of small boats using the congested waterways of our Nation presents a real challenge to chart-making operations.

We believe the Bureau's Small-craft Chart Program will be the answer to this problem. After the issue of our first small-craft chart, 101-SC, Potomac River, four more of the folio type were subsequently published, as follows :

140-SC, Fort Pierce to Miami, Fla., January 1960
184-SC, Bellingham to Seattle, Wash., October 1960
165-SC, San Francisco Bay to Antioch, Calif., January 1961
117-SC, Long Island Sound, New Haven Hbr. Entr. and P. Jefferson to Throgs Neck, Conn., N. Y., October 1961.

With these five charts on issue, in 1961 there was a strong sentiment to convert the standard size Intracoastal Waterway charts to accordion-folded charts, each printed in one sheet on both sides of paper measuring 15×58 inches and inserted in a convenient jacket. By including facility and supply information on such a chart, it would serve the needs of the small boatman as well as through-traffic. As the new formats are issued, the conventional Intracoastal Waterway charts covering the same area are canceled. In December 1961 the first of this " route " type was printed, as follows :

857-SC, Charlotte Harbor to Tampa Bay, Florida.

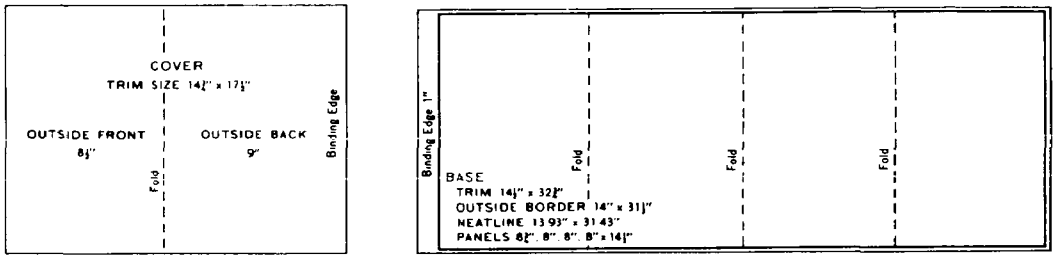
In January 1963 a third type of small-craft chart was issued, when the following two charts were printed : 246-SC, Boston Harbor, and 248-SC Boston Inner Harbor. Their immediate acceptance, especially while on display at the New England Boat Show, proved this " area " type to be also in demand. This type consists generally of a conventional chart with additional information for small craft, folded into convenient panels and issued in a protective jacket.

Small-craft charts are one of five classifications of nautical charts currently published by the Coast and Geodetic Survey. The other four, each of which is explained in detail in the Nautical Chart Catalog, are : Harbor, Coast, General, and Sailing Charts.

The diagrams below show the cover, base, neatline and panel dimensions of the three basic types of Small-craft Chart formats in current use.

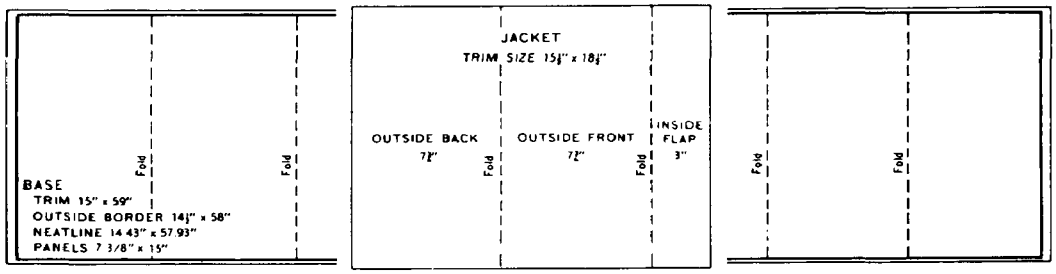
100-SC FOLIO CHART TYPE

Small-craft Chart: Multiple pages printed back-to-back; each page accordion-folded and issued in a side (ring) binding with protective cover.



600-SC AND 800-SC ROUTE CHART TYPE

Charts of rivers, narrow bodies of water; Intracoastal Waterway Charts. 1 page printed back-to-back; 7 folds; 8 panels; accordion-folded and issued in a jacket.



AREA CHART TYPE

Conventional Chart: 1 page printed one side; folded on a horizontal axis; accordion folded and issued in a jacket.

