

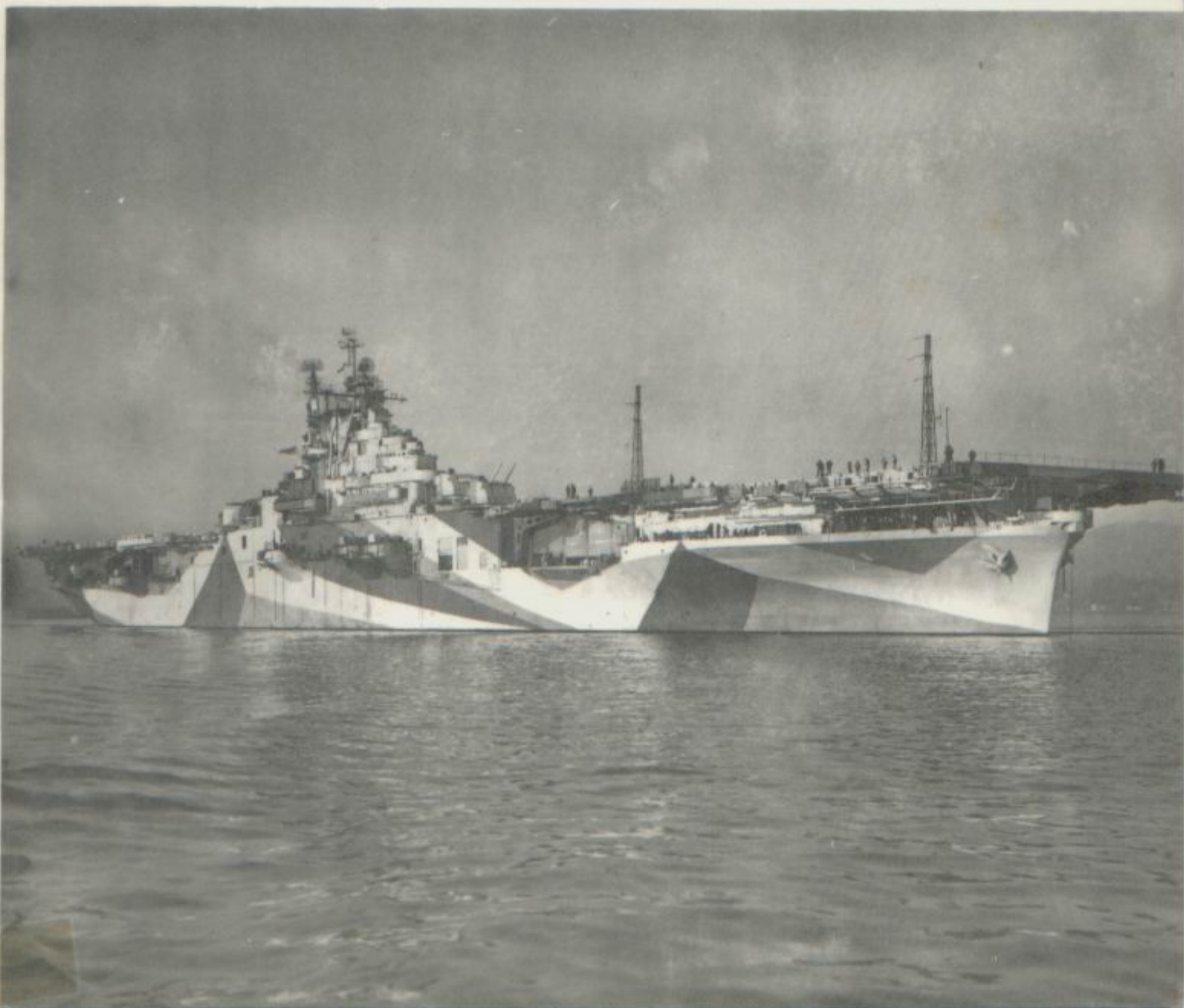
UNITED STATES NAVY

CAMOUFLAGE 2

OF THE WW2 ERA

FLEET CARRIERS

THE FLOATING DRYDOCK, KRESGEVILLE, PA



EDITORIALLY SPEAKING

This is our second volume on "U.S. Navy Camouflage of the WW2 era". The first book dealt with camouflage instructions in general. While we will constantly refer to this first book as Camouflage I, or Volume I, keep in mind that there is no "1" designation printed anywhere on, or in, that book to identify it as Camouflage I.

The majority of U.S. Navy camouflage schemes, known as measures, were fairly simple—except for the patterns. During WW2, USN pattern camouflage included two major types. Splotch patterns were in heavy use from 1941 thru 1942. Dazzle patterns were carried by nearly every Pacific fleet warship, beginning early in 1944, until well into 1945. The splotch patterns were casually designed "on the spot". Practically all of the hundreds of dazzle designs were prepared well in advance. They were sent to yards and tenders to enable specific designs to be applied to specific ships.

We've exposed only "the tip of the dazzle iceberg" in Chapter 5 of Camouflage I (however, it does include a complete breakdown of terminology). This new volume is an extension of Chapter 5. Even then, it covers only fleet and light fleet carriers (CV & CVL).

Each official USN pattern drawing has been matched to pictures of those carriers which actually carried that design. When possible, we've noted colors or patterns which deviated from the master drawing. Some of these observations are based on photo interpretation only. Thus, there is a possibility for error, especially if we had to rely on a "one of a kind" picture.

After an extensive search, we've reproduced the best pictures of each dazzle carrier. Even then, some pictures are of terrible quality. We've also included many large close-ups, a brief history of non-dazzle measures (as carried by each carrier) and made note of a number of appearance changes. Chapter 4, of Camouflage I, includes a rather comprehensive explanation of the non-dazzle measures discussed in this volume.

We believe that the 143 pictures within this volume will appeal to all naval enthusiasts, and not just to camouflage

modelers. Keep in mind that "reading" photographs, as discussed in the introduction in Camouflage I, is especially valid in this volume.

The last chapter of this book is somewhat unique in that it is a supplement to Camouflage I. We recommend that you read this chapter first, then keep Volume I at your side while studying Chapters 2 thru 13. Camouflage I is intended to be the master book. Any additional volumes will be designed to be an extension of it.

If Camouflage I is unavailable in your area, it can be ordered directly from Floating Drydock. We've also just released a set of accurate paint chips. Due to our error, the navy blue (5-N) chip is incorrectly named navy gray. It should be navy blue. See the inside of the back cover for ordering instructions.

Throughout this edition, we have reviewed other current publications which are applicable (i.e., aircraft carriers). This includes praise as well as condemnation. Both of us have painted models while relying on published data. We have occasionally ruined hundreds of hours of work because of some author's casual attitude. We believe that we have a duty, especially to beginners, to correct declarations made in publications which we know to be wrong.

LARRY SOWINSKI, TOM WALKOWIAK

All photographs are official U.S. Navy from the National Archives. We would especially like to thank some of the people who were a great help to us: Ernest Arrayo, Robert Carlisle (USN Photo Journalism), Edward Dominik, Norman Friedman, Bernard Glasgow, Charles and Carole Gerardi, Paul Howshall, Michael Meleta, Robert Morales (Pres. of N.Y.

shipcraft guild), Patrick O'Brien, Del Palmieri, Galen Papadakis, John Reilly (Naval History Division), Allan Rowland, Gus Swainson, Robert Sumrall (who started it all) and James Trimble (Nat. Archives). And to our wives, Rosemary Sowinski and Sherry Walkowiak, whose help and understanding made it all possible.

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Drawings by T. Walkowiak

Design and layout by L. Sowinski (1977)

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COVER: The USS YORKTOWN CV10 leaving Puget Sound Navy Yard on 6 October 1944 wearing a fresh Measure 33 Design 10A. The colors are Navy Blue 5-N, Ocean Gray 5-O and Light Gray 5-L.



U.S.S. YORKTOWN (CV-10) off Formosa, January 21, 1945. Constant operations have taken their toll on her camouflage pattern. Dark green primer (84-D) and rust are in abundance. Note the difference between wet and dry paint and the contrast between the darkest panel (5-N) and the black boot topping. There appears to be no countershading under the flight deck overhang.

FLEET CARRIERS, Chapter 1

This volume covers only those U.S. wartime fleet carriers which were camouflaged in dazzle patterns. Therefore, LEXINGTON (CV-16), LANGLEY (CVL-27) and CABOT (CVL-28) are not included. All three of these ships fought the war in Measure 21, solid navy blue. LEXINGTON was painted into Ms12 at the end of the war (see page 64).

The fourteen ESSEX class "dazzle" carriers dominate this book the same way they dominated the entire U.S. carrier fleet. We would've liked to have included much more on each ship, but we have already stretched these pages beyond reason.

There are several source books which can be used to supplement the technical aspect of U.S. CARRIERS. A very recent publication is also the best. Leeward Publications' "Ship's Data 7" is an excellent profile of the entire technical and operational career of U.S.S. YORKTOWN (CV-10). As written by Norman Friedman, this work is not just about one ship, but is invaluable as a reference for the entire ESSEX class. It details modifications, radars and contains a beautiful color profile of CV-10 in dazzle. However, "Ship's Data 7" also has a number of problems: the cover art is incorrect with regard to the shape of the bow, height of the bridges and position of the bridge 40mm director. The color on both the back cover and centerspread art work (in our copies) has too much yellow in it. This is not an uncommon printing problem. We also suffered from color printing fluctuations on the cover of Camouflage I.

Flight Deck Coloration

Carrier flight decks were very colorful, up to the end of 1941. A red-mahogany stain covered the fir planking with painted yellow

aircraft guidelines and identification letters.

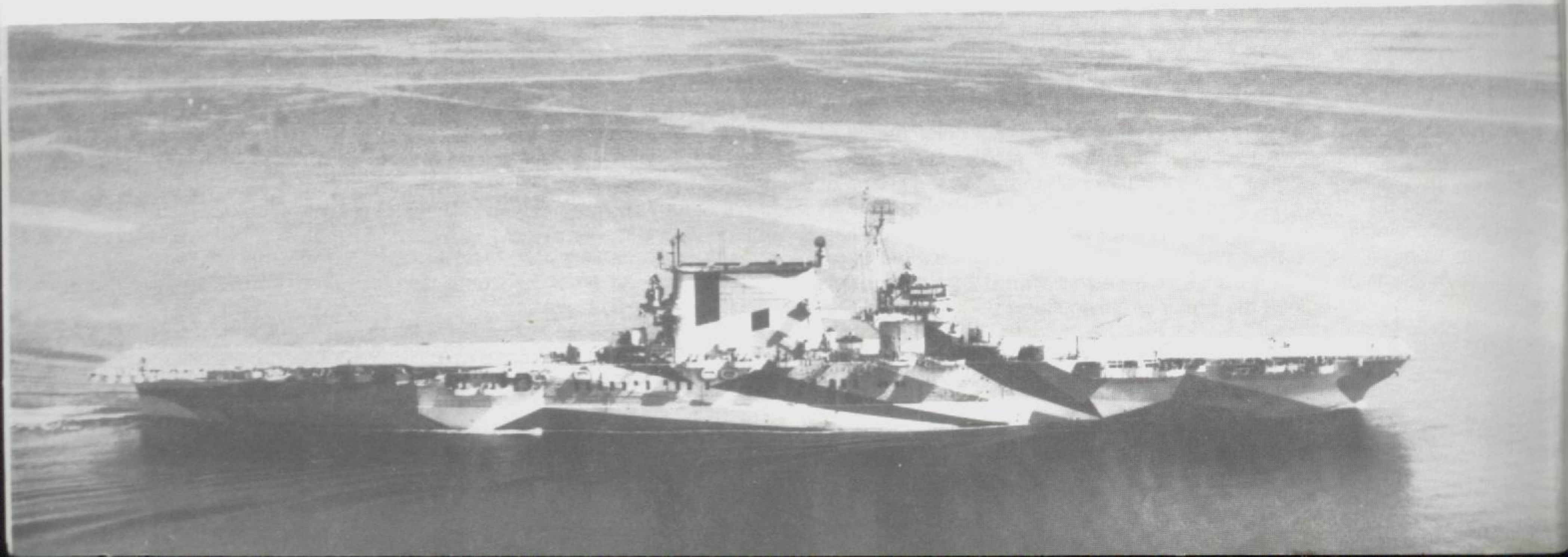
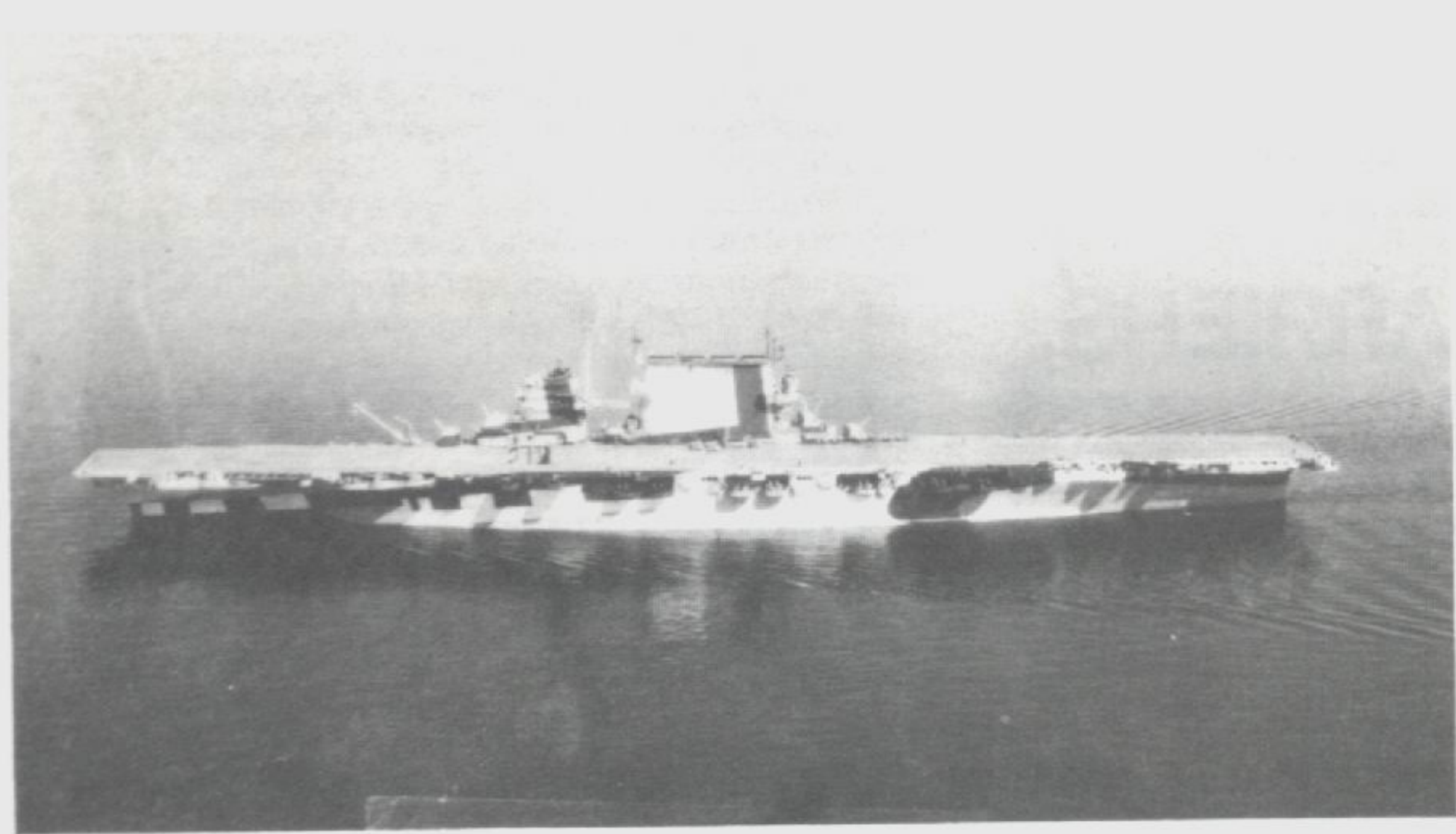
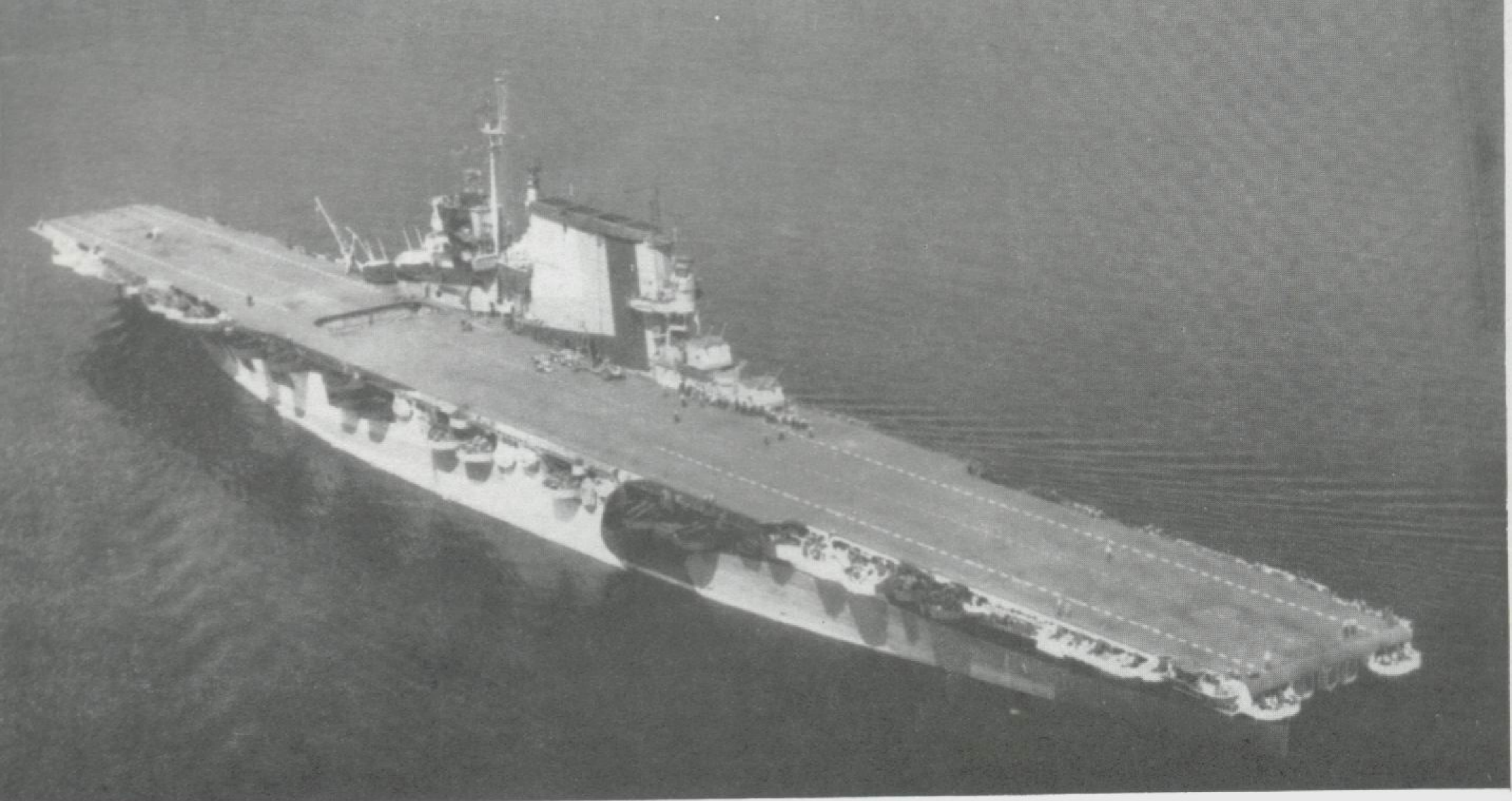
A blue stain was introduced early in 1942. Initially, there may have been a number of variations, but by 1943 "blue flight deck stain (No. 21) was issued to all yards. During 1944, a darker stain matching deck blue (20-B) began to be used. It's fairly easy to spot the darker stain, as freshly applied, but weathering and flight operations soon reduced the actual color of any flight deck to a fraction of its original chroma (see Chapt.2).

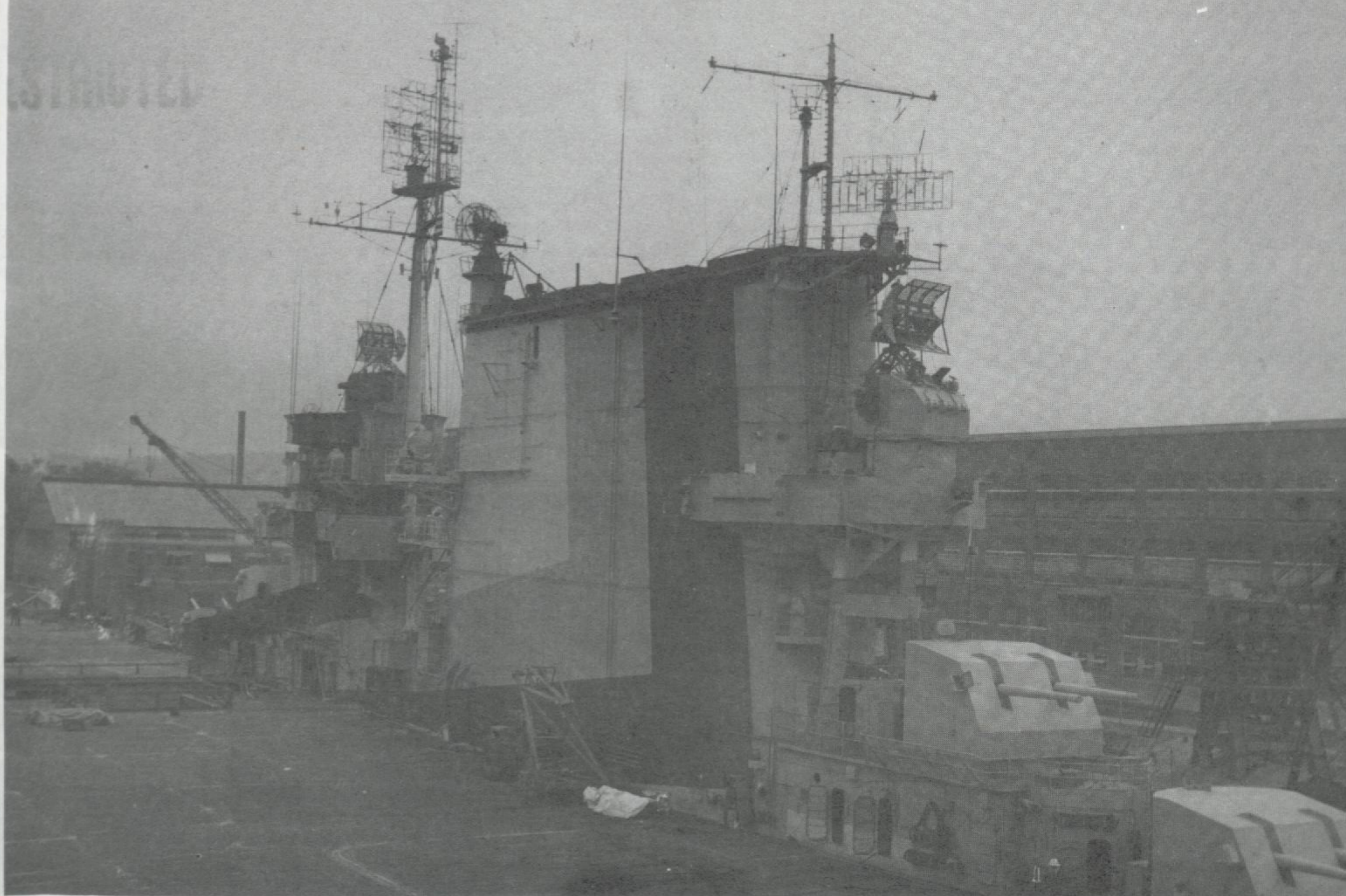
Flight deck hull numbers did not come into use till the end of 1943. While black paint was standard, it has also been reported that deck blue (20-B) paint was also used. In 1945, a number of carriers painted on white numerals.

In 1942, guidelines were a medium gray. Some were dashes, some were solid. During 1943, yards were issued a light gray flight deck striping. Yellow was back in use in the PACIFIC. Both were replaced by white dashes. However, we don't know of any way to tell whether the dash lines are light gray, or yellow, or just dirty, worn white (in a black and white photograph). White dashes were supposed to be standard (during the dazzle period), but were generally so weathered that it becomes "anyone's guess". Check the close-up of CV-10 on the back cover.

No patterns were carried on the flight deck or other horizontal surfaces. All other horizontal surfaces were painted with deck blue (20-B) paint.

In all honesty, we are forced to leave you with some inconclusive conclusions. To save space in the following chapters, we will sometimes refer to "standard flight deck coloration". It is our opinion that the flight deck is blue stain No.21 with painted black numerals and painted white dashlines.





SARATOGA at Puget Sound. This close-up view of the port side of the Island was taken 13 August 1944 during refit. This angle clearly shows the structure that the camouflage matched the design sheet on page 5.

DESIGN 11A, Chapter 2

Design 11A was prepared specifically for the unique silhouette of the SARATOGA (CV-3). As such, she was the only aircraft carrier to carry this design. Measure 32 colors were used: light gray (5-L), ocean gray (5-O) and dull black (BK). The flight deck was stained flight deck blue. All other decks and horizontal surfaces were painted deck blue (20-B).

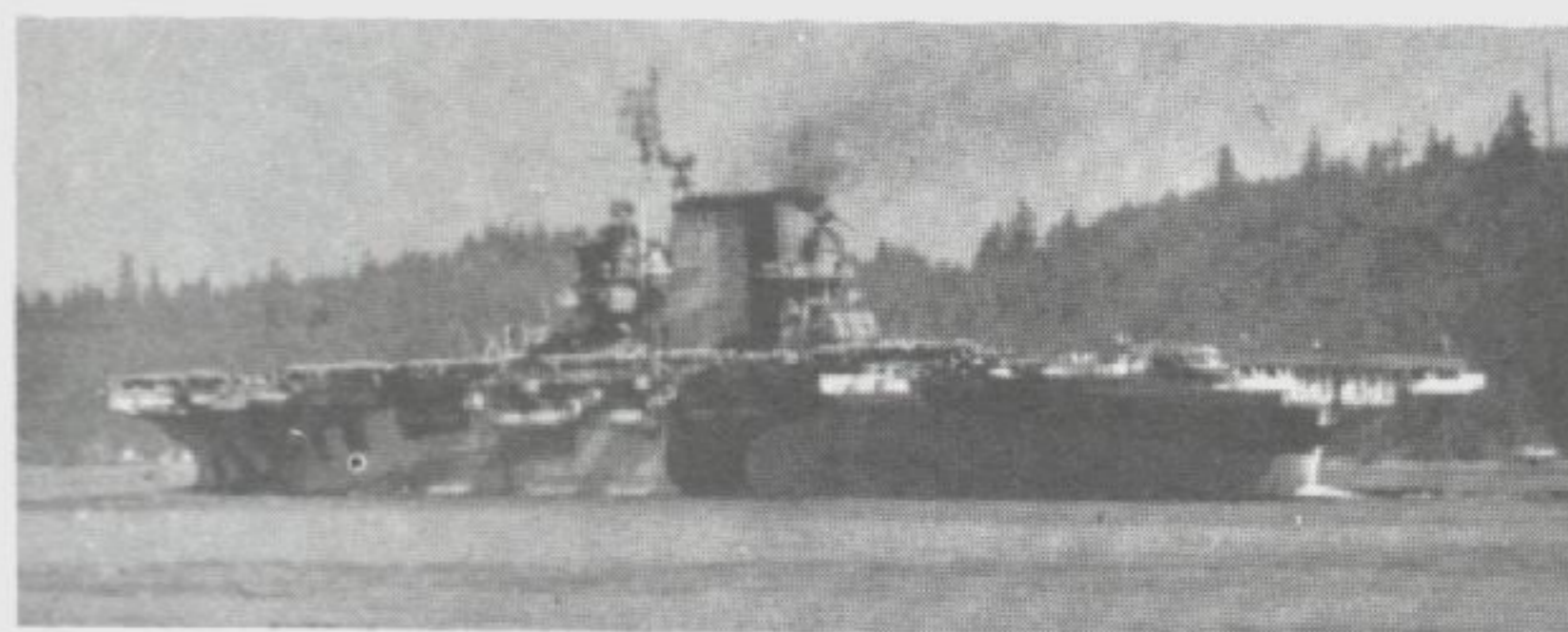
The photographs in this chapter are all of SARATOGA, taken in Puget Sound on September 7, 1944. SARA carried Measure 21, solid navy blue, both before and after her "dazzle" period.

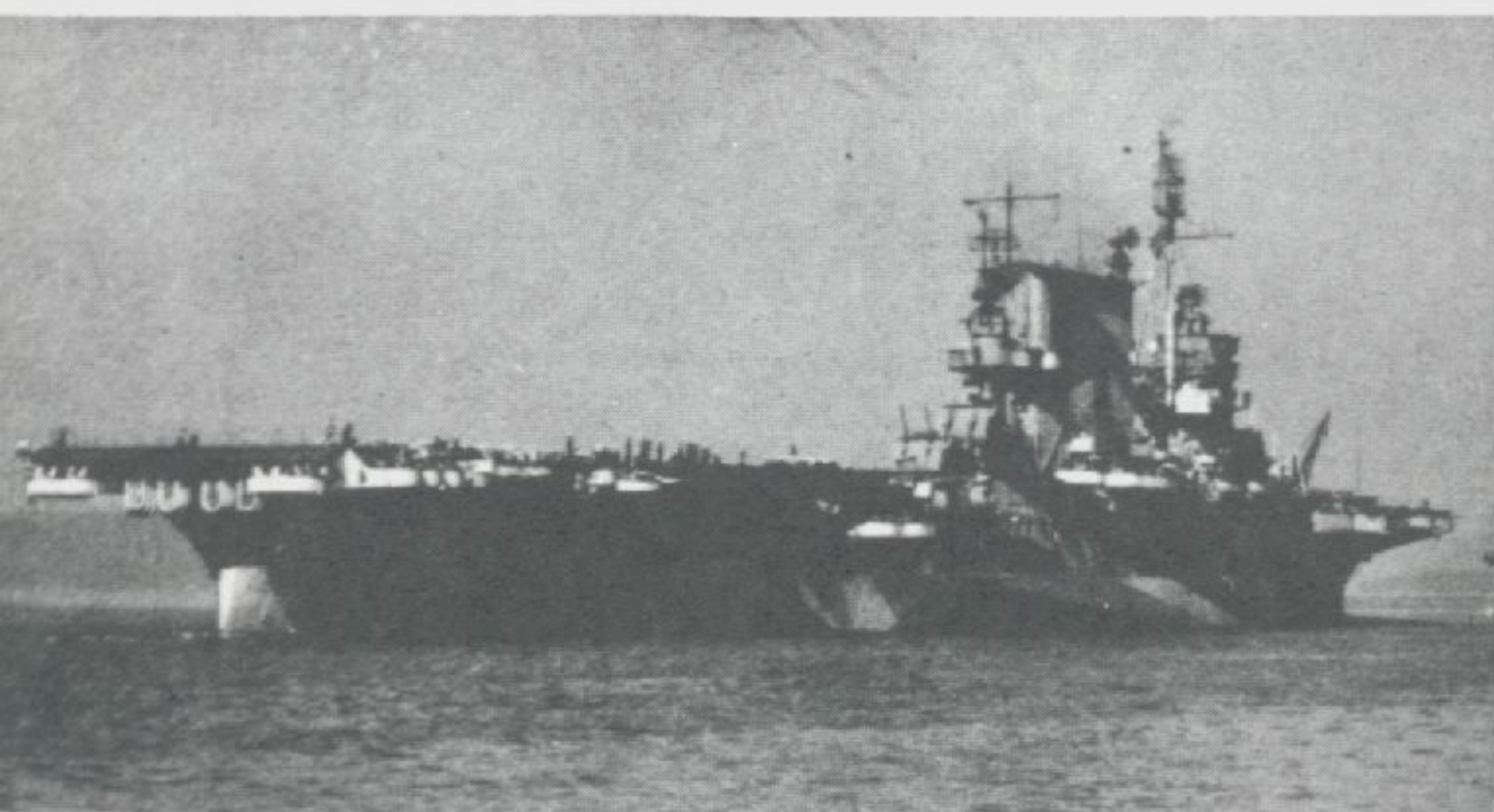
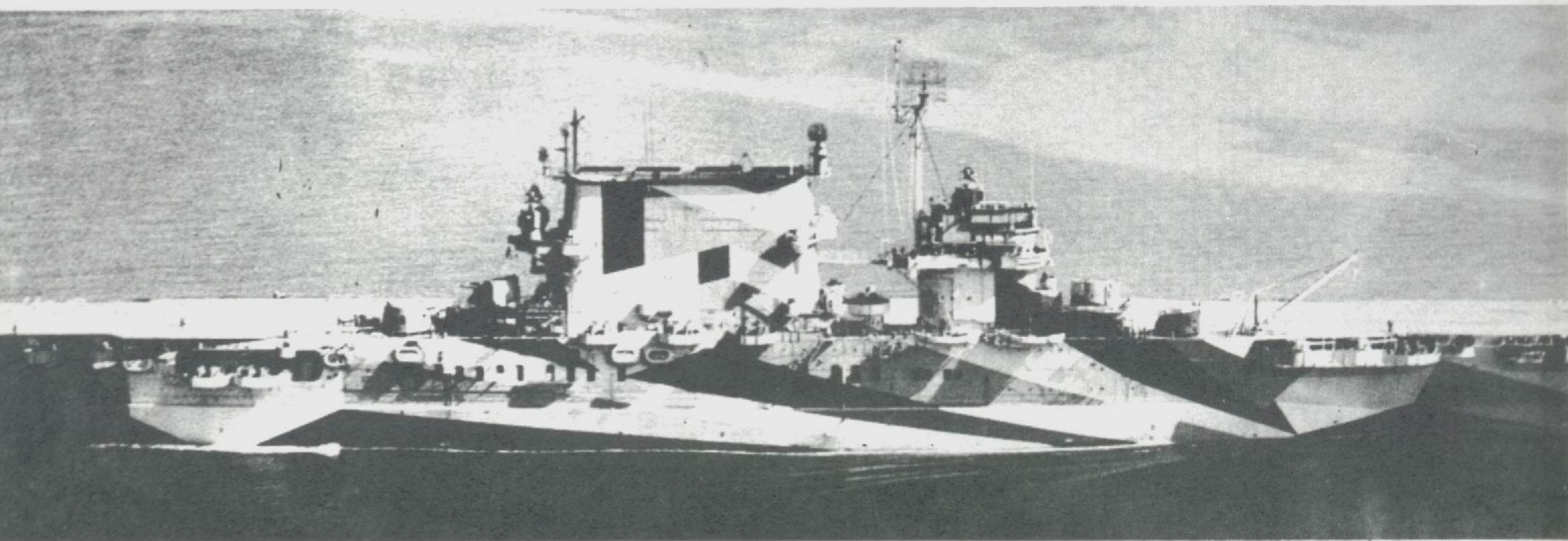
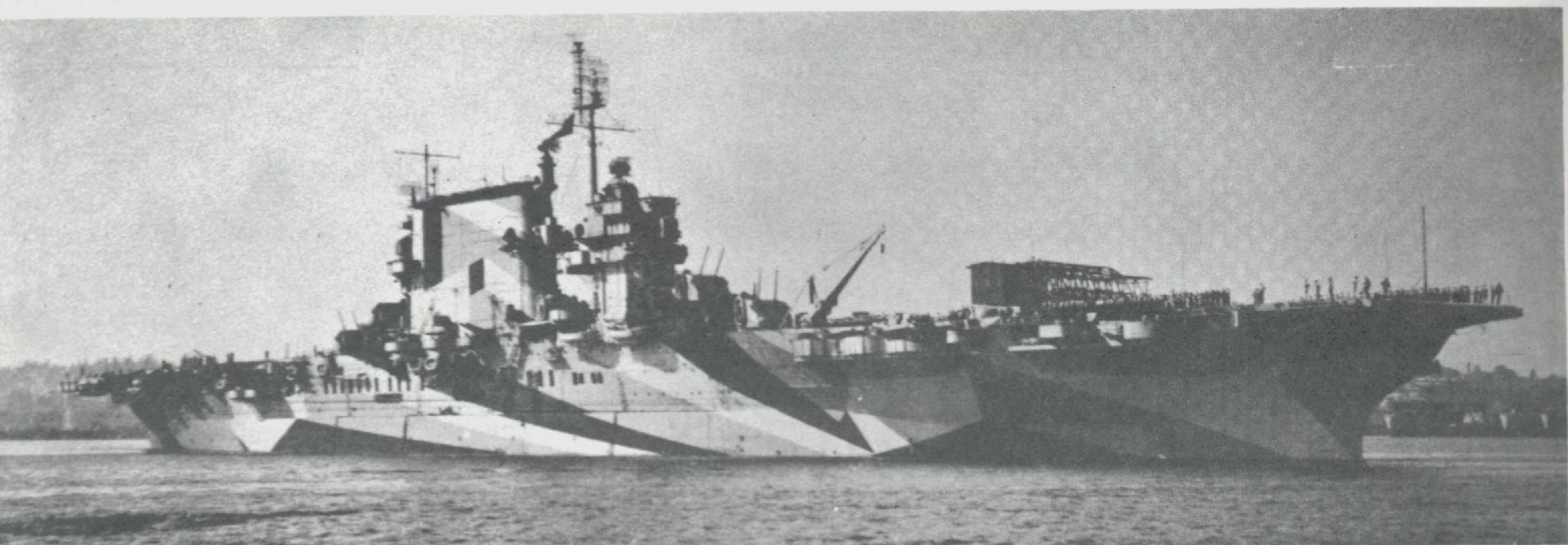
Bremerton (Puget Sound) appears to have matched the design drawing (see page 5) very closely. The only noticeable deviation is on the port side, just aft of the sternmost 5" twin mount. The forward curve of the black panel, as applied on this ship, is blunted while the drawing shows it smoothly sweeping forward as it nears the waterline.

Flight deck coloration appears to be standard except for the dash lines. While the narrow centerline dash ran the entire length of the ship, the broad dashes on either side did not. Both stopped short of the island, then began again past the island. Blue flight deck stain was used to darken the wood deck to a value of medium blue/gray. Swatches show it to be somewhat darker and bluer than ocean gray (5-O) about the value of sea blue (5-S). However, once applied to weathered and previously

stained wood (mahogany) it appeared darker. This color mixture resulted in a number of slight color variations throughout the length of the flight deck. It generally produced a medium to dark shade of overall blue-gray with tinges of warm gray, green-gray, and red/brown-gray. All of this was mixed with leaked gas, oil, lubricants, tire skid marks and gouges. The after part of the flight deck usually received the worst abuse (from landing aircraft). Unless freshly painted, the after numeral is always more faded and weathered than the forward one.