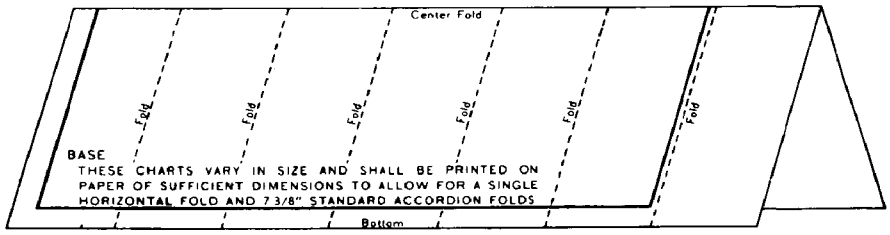


FIG. 2. — Types of small-craft charts.

All small-craft charts have the " -SC " after the chart number. As illustrated in figure 2, there are currently three types of small-craft charts, as follows :

1. FOLIO TYPE (Nos. 100-SC through 199-SC)

   Multiple sheets printed front and back, accordion-folded and bound in a protective cover.

2. ROUTE TYPE

   An accordion-folded sheet printed front and back and issued in a protective jacket.
   a. Relatively narrow waterways (other than the Intracoastal Waterway) No. 600-SC through 699-SC.
   b. The Intracoastal Waterway (Atlantic and Gulf coasts) Nos. 800-SC through 899-SC.

3. AREA TYPE

   Single sheet printed on one side, folded on a horizontal axis, accordion folded and issued in a protective jacket. This type is a conventional chart with additional small-craft information. (Nos. 70-SC to 9500-SC, except for those numbers reserved to designate other types of small-craft charts).

   As of March 1, 1964, the following 26 small-craft charts were on issue :

I. FOLIO TYPE :

101-SC, Potomac River, Maryland, Virginia, and D. C.
116-SC, Long Island Sound, Watch Hill to New Haven, Rhode Island, Connecticut
117-SC, Long Island Sound, New Haven Harbor Entrance and Port Jefferson to Throgs Neck, Connecticut, New York
120-SC, S. Coast Long Island, Shinnecock Bay to E. Rockaway Inlet, New York
141-SC, Miami to Marathon and Florida Bay, Florida
165-SC, San Francisco Bay to Antioch, California
184-SC, Bellingham to Seattle, Washington

II. ROUTE TYPE :

a. Nos. 600-SC to 699-SC (rivers and narrow waterways)
682-SC, to Snake River, Lake Sacajawea, Washington
690-SC, Lake Washington Ship Canal and Lake Washington, Washington

b. Nos. 800-SC to 899-SC (Intracoastal Waterway)
824-SC, Sandy Hook to Little Egg Harbor, New Jersey
826-SC, Little Egg Harbor to Cape May, New Jersey
829-SC, Norfolk to Albemarle Sound, Virginia, North Carolina
831-SC, Albemarle Sound to Neuse River, North Carolina
833-SC, Morehead City to Wrightsville, North Carolina
841-SC, St. Simons Sound to Tolomato River, Florida

843-SC, Tolomato River to Eau Gallie, Florida
845-SC, Eau Gallie to West Palm Beach, Florida
847-SC, West Palm Beach to Miami, Florida
855-SC, St. Lucie Inlet to Fort Myers and Lake Okeechobee, Florida
856-SC, Fort Myers to Charlotte Harbor, Florida
857-SC, Charlotte Harbor to Tampa Bay, Florida

III. AREA TYPE :

246-SC, Boston Harbor, Massachusetts
248-SC, Boston Inner Harbor, Massachussets
369-SC, New York Harbor, New York, New Jersey
542-SC, Jamaica Bay and Rockaway Inlet, New York
550-SC, Chesapeake Bay - Eastern Bay and South River, Maryland

This is only the beginning of the Bureau's long-range small-craft charting program. How fast we expand depends primarily upon funds and capability. As each first edition is printed, one more is added to the list of those scheduled for revision and printing. New editions of small-craft charts are issued annually and are not hand-corrected between printings. Critical changes between new editions are published in the Notice to Mariners.

As with conventional charts, the small-craft charting program requires continuous research and development to study ever-changing user needs. Consideration is being given to expanding our charting coverage to inland lakes. However, the Bureau is presently concentrating on the vast coastline and the contiguous waterways of the United States. Our Atlantic coastline exceeds 28 000 statute miles, the Gulf Coast 17 000 miles, the Pacific Coast 8 000 miles; and Alaska and Hawaii total 35 000 miles.

The Coast and Geodetic Survey of the U. S. Department of Commerce is proud of the opportunity to accept this charting challenge.