The flight deck numerals are flat black, the dashes are white. Pictures taken of SARA in Measure 21 (in 1945) indicate that the flight deck colors remained the same, except that all dash lines ran the entire length of the ship.





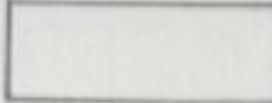

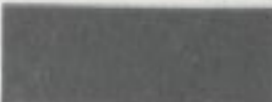
SARATOGA's silhouette is so unique that it would've been impossible to mistake her for anything else. This may be why Measure 32 high contrast colors were chosen. Black, highly visible, was very effective in distorting and breaking up large flat shapes. Thus, an attempt was made to make the immense funnel less noticeable.

Major wartime structural changes consisted of: Removal of all four 8" twin turrets, replaced by 5" twin DP mounts on a one-for-one basis. Removal of the tripod foremast, replaced with a pole. Bridge rebuilt. The three 5"/25s (on each quarter) were replaced by two 5"/38s and one quad 40. Numerous sponsons for 20 and 40 mm AAs were added port and starboard on the hanger deck (boat wells) and at various levels just below the flight deck. An immense blister was added to the starboard side only. The port side blister was considerably smaller.

SARA was the oldest U.S. carrier to survive the war. She was expended at Bikini during the Atom bomb tests.



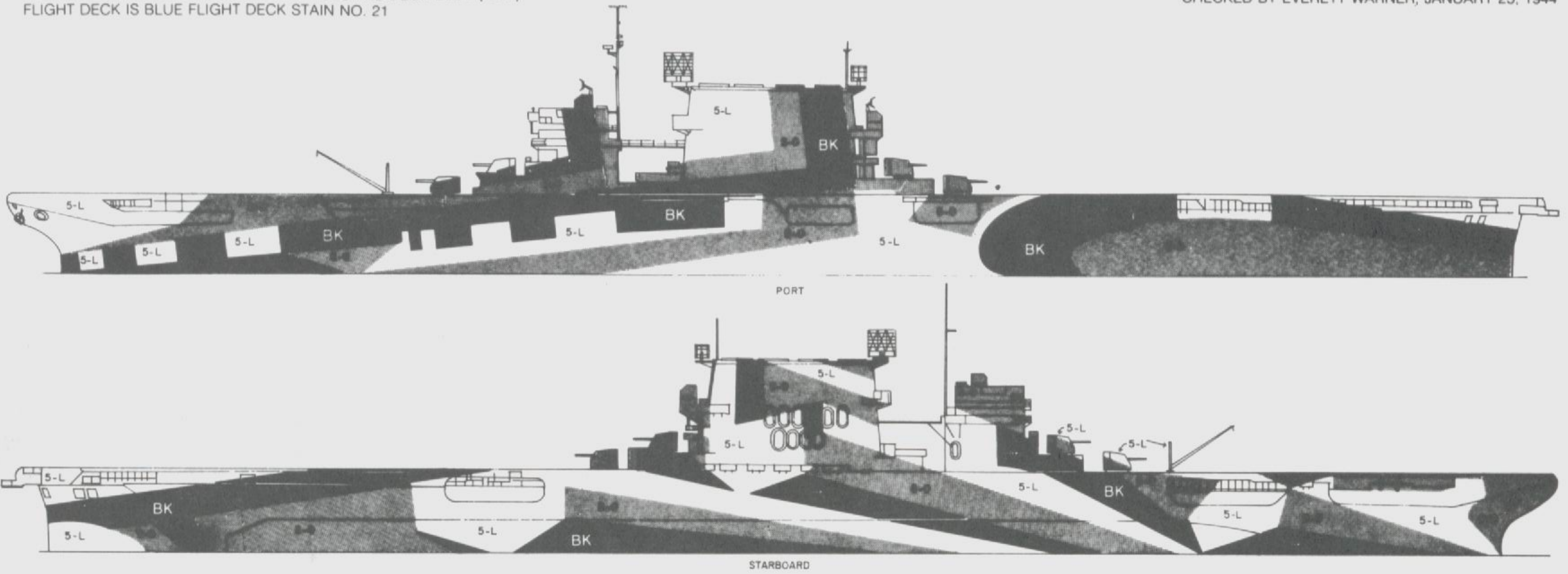
11A's original design was prepared directly on a booklet of general plans. All originals were drawn up in color. No "head on, stern on" superstructure "end on" designs were prepared for SARATOGA.

-  light gray (5-L)
-  ocean gray (5-O)
-  dull black (BK)

CV-3
measure 32
camouflage design 11A

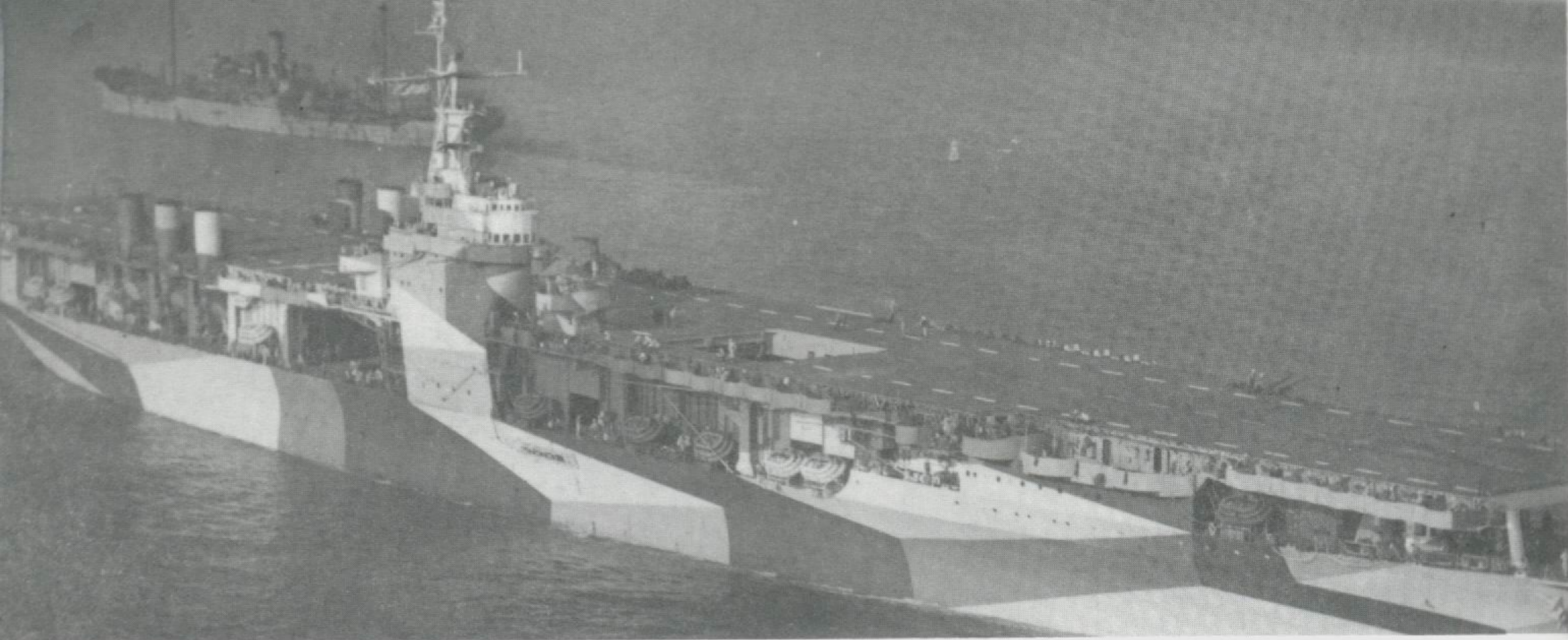
DECKS AND OTHER HORIZONTAL SURFACES ARE DECK BLUE (20-B)
FLIGHT DECK IS BLUE FLIGHT DECK STAIN NO. 21

CHECKED BY EVERETT WARNER, JANUARY 25, 1944



SARATOGA leaves the Puget Sound Navy Yard on September 7, 1944. Her starboard pattern is a perfect match to the master drawing.





ABOVE and BELOW: RANGER out of Norfolk on July 6, 1944. All the 5" AA mounts have been removed. Compare these colors to those carried by CV-15 and CV-20 in Chapter 9.

DESIGN 1A, Chapter 3

Like SARATOGA in the previous chapter, this design was prepared just for one ship, RANGER (CV-4).

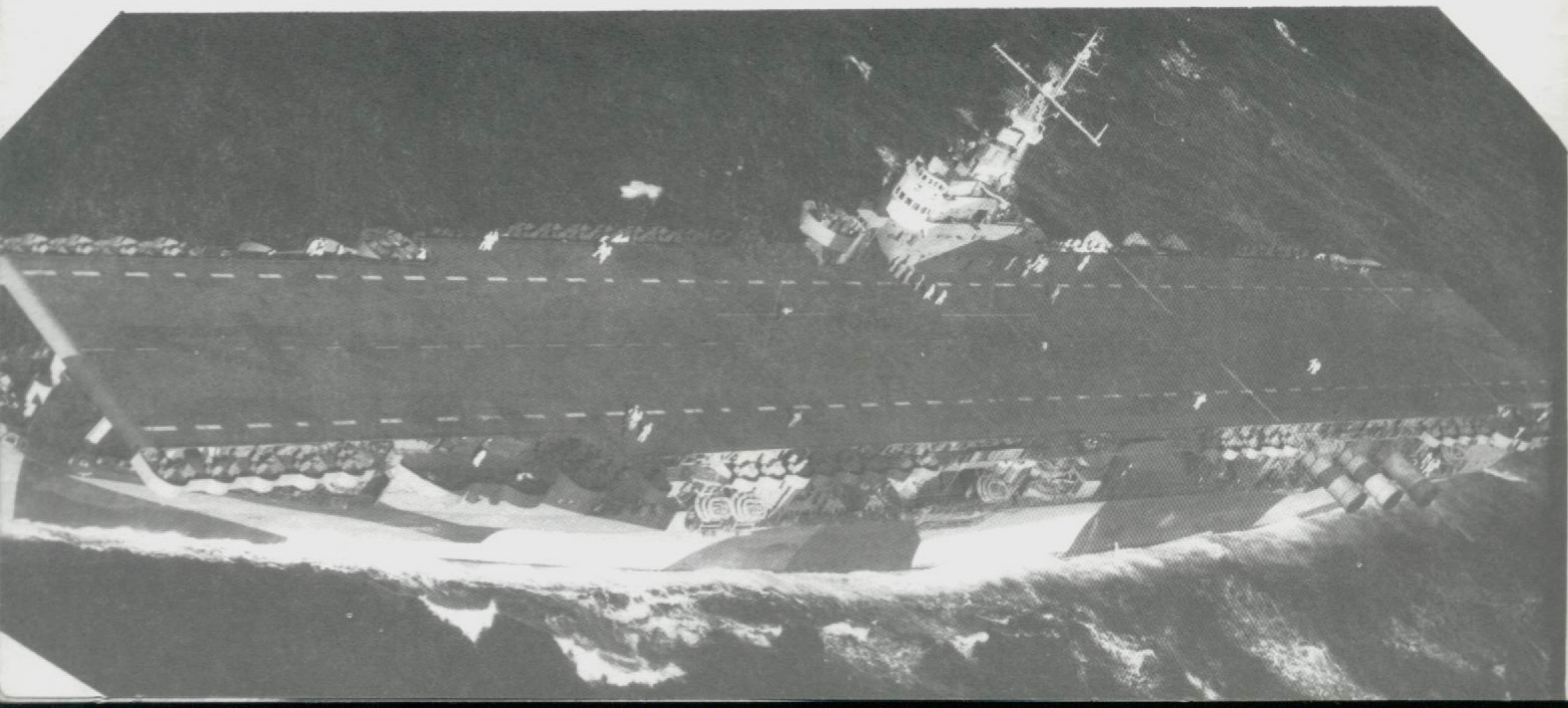
The pattern shapes and designated colors appear to have been faithful copies from the prepared drawing—except—there was a discrepancy in the design sheet as prepared. We've repeated this inconsistency (on page 7) for your evaluation. Note that the measure is specified as M33 and the colors on the profile drawings are pale gray (5-P), haze gray (5-H), ocean gray (5-O) and navy blue (5-N). However, the color legend shows dull black (BK) instead of navy blue (5-N). Previously reproduced pictures indicate that perhaps black was indeed used. The pictures reproduced here seem to say a dark 5-N. Your guess is as good as ours in this case. The cause of the problem may be the kind of film used, or a bastard paint mix.

This was the only four color design prepared for large fleet

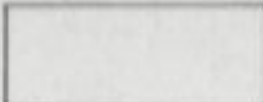



carriers. The most common designs used only three.

Relegated primarily to the slower paced Atlantic and training duties, the RANGER appears to be little changed. Most noticeable is the addition of 20 and 40mm mounts. However, there seems to have been a serious weight problem. With only six quad 40s added, all eight 5" single mounts had to be removed.

The flight deck stain looks a little on the dark side. It's probably "deck blue stain" instead of the lighter "blue flight deck stain". RANGER had been the test carrier for the introduction of the earlier blue stain (see Camouflage I, page 11, under AIRCRAFT CARRIER DECKS). The black numerals are very hard to see in the views taken off Norfolk. The near-overhead, taken five months later, shows the numeral barely visible. Dash lines appear to be white. Elevators are crossed with Xs.

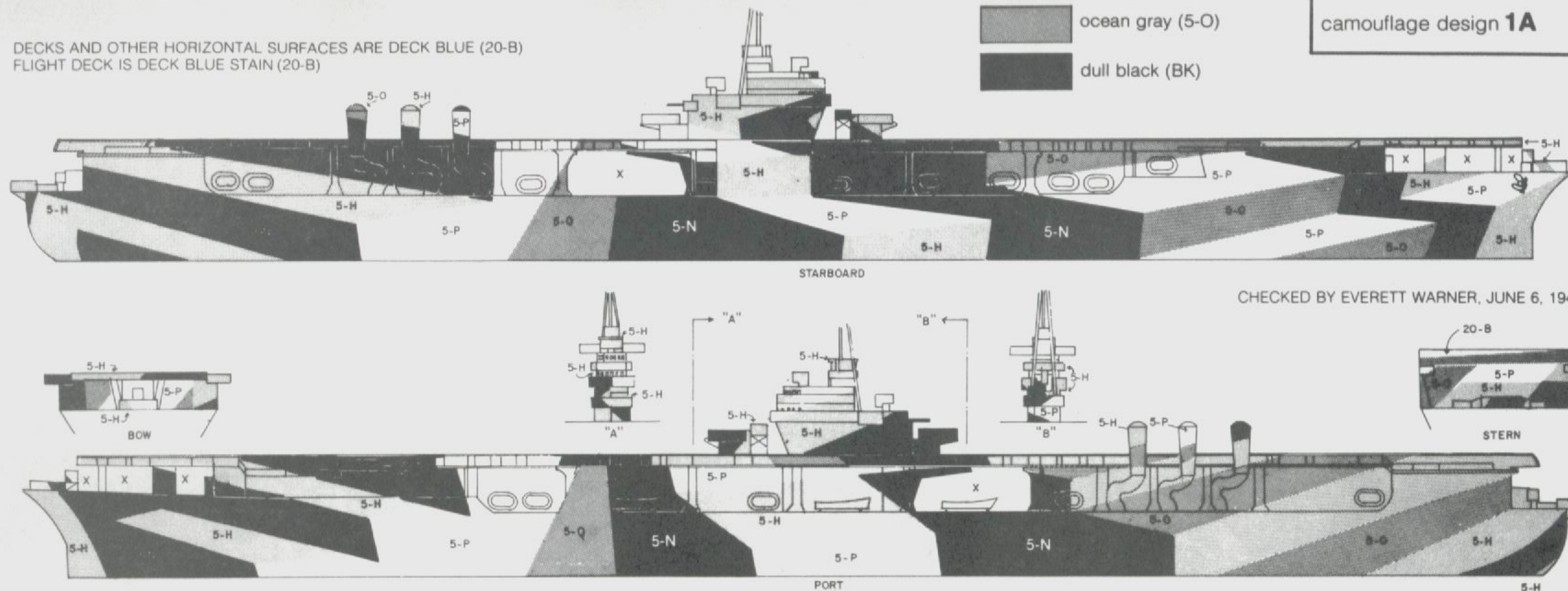


Even though RANGER was "one of a kind," a special drawing was prepared for her camouflage pattern. Thus "end on" drawings were also included. The discrepancy between the color legend (BK) and the drawing (5-N) was copied by us, from the original.

-  pale gray (5-P)
-  haze gray (5-H)
-  ocean gray (5-O)
-  dull black (BK)

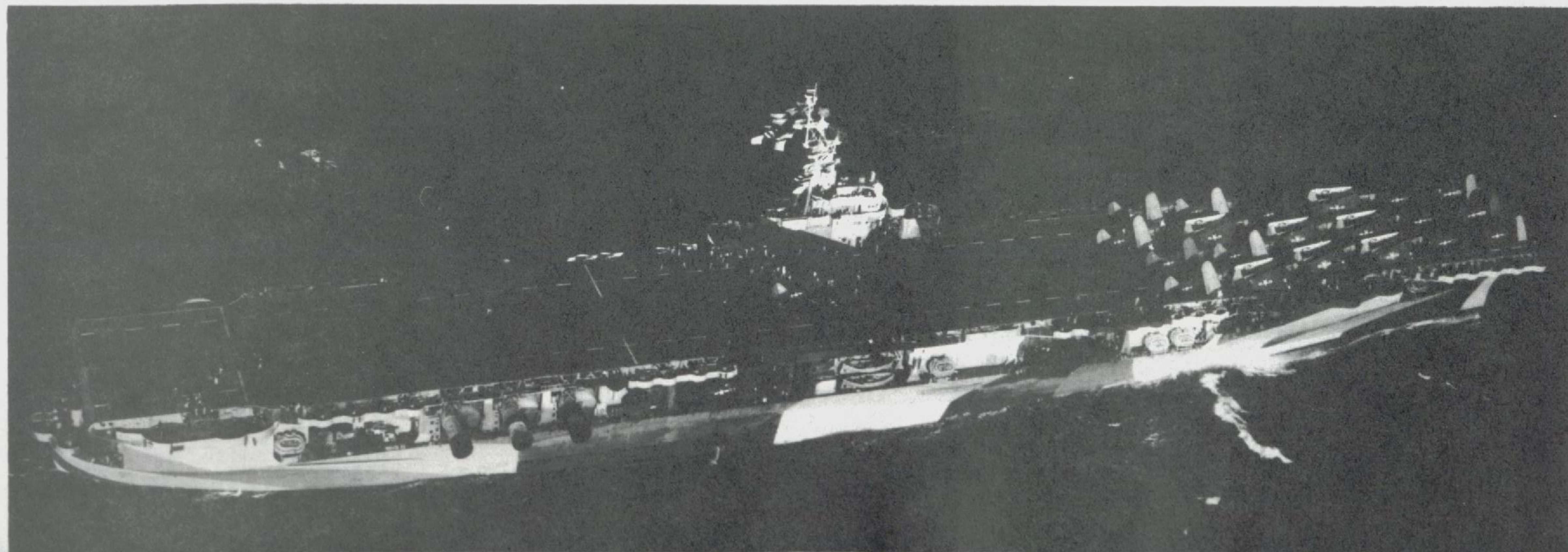
CV-4
measure **33**
camouflage design **1A**

DECKS AND OTHER HORIZONTAL SURFACES ARE DECK BLUE (20-B)
FLIGHT DECK IS DECK BLUE STAIN (20-B)



7

RANGER off San Diego on December 1, 1944 in her role of "night fighter training carrier."







The "Big E" pulls out of Pearl Harbor, August 2, 1944, in fresh dazzle paint. The flight deck is also freshly stained with deck blue stain, painted black numerals, and white dashes. As near as we can judge, there's next to no visible difference between the darkest dazzle color and the boot topping. Also, the contrast between the medium color (haze gray) and the darkest color is very extreme.

DESIGN 4Ab, Chapter 4

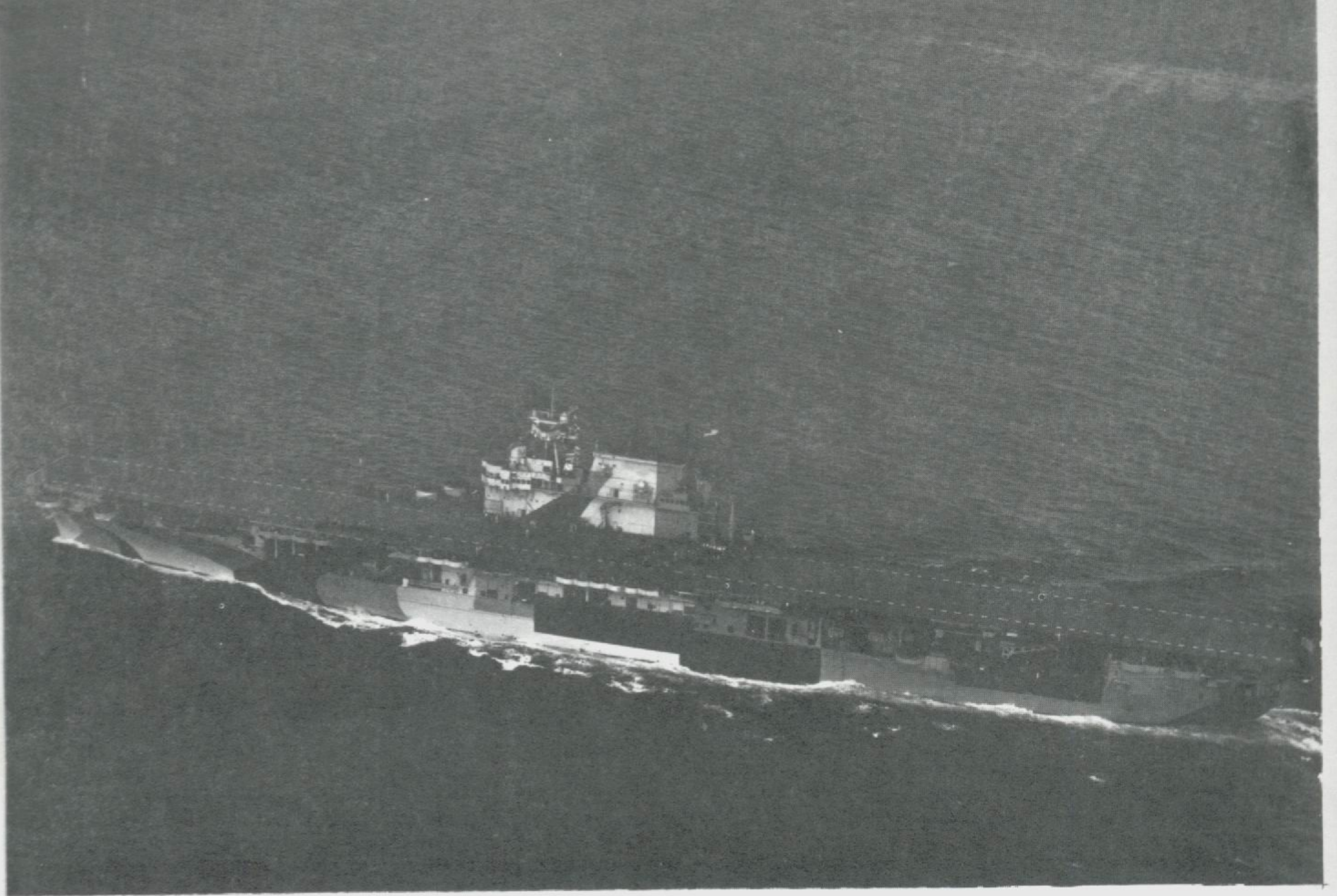
ENTERPRISE (CV-6), as painted up in design 4Ab, represents another definite color problem. This design, as prepared, indicated Measure 33 colors of pale gray (5-P), haze gray (5-H) and navy blue (5-N). We're convinced dull black or blue/black was substituted in place of navy blue. The contrast between the darkest panels and haze gray is just too great. However, we draw your attention to PC 1251 (on the following page) which is passing ENTERPRISE on the port side. She's at least as dark as CV-6's darkest color, yet there is a visible contrast between the black on the top of the PC's smoke stack and the rest of the craft. The PC's light gray mast is reminiscent of Measure I (see Camouflage I, page 5). Measure I was officially discontinued in September 1941! All of the pictures in this chapter were taken on

August 2, 1944, while the "Big E" was off the coast of Hawaii.

While RANGER in the previous chapter is open to question, ENTERPRISE'S darkest color is too dark to be navy blue. Compare her to any of the carriers in Chapters 9 and 10.

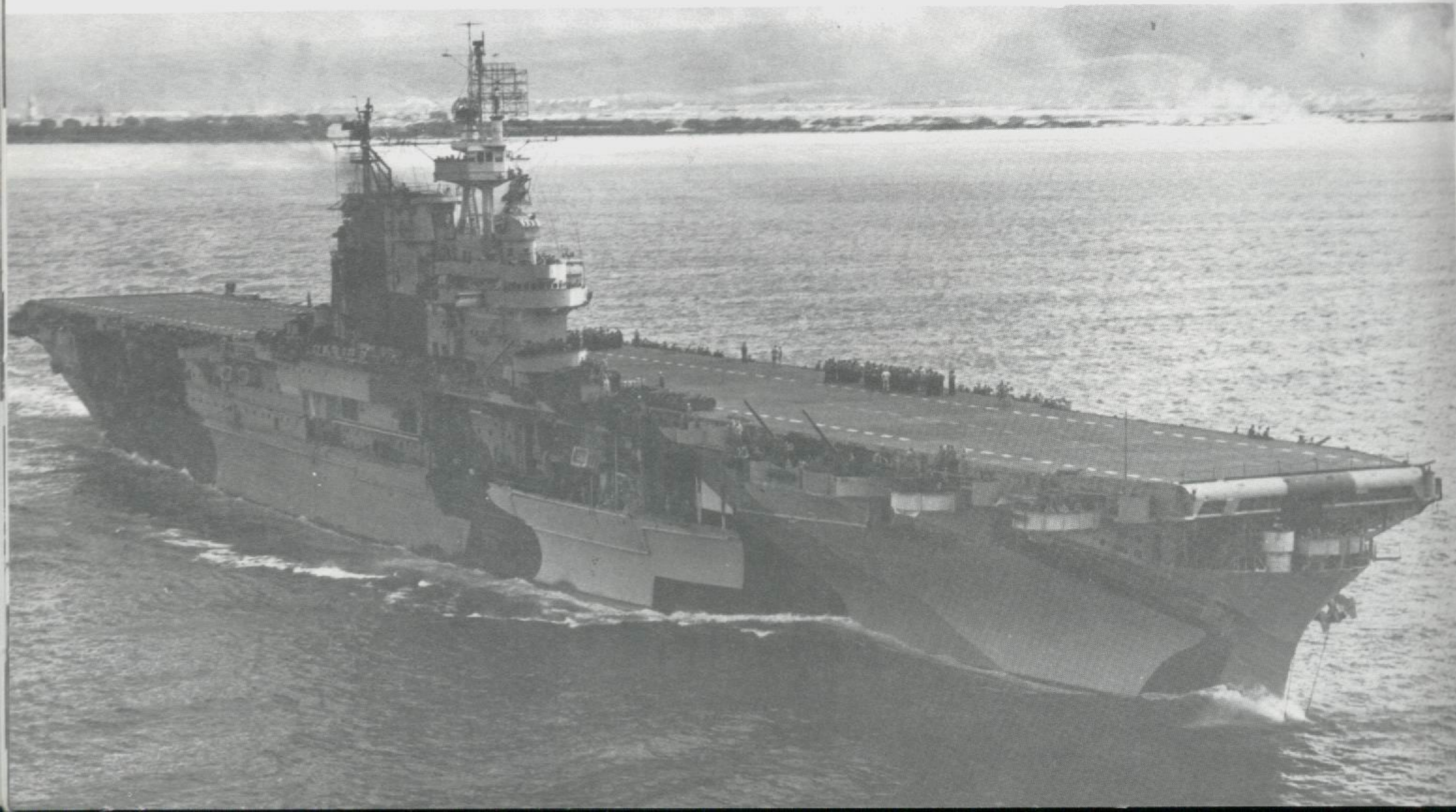
This pattern has the suffix "b" added to it because it is a modification based on an earlier design. 4A. This was the only carrier pattern that appeared, in a simpler form, in the SHIPS-2 supplement of March 1943. It differed from 4Ab in that the "b" design used hard lined shapes while 4A used hard lines and soft, feathered blend-ins. Design 4Ab was applied in June 1944 and carried at least into January '45. Prior to, and after this time, ENTERPRISE wore Measure 21, solid navy blue.

The "Big E" is shown here in the same rig as when she was

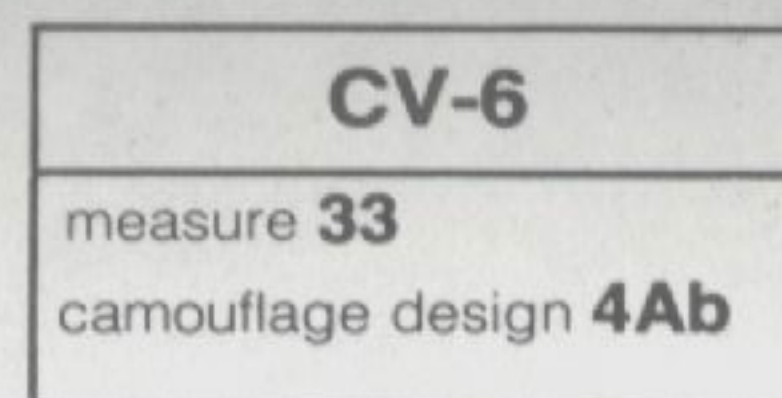
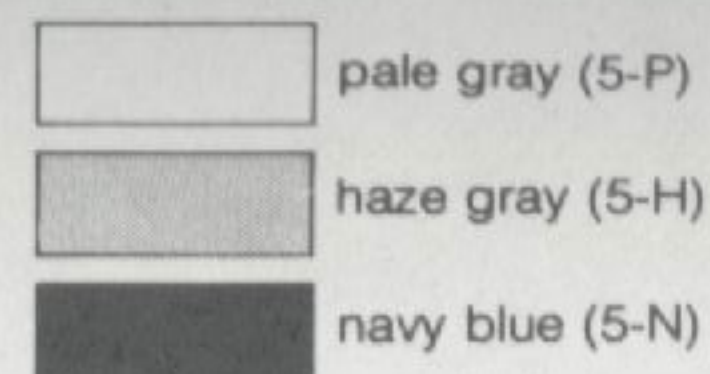


hit by a kamikaze in May '45. In her last wartime repair and refit of June '45, the twin 40 on the bow was removed and the two sets of twin 40s on both bow quarters were replaced with quad 40's.

ENTERPRISE (CV-6) was, and always will be, America's greatest warship. It's a tragedy that she was unceremoniously scrapped.

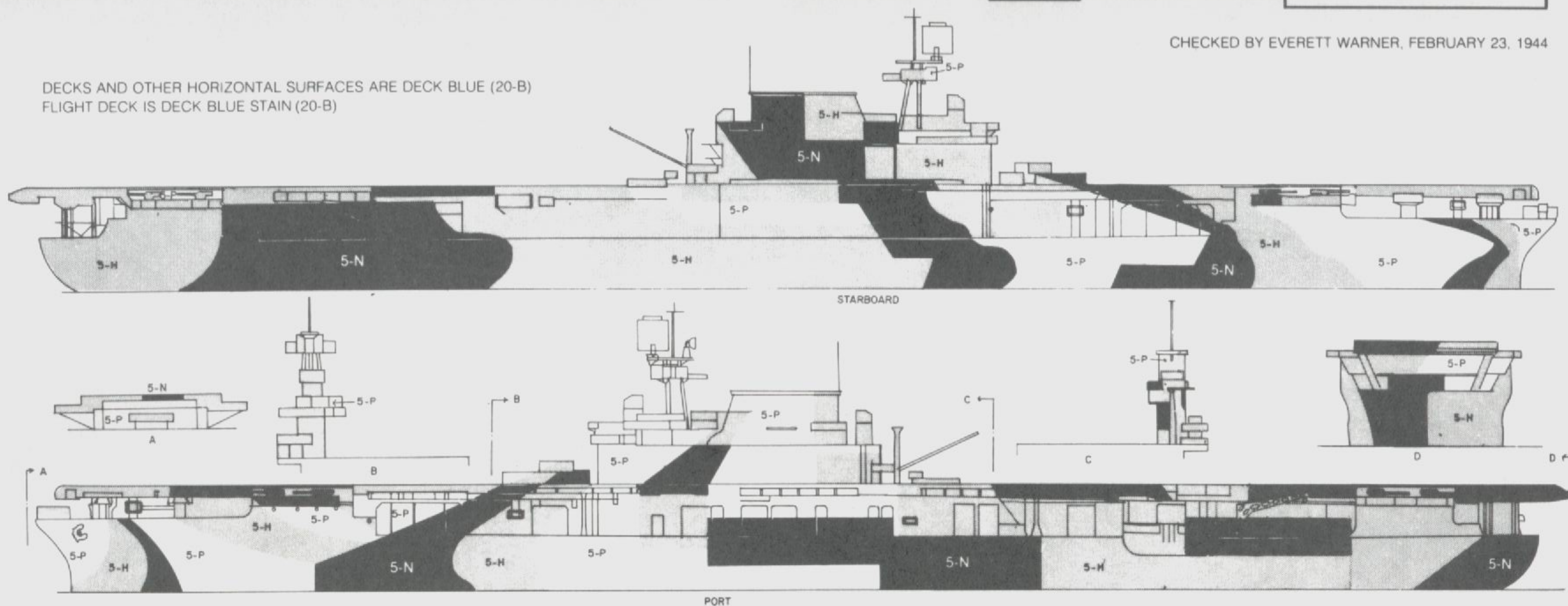


Unlike RANGER, no special drawing was prepared for the application of ENTERPRISE'S camouflage pattern. It was applied directly over the outboard profiles from a booklet of general plans. However, "port side island" and "end on" drawings were made up and added.

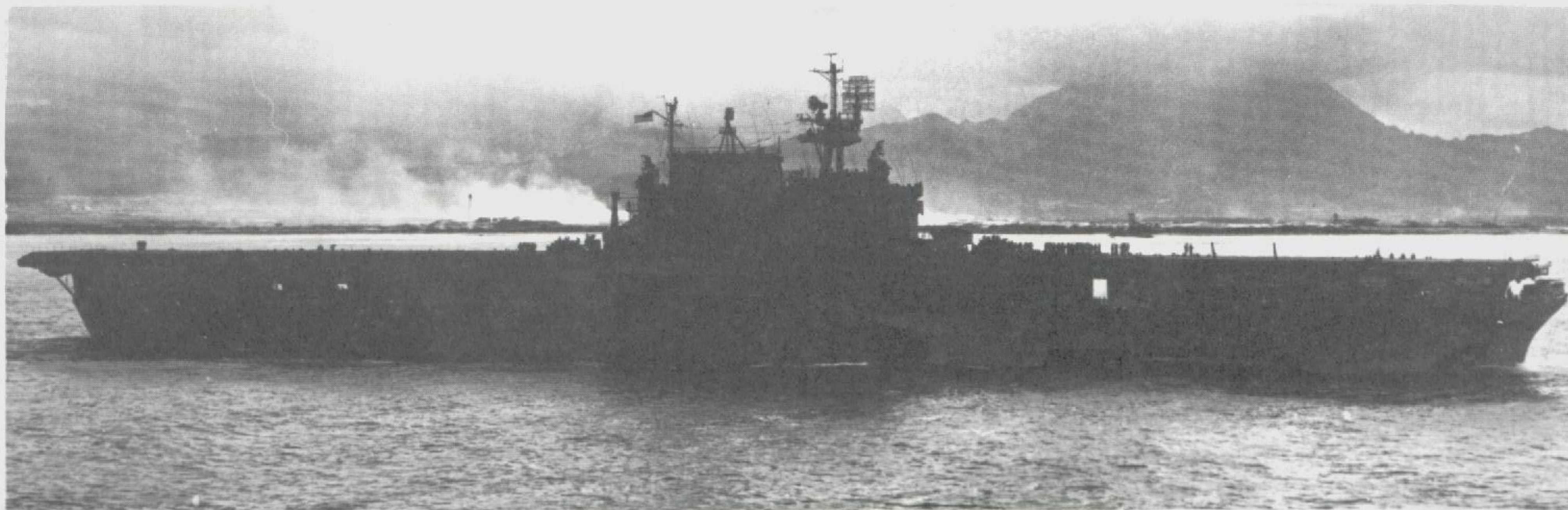


CHECKED BY EVERETT WARNER, FEBRUARY 23, 1944

DECKS AND OTHER HORIZONTAL SURFACES ARE DECK BLUE (20-B)
FLIGHT DECK IS DECK BLUE STAIN (20-B)



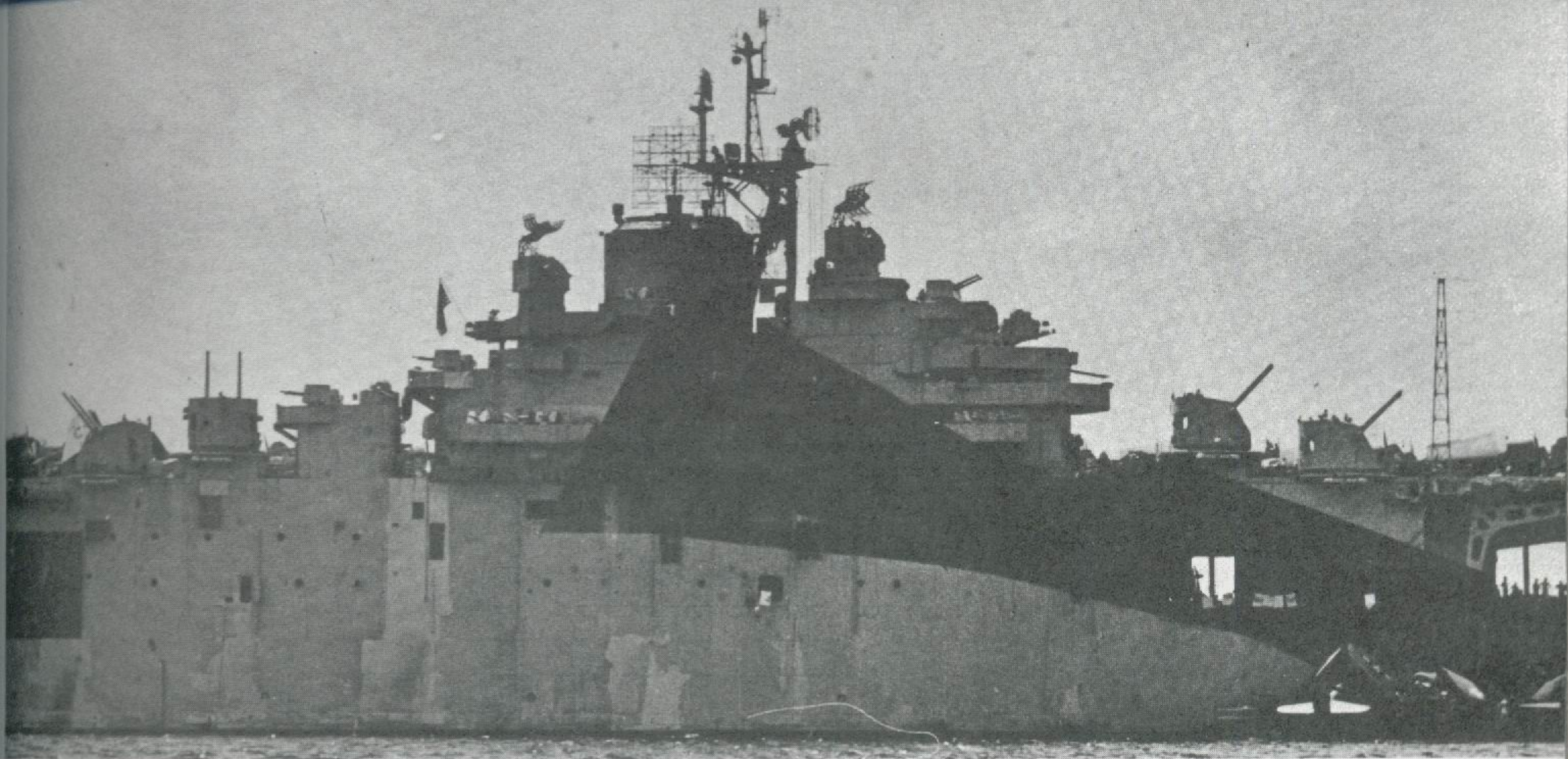
ENTERPRISE off Hawaii, immediately after her refit at Pearl Harbor. The dazzle paint scheme is brand new.





550-44-S8 ISLAND STRUCTURE SHOWING ALTERATIONS
SAN FRANCISCO, CALIFORNIA 15 APRIL 1944 CV9

BS 79-5



This is a close up of the full view of ESSEX shown on the top of page 14. It shows details not visible in the two port side views of the island.

DESIGN 6/10D, Chapter 5

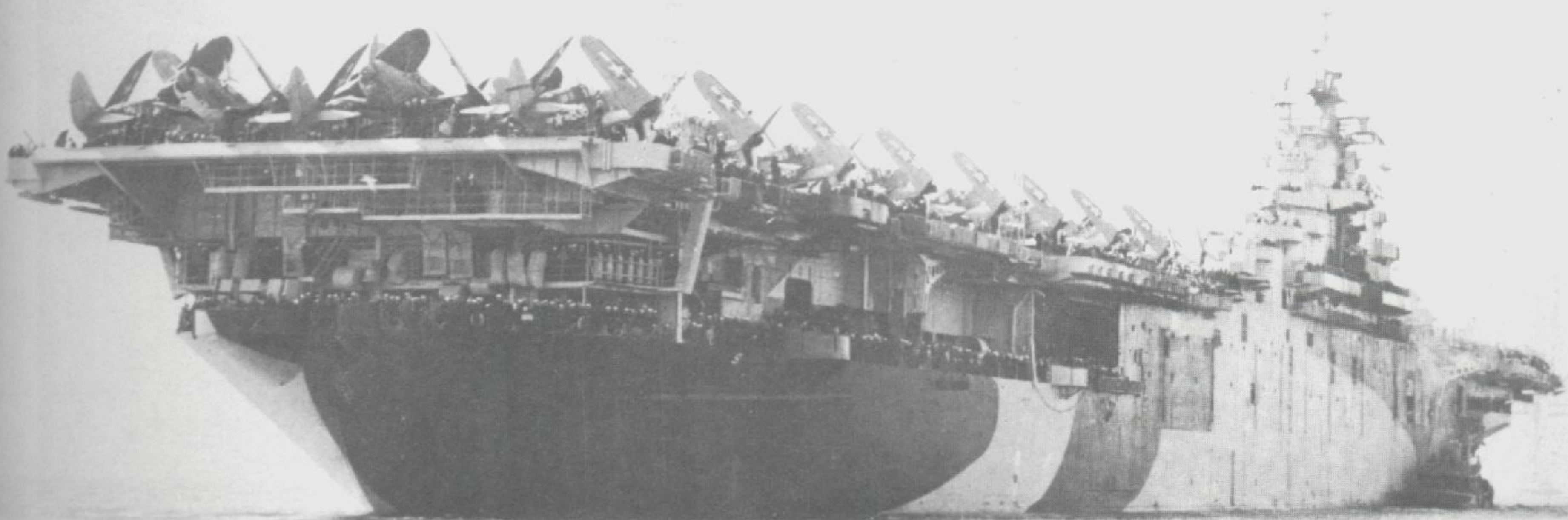
This design was the only two color (dull black, light gray) pattern prepared for ESSEX class carriers. For that matter, it was unique to all fleet carriers. Its' designation, 6/10D is a little confusing, but does indicate that the original pattern was prepared initially for destroyers (D) and redrawn for the ESSEX class. Only ESSEX herself carried this design. Therefore, like the previous three chapters, this also covers just one ship.

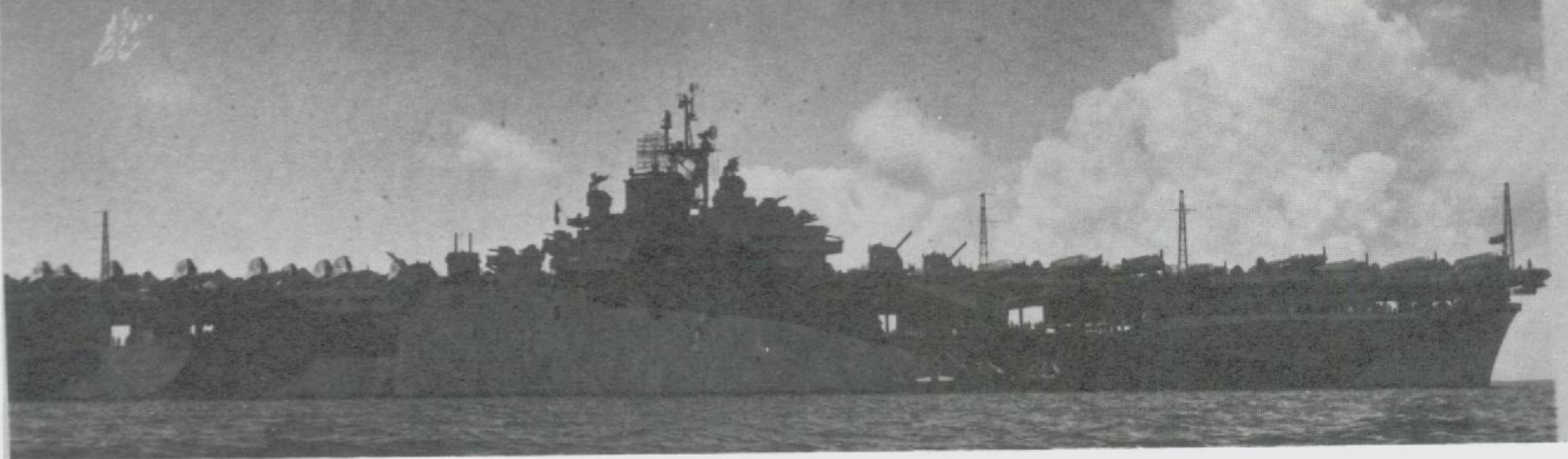
ESSEX (CV-9) carried Measure 21 up to the time of her only wartime refit at San Francisco, during April 1944. Design 6/10D was then applied. The bridge was modified by removing the island's forward quad 40 and extending the flag bridge. Unlike all seven of her "early period" sisterships (CV-10, 11, 12, 13, 16, 17, 18), ESSEX never had the three starboard quad 40s added below the island. She also never carried a hangar deck catapult

(neither did CV-16). Only ESSEX carried all five lattice radio masts (starboard along flight deck) thru the entire war. As will be noted in following chapters, all other sisterships either completed with only four, or were reduced to four, or even two. ESSEX is also the only ship of her class to finish the war with just the original single quad 40 mount on the fantail (left of centerline). Her starboard quarter quad 40 tubs were never extended outboard, nor did she add the two quad 40s to the port quarter (flight deck level).

The design drawing was followed closely except for some of the sweeping curves which were the hardest to match faithfully. Compare the black panels on ESSEX to the darkest panels on RANGER and ENTERPRISE and you'll understand our doubts about both CV-4 and CV-5's darkest colors being 5-N.

OPPOSITE: Stern view of ESSEX's island after her refit at San Francisco (April 15, 1944). BELOW: ESSEX departs for the Pacific on the same day. This view clearly shows the off center quad 40 mount on the fantail and the two inboard quads on the hangar level.

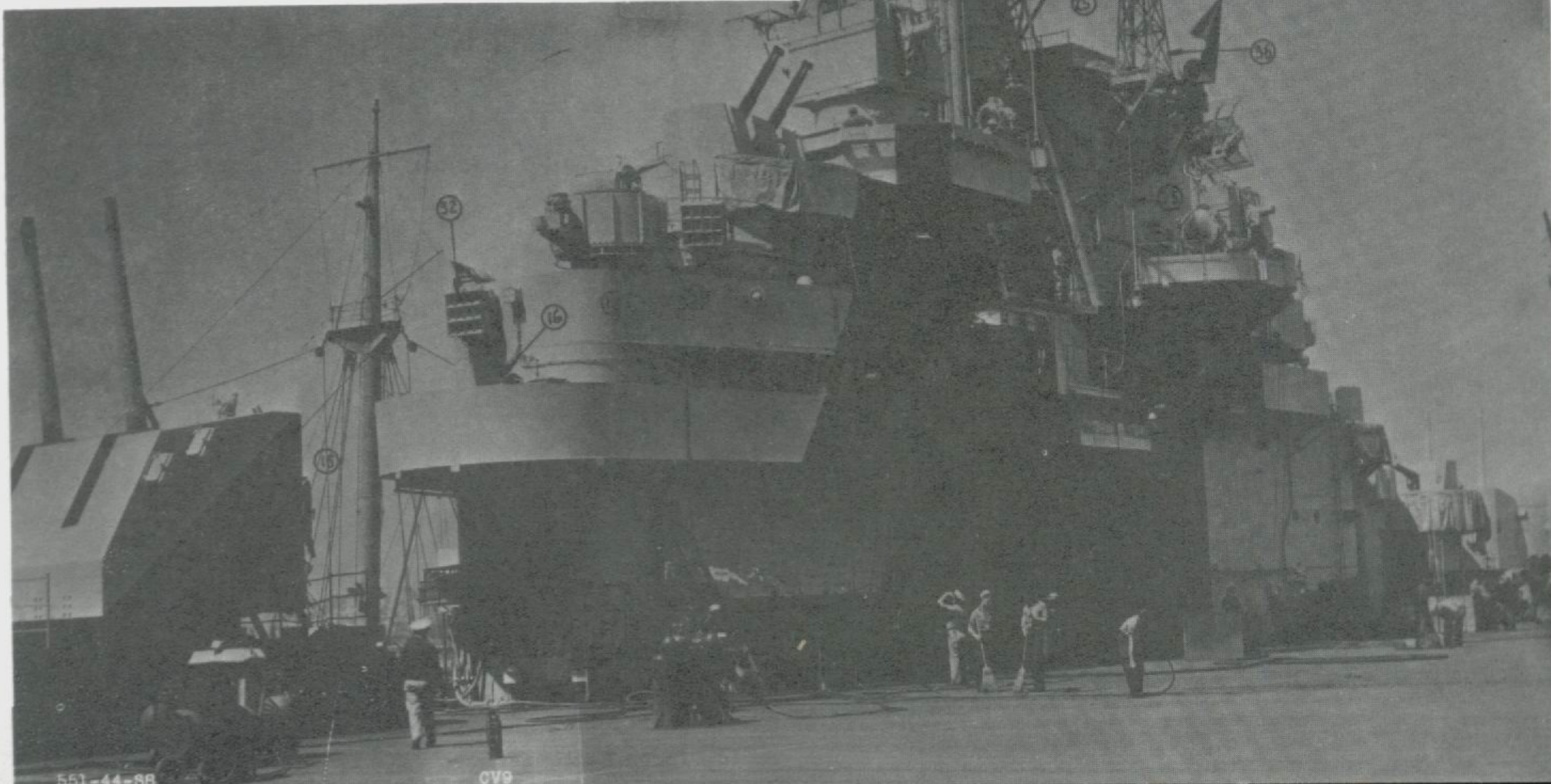
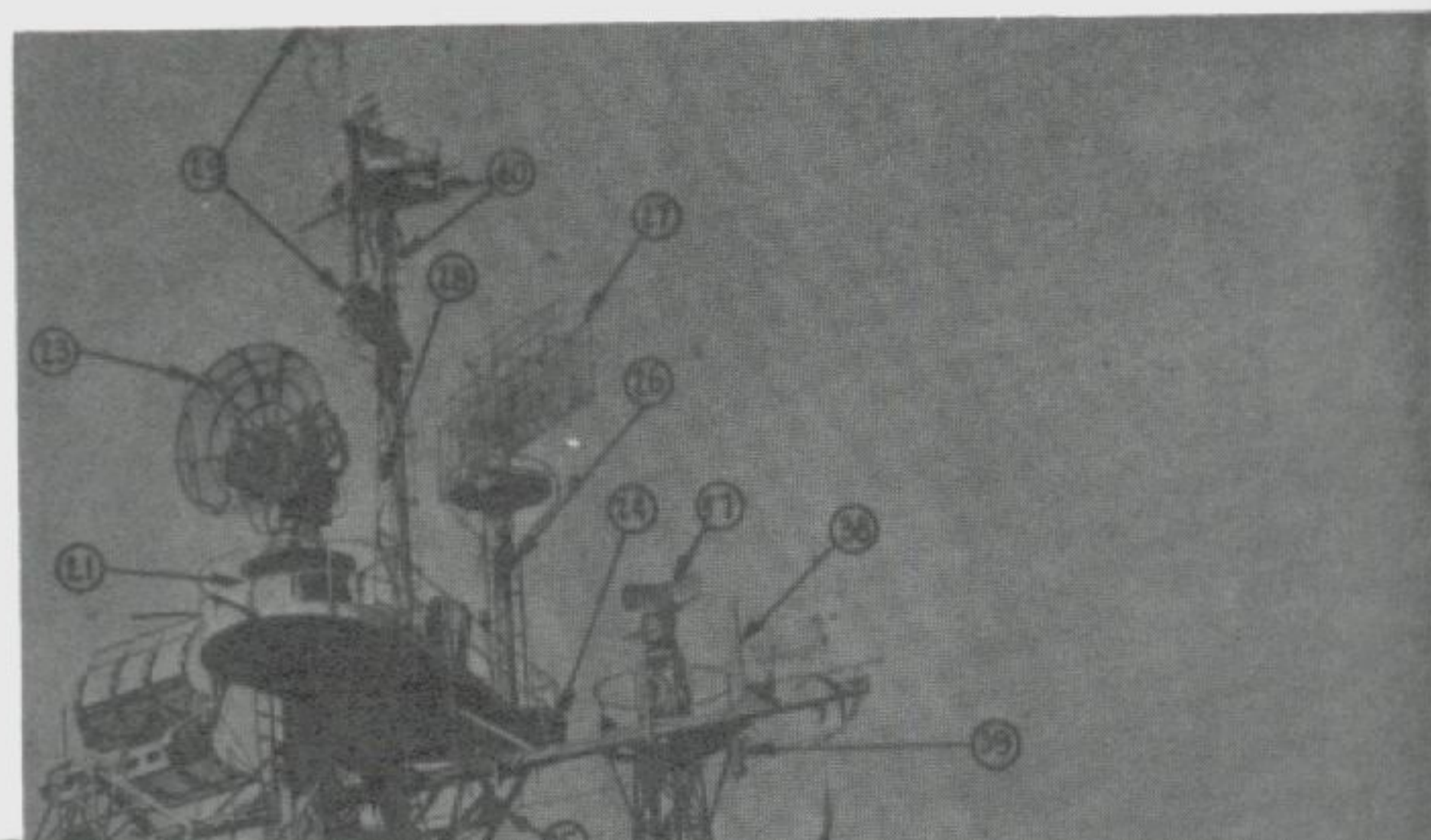




Standard blue stain was used on the flight deck. Both numerals and dash lines were painted dull black. The elevators are outlined in yellow.



Design 6/10D was carried at least until after November 25, 1944 when she was hit by a kamikaze. The damaged flight deck was rebuilt while anchored at Ulithi. Perhaps she was repainted into Measure 21 at that time. We only have photo coverage of her four months later in solid navy blue(5-N).

BOOK REVIEW: Octopus Books Limited's "WARSHIPS" by H. P. Willmot is a beautiful piece of printing. However, its context is suspect. One of its centerspread color artwork, claimed to be ESSEX, is a figment of the imagination. Practically everything is structurally wrong with it. Even the length of the island is way off. The data also has several major statistical errors.



OPPOSITE PAGE PHOTO CAPTIONS

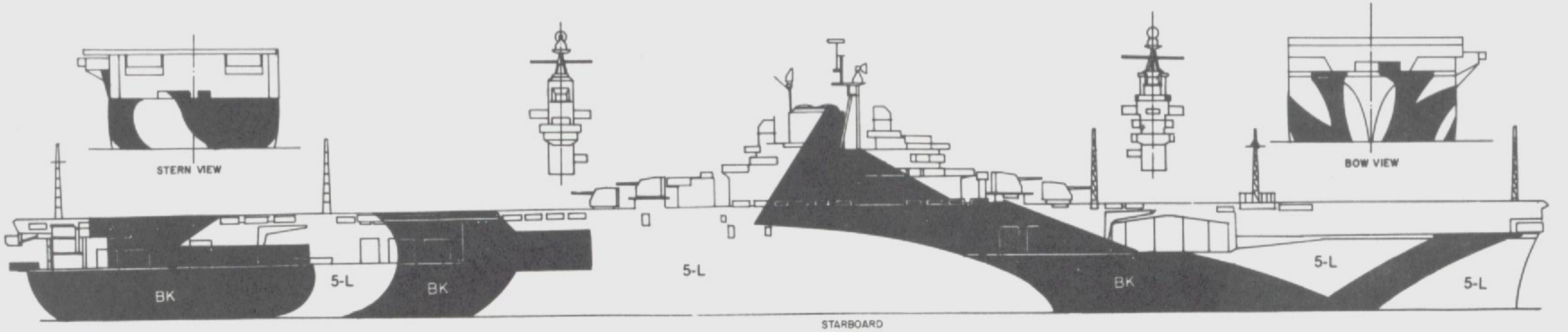
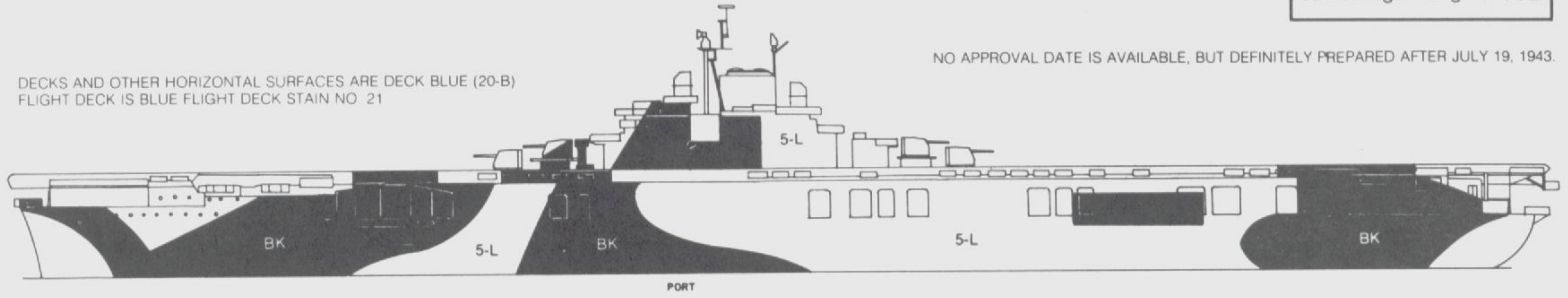
TOP: ESSEX at Ulithi, June 1944. CENTER: ESSEX in the Pacific (July '44).
BOTTOM: ESSEX's new, extended flag bridge. Note the absence of any wind defectors or glass windshields. The SK antenna is hidden behind the tripod.

	light gray (5-L)
	dull black (BK)

CV-9 class
measure 32
camouflage design 6-10D

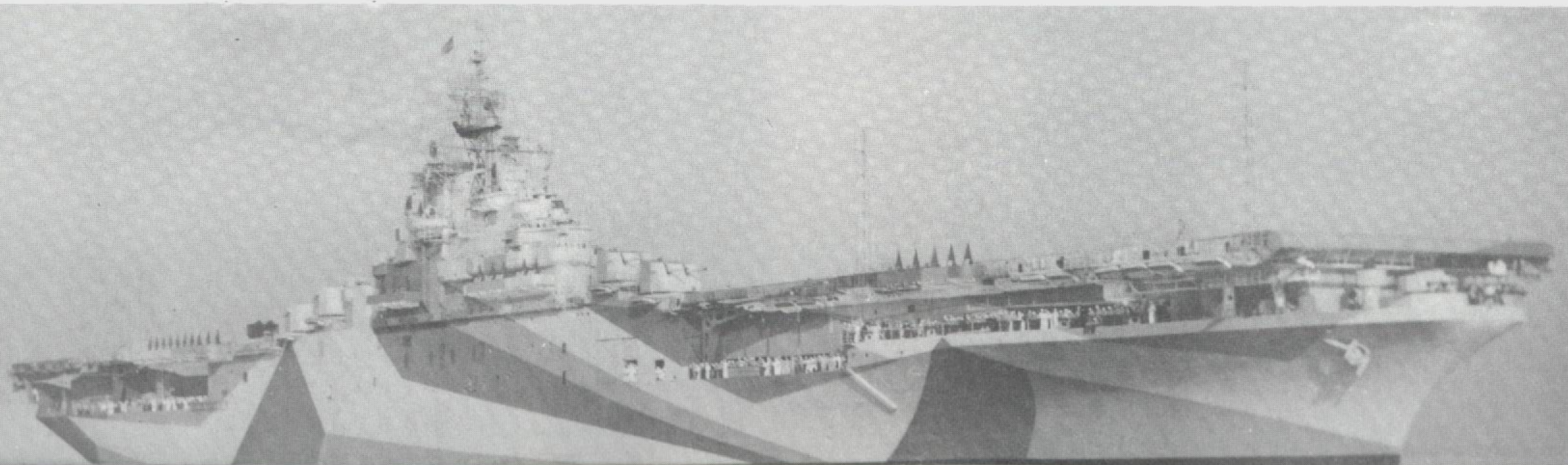
NO APPROVAL DATE IS AVAILABLE, BUT DEFINITELY PREPARED AFTER JULY 19, 1943.

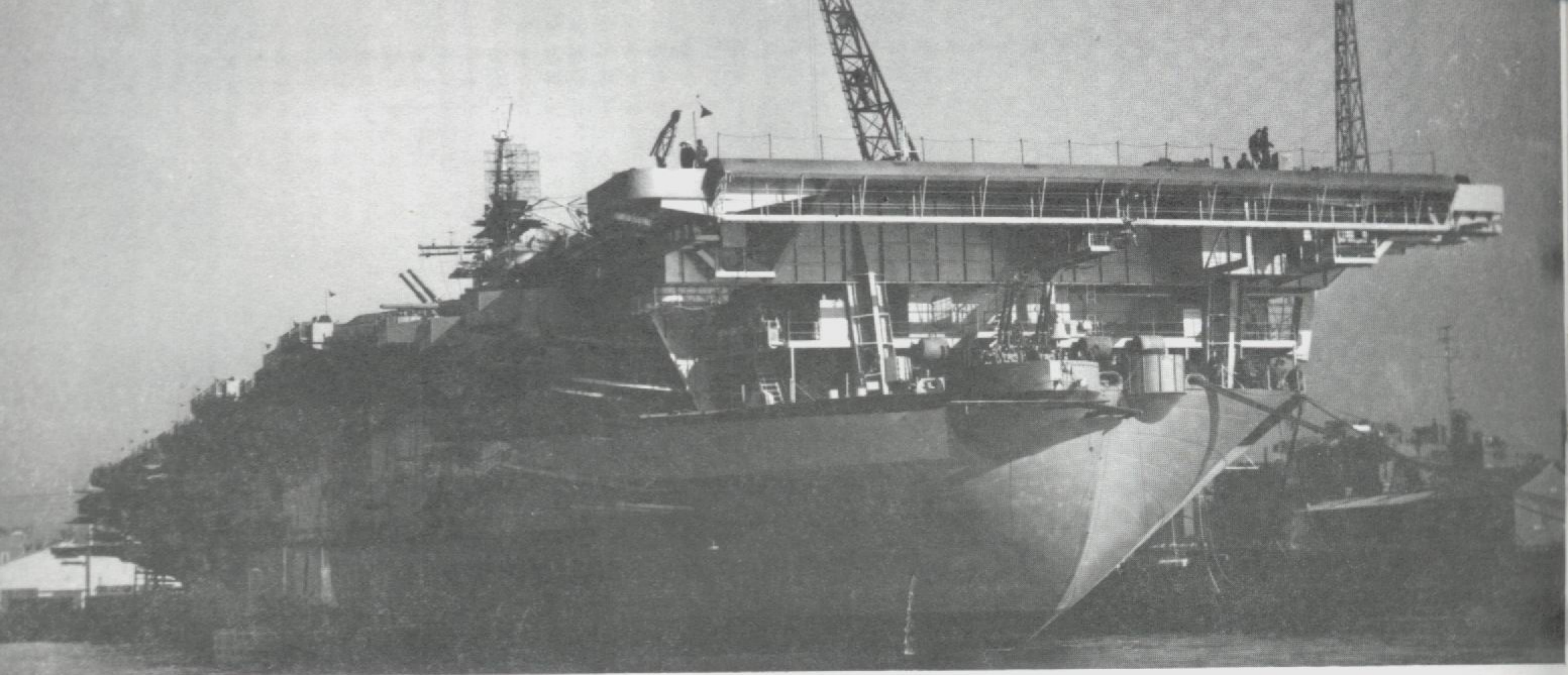
DECKS AND OTHER HORIZONTAL SURFACES ARE DECK BLUE (20-B)
FLIGHT DECK IS BLUE FLIGHT DECK STAIN NO. 21



15

TICONDEROGA (CV-14) upon delivery from Newport News Drydock Co., in May, 1944. The dark panels are Navy Blue rather than the Black used on 6-10D.







ABOVE: This is blown up from a small section of a much larger picture. BUNKER HILL (CV-17) is shown passing astern of WASP (CV-18) off Saipan, June '44. **OPPOSITE PAGE, TOP:** FRANKLIN (CV-13) completing at Newport News Shipbuilding and Dry Dock Co., Jan. 6, 1944. The dull black camouflage panels are a perfect match for the black boot

topping. **CENTER:** FRANKLIN with her early bridge in the Atlantic, Feb. '44. **BELOW:** close up of BUNKER HILL, see bottom of pg. 18 for full view. This clearly shows the bridge and forward quad 40 carried by all seven of the early ESSEXES, as well as the "clean" starboard side (before the three quad 40s were added).

DESIGN 6A, Chapter 6

Design 6A was an open pattern, that is, no colors were specified. Only the pattern shapes were given. Refer to Camouflage I, pg. 33, under "Measure/Design and Type explanation."

Two ESSEX class carriers wore this design. FRANKLIN (CV-13) was commissioned in 6A on Jan. 31, 1944. However, by the time she left for the Pacific (three months later) the port side had been repainted into a different pattern—design 3A. Therefore, for the period from May 5, 1944 to Nov. 28, 1944, FRANKLIN's camouflage designation was 32/6A-3A. She was the only carrier to wear a pattern composed from two different designs. Her design 3A port side pattern is shown in the following chapter. Structurally FRANKLIN's bridge was extended and the hangar catapult removed when her port side pattern was reworked.

BUNKER HILL (CV-17) was the other carrier to be camouflaged in design 6A. Close comparison between both ships' starboard patterns will show minor variations, primarily in curved panels. Unlike FRANKLIN, BUNKER HILL's bridge was never extended while she carried a pattern. She can be distinguished from FRANKLIN's early period by the three lattice radio masts along the flight deck, forward of the island. FRANKLIN carried only two. Both ships carried the single, off-center, quad

40 on the fantail and two quads on the starboard quarter,

Both were refitted and repainted (Ms 21) in January '45. Two quad 40s were fitted on an extended fantail support. Both starboard quarter quad 40s were extended outboard on sponsons. Three quad 40s were added starboard amidships, just under the island. The hangar deck catapult was removed (on CV-17) and two quad 40's were put on the catapult's port side extension. A second catapult was installed on the flight deck.

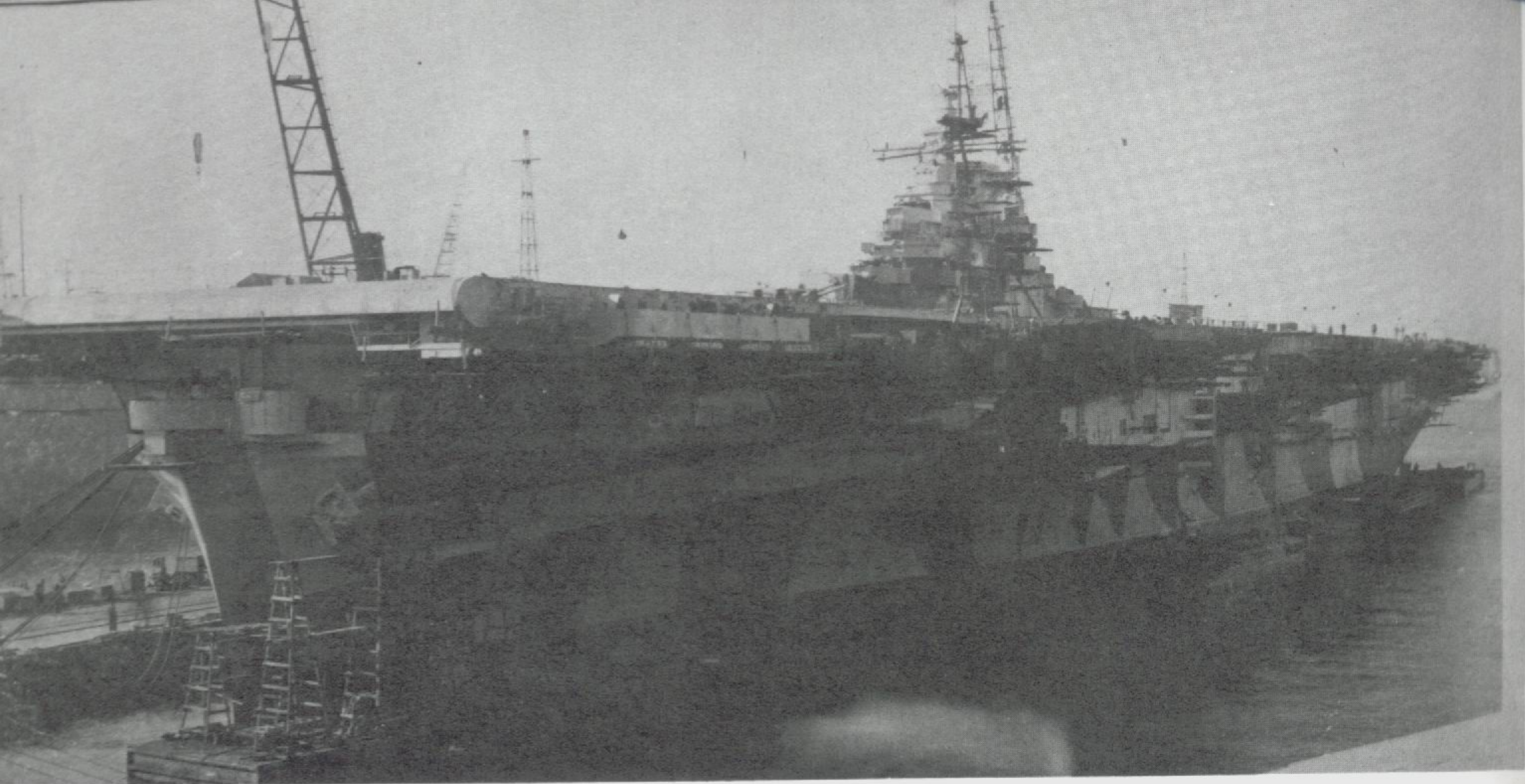
Both flight decks were stained with the standard blue stain and painted with dull black numerals. BUNKER HILL's numerals were outlined in yellow. Her dashes may also have been yellow, while FRANKLIN's were reported to be white, with yellow elevator outlines and "Xs".

BUNKER HILL's port side pattern must've been a bitch to maintain. Perhaps FRANKLIN's captain decided to repaint into design 3A because of this.

It's obvious that both carriers used Measure 32 colors of light gray (5-L), ocean gray (5-O) and dull black (BK) for their color break up. FRANKLIN was reported to have carried a GREEN pattern for several weeks, but we cannot substantiate this. If this were true, it would've had to have been as first completed.

FRANKLIN off Norfolk in May '44. The paint scheme is brand new.

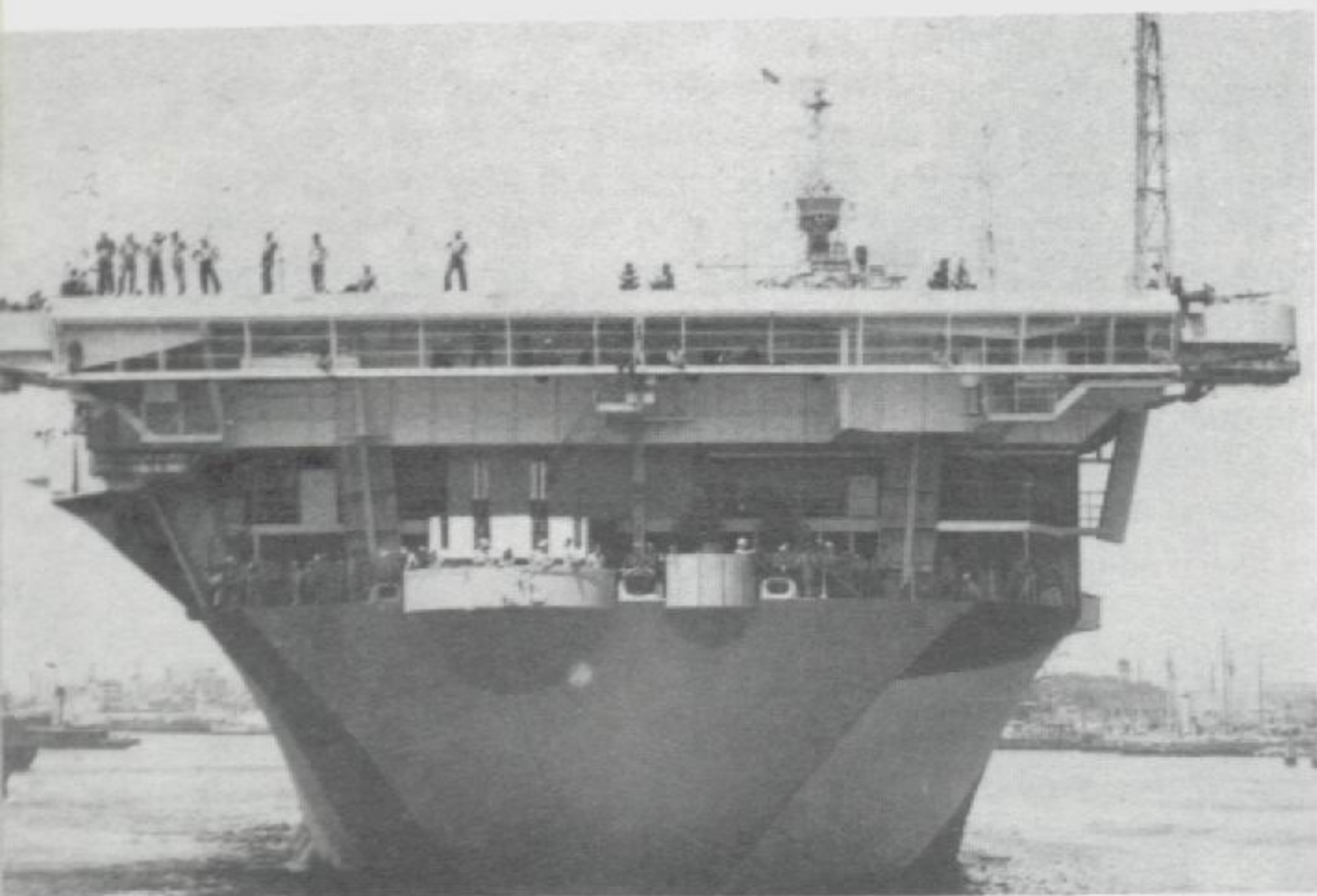




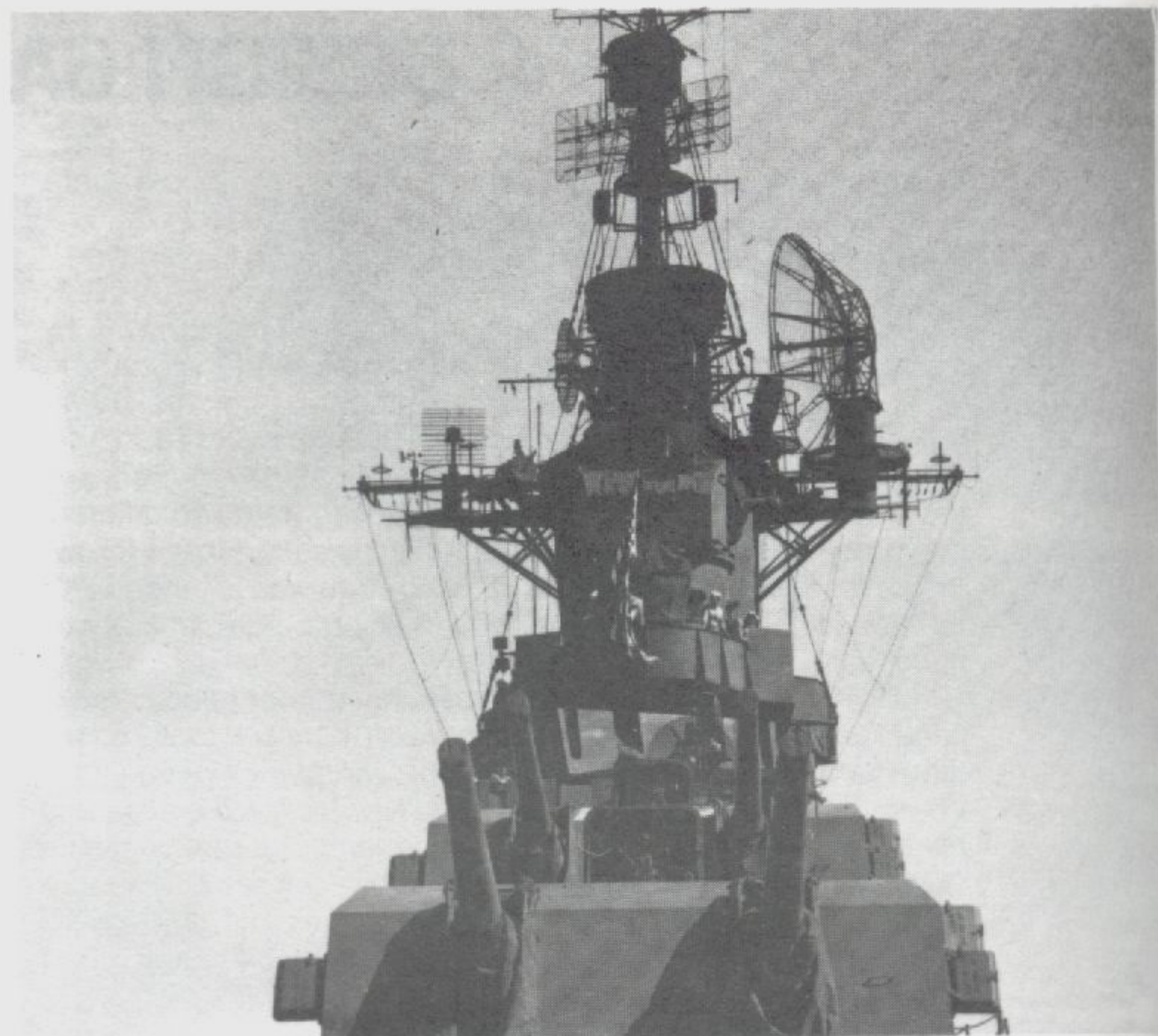
ABOVE: Another view of FRANKLIN nearing completion.

RIGHT: Stern view looking forward of BUNKER HILL's island. Positions of the major radar's are clearly shown.

BELOW: Stern view of FRANKLIN in May '44 off Norfolk.



BELOW: Copy print of BUNKER HILL at Majuro in May '44. This picture has been reproduced before, but only with all of its' radars and masts retouched out. Unfortunately, the original negative is not available.



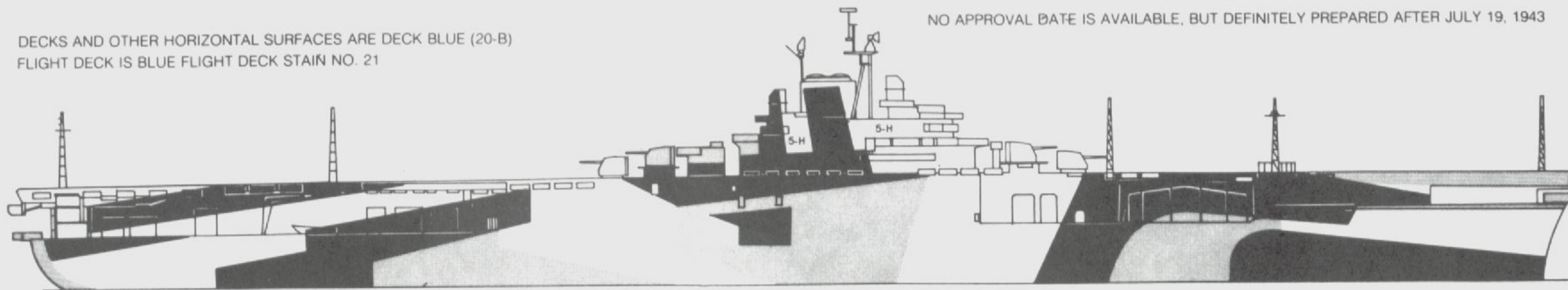
All the photographs in this chapter must be examined closely and compared to this master for individual variations. Everett Warner approved this design shortly after August 1943. This was one of the first ESSEX class designs to be prepared.

The original was rather crudely drawn. Note the very shaky lines on BUNKER HILL'S port side.

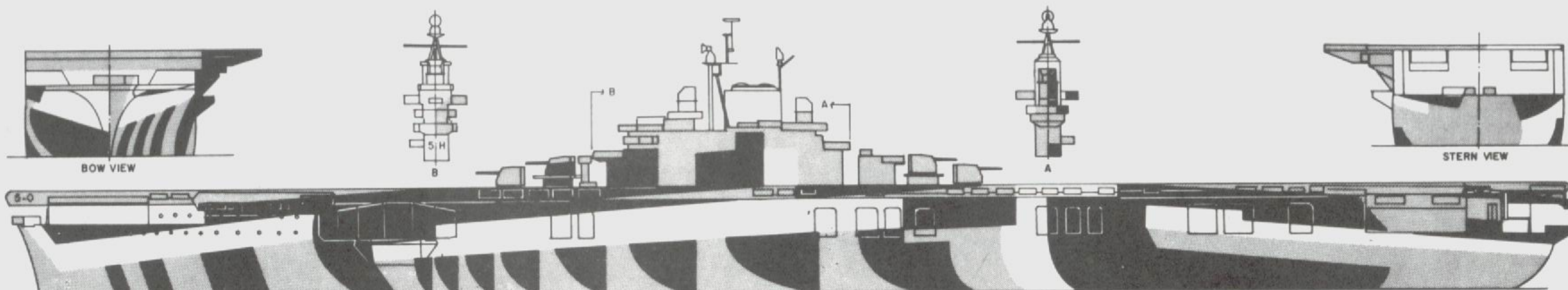
CV-9 class
measure **3** —
camouflage design **6A**

DECKS AND OTHER HORIZONTAL SURFACES ARE DECK BLUE (20-B)
FLIGHT DECK IS BLUE FLIGHT DECK STAIN NO. 21

NO APPROVAL DATE IS AVAILABLE, BUT DEFINITELY PREPARED AFTER JULY 19, 1943



STARBOARD



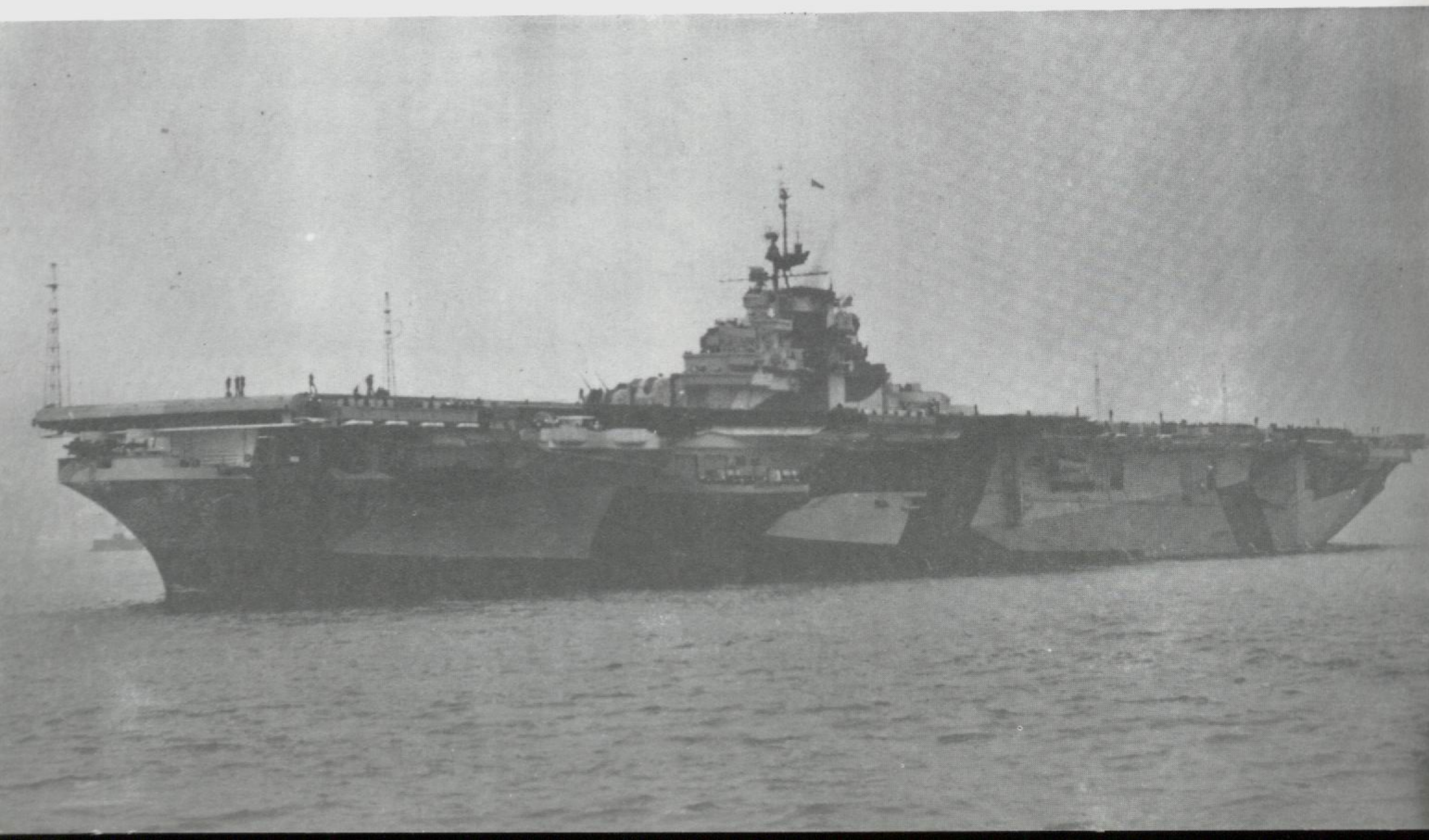
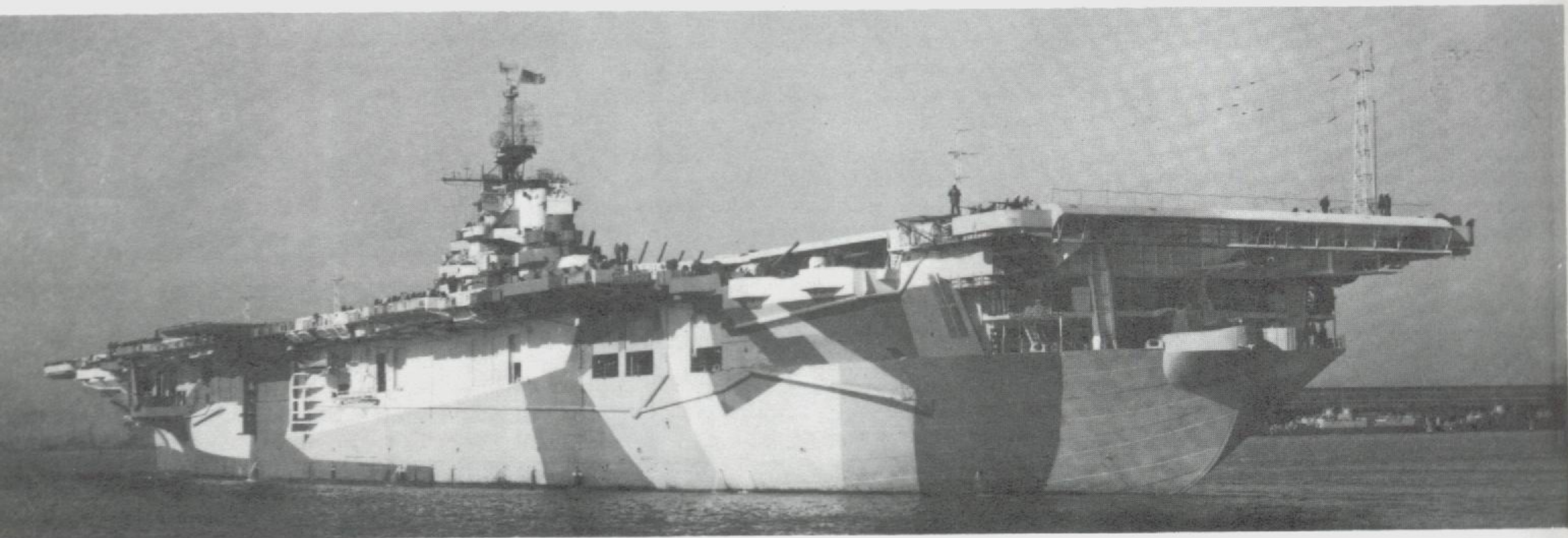
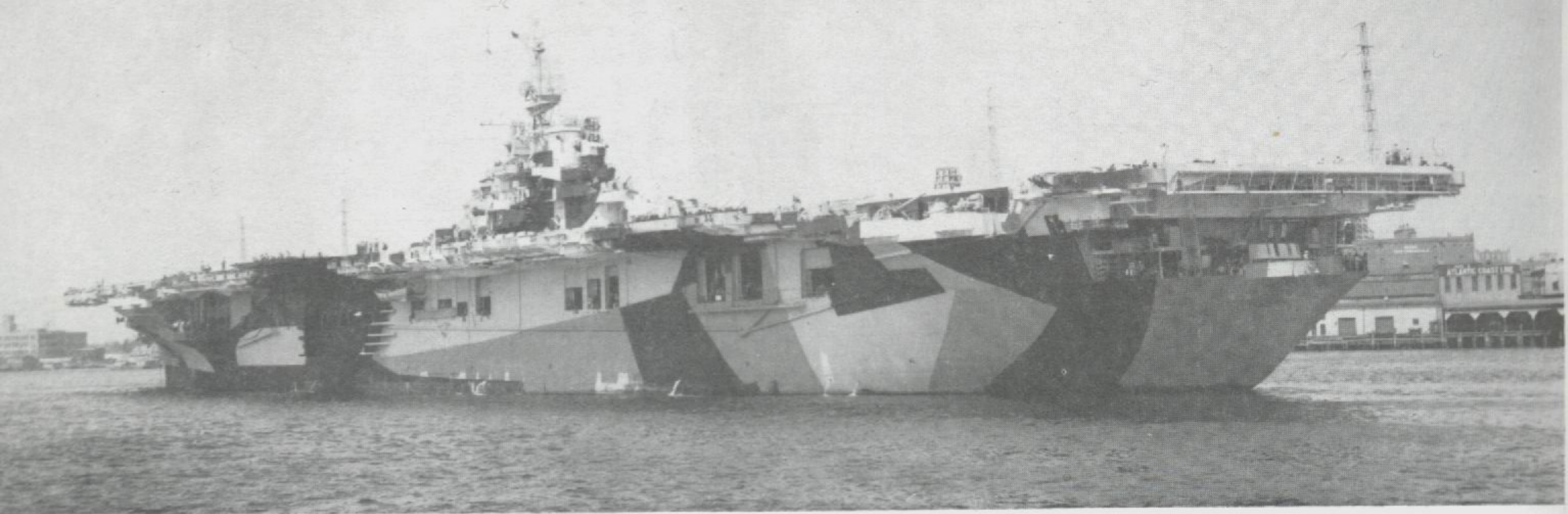
BOW VIEW

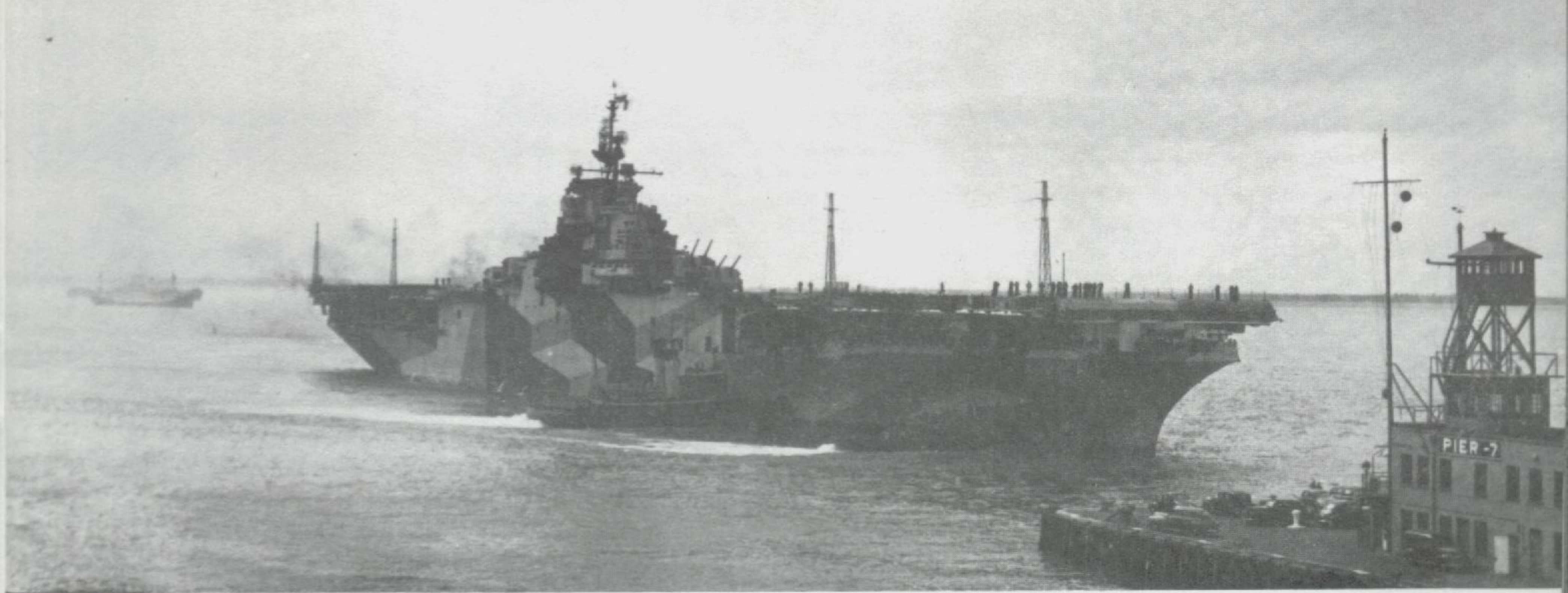
STERN VIEW

PORT

BUNKER HILL at Majuro, May '44. Compare this original to the copy print of the starboard side. This port side pattern was the most intricate design applied to any carrier.







HANCOCK (CV-19) at Norfolk, June 4, 1944 shows her prominent clipper bow. All long bow ESSEXES, like HANCOCK, were completed with two quad 40s on both the bow and stern, an extended bridge, two flight deck catapults and without a hangar deck catapult.

DESIGN 3A, Chapter 7

This chapter covers three and one-half ESSEX class carriers, all painted in the same camouflage pattern—Design 3A. The original drawing did not specify any colors. As such, this design was an "open measure." There are a number of interesting variations between HORNET (CV-12), INTREPID (CV-11), HANCOCK (CV-19) and FRANKLIN's port side.

HORNET was the first fleet carrier to wear a dazzle pattern (as commissioned on Nov. 29, 1943). She was the only Design 3A ship to carry the light color range of Measure 33; pale gray (5-P), haze gray (5-H) and navy blue (5-N). HORNET was also one of the last to have her pattern painted out (July '45). She remained in her "as commissioned" appearance longer than any other ESSEX class carrier. In June '45, she was the only one still carrying a hangar deck catapult and an unmodified bridge.

HORNET's flight deck was stained blue with painted dull black numerals and yellow dashes. We have an undated picture of her (in pattern) which shows her forward numeral reading from the bow. We believe it to be an "as commissioned" picture because the ship looks very clean. A series of "weathered" views (taken in the Pacific) show both numerals reading from the stern—the standard practice. The thin dash line (normally centered) is off centerline, to the starboard side. Instead, it is centered on the forward elevator.

There are three color pictures of HORNET, and one of HANCOCK, on the outside back cover.

OPPOSITE PAGE, ABOVE: FRANKLIN (CV-13) at Norfolk on May 4, 1944. CENTER: HORNET (CV-12) at Norfolk on Dec. 19, 1943. She's port broadside to a strong, low sun. CV-12 is wearing the light colors of Measure 33, while CV-13 (above her) is in medium range Measure 32. BOTTOM: HANCOCK off Boston in May '44.

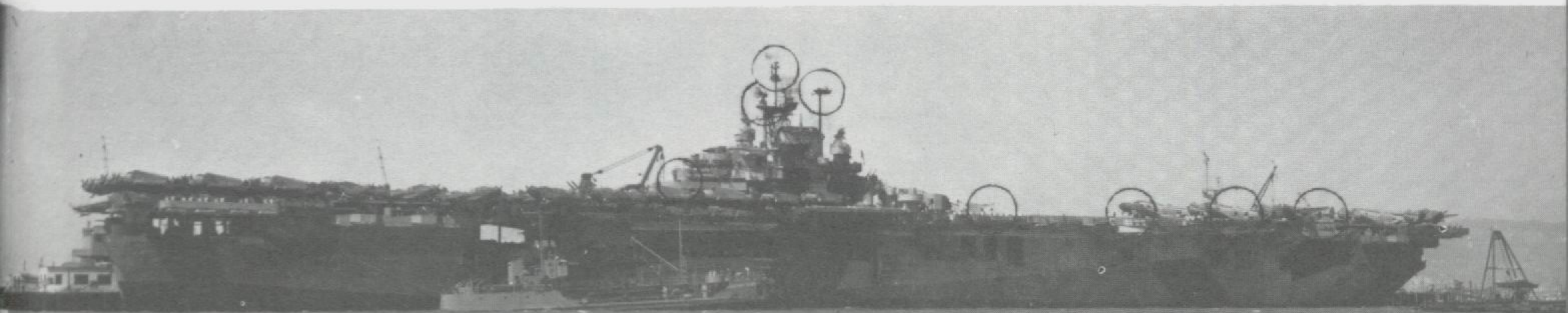
INTREPID was the second ESSEX to paint into Design 3A. Like HANCOCK and FRANKLIN, she wore the Measure 32 colors of light gray (5-L) ocean gray (5-O) and dull black (BK). These colors are confirmed in Everett Warner's "Survey of Ship Camouflage," November 1944. INTREPID's patterns have a number of variations, noticeably on the starboard bow and port side, under and abaft of the former hangar deck catapult platform (see page 26, port side view).

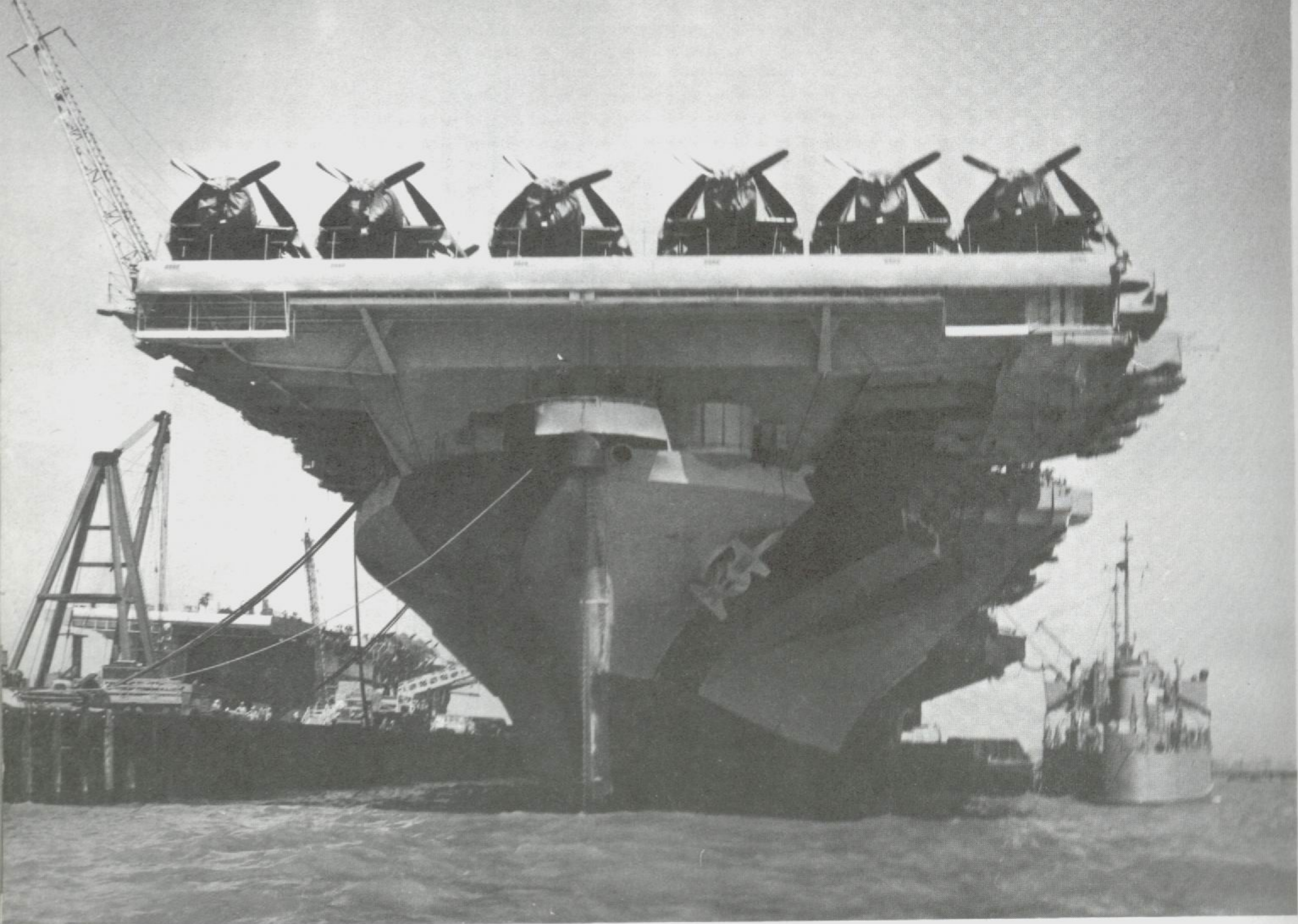
INTREPID was the only carrier in Design 3A to carry the three starboard quad 40's under the island. Her pattern was painted on at the same time (at Hunters Point, California during April 1944). Her flag bridge was also extended and the hangar deck catapult was removed. A number of additional modifications were made in the Pacific (see the various INTREPID picture captions in this chapter).

INTREPID was commissioned in Measure 21. She carried Design 3A from June to December '44, then finished the war in Measure 12. Her flight deck was stained blue with painted dull black numerals and white dash lines. See page 31 for flight deck coloration changes.

HANCOCK was the only long bow ESSEX to wear Design 3A. Since all the Pattern Design Sheets were prepared for short bow ESSEXES only, there are a number of noticeable variations to HANCOCK's bow design (see page 23).

THERE were no obvious appearance changes to HAN-





INTREPID refitting at Hunters Point during June 1944. Compare this short bow ESSEX to the long bow HANCOCK (opposite).

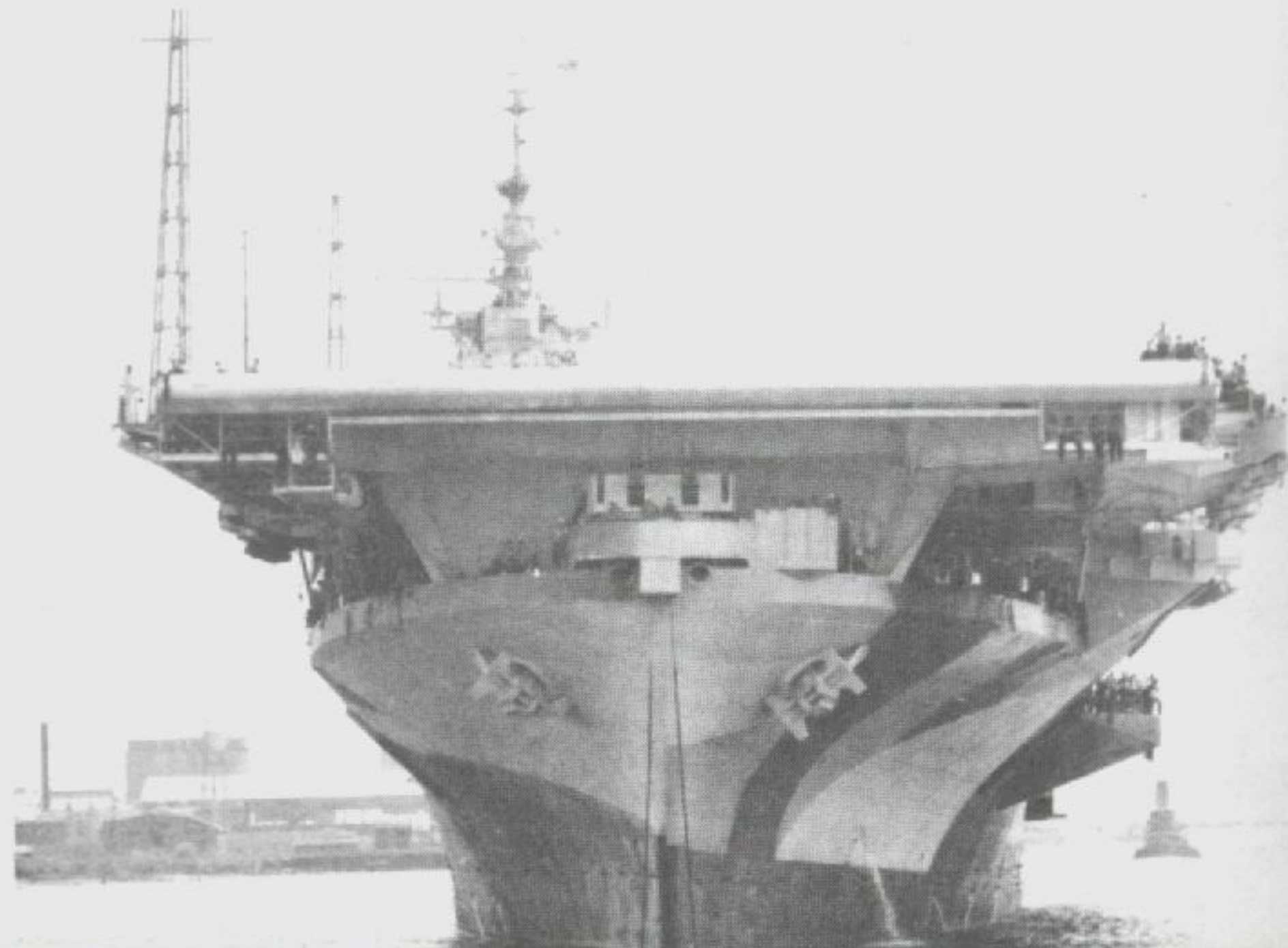
COCK while she carried Design 3A. She was repainted into Measure 12 while refitting at Pearl Harbor, from April to June '45 (see bottom of page 64). Also at this time, five outboard quad 40s were added to the starboard side and two to the port side.

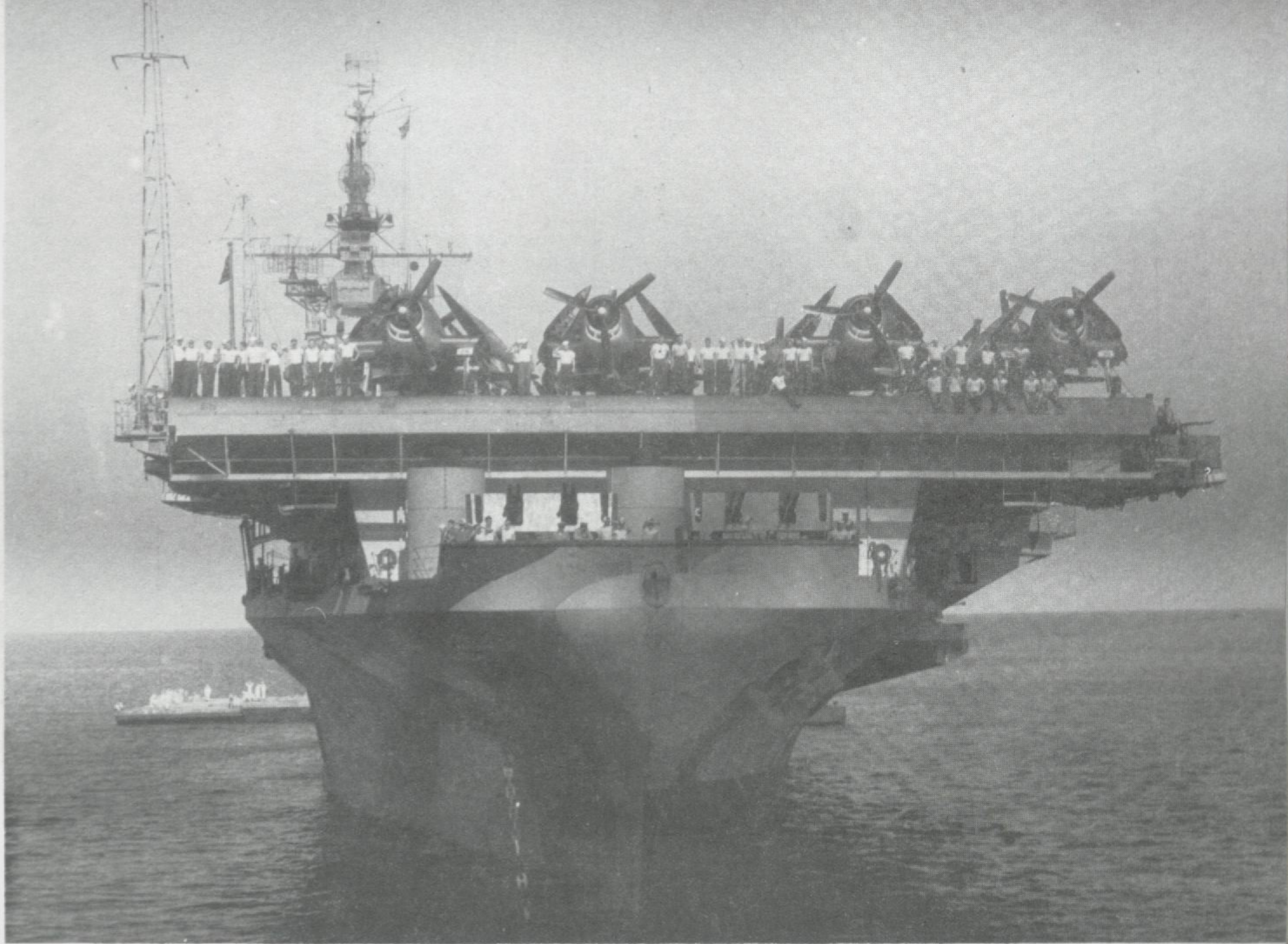
HANCOCK's flight deck colors were the same as INTREPID, as refitted in June 1944. We don't have any evidence of elevator markings, although it would seem probable that they were carried at some time.

FRANKLIN was the last ESSEX to be painted in Design 3A. As noted in the previous chapter, only the port side was repainted into this design (in May '44). Keep in mind that her starboard pattern remained in Design 6A, as shown in the previous chapter.

Eventually, all four carriers received their full allotment of quad 40s (17 mounts for the short bows, 18 for the long bows). Both INTREPID and HANCOCK retained their SK bedspring

HORNET (left) at Norfolk, Dec. 19, 1945 and FRANKLIN (right) on May 4, 1944. Note matching port side designs but different starboard designs.





HANCOCK at Trinidad, July 7, 1944. Water reflection on the flared bow has made the dull black panels appear to be much lighter.

antennas. HORNET and FRANKLIN had their SKs replaced with SK2 dishes. FRANKLIN's SK2 was resited outboard of the funnel, starboard side.

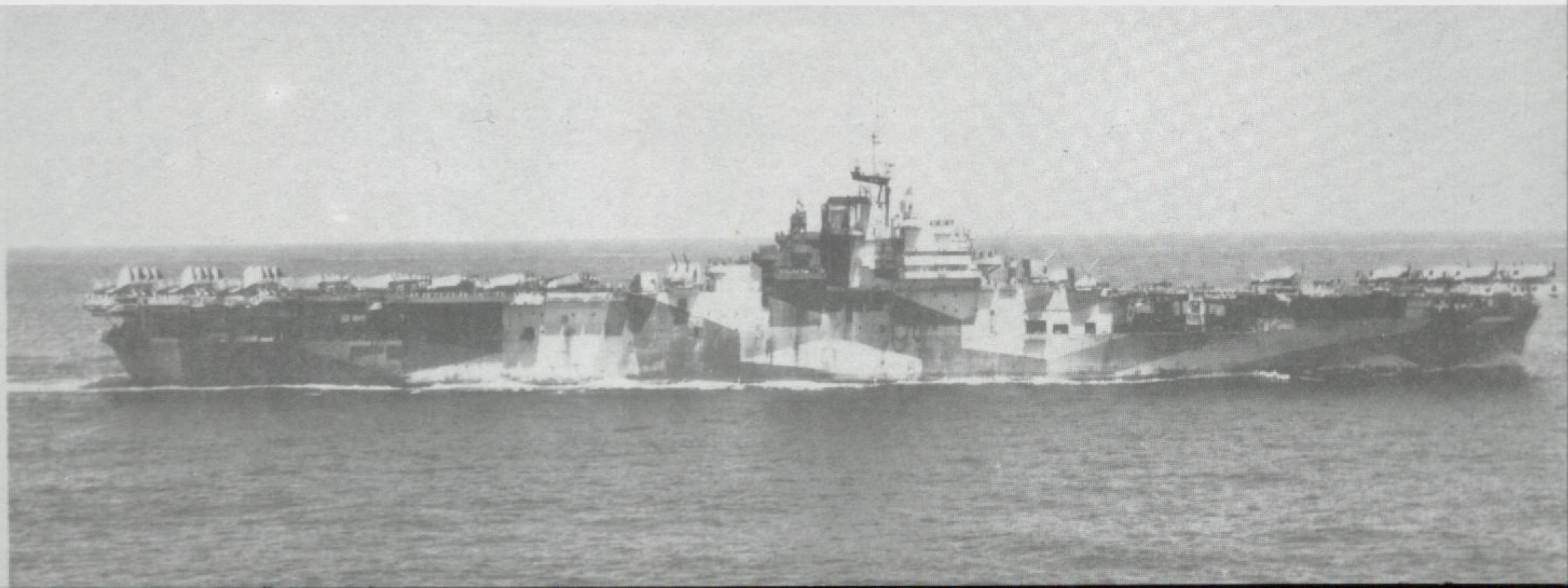
Book Reviews

U.S.S. INTREPID ALBUM is one of our publications—as such, we cannot be truly objective. However, it is up to the standard of Camouflage 1 and contains many pictures of INTREPID. Espe-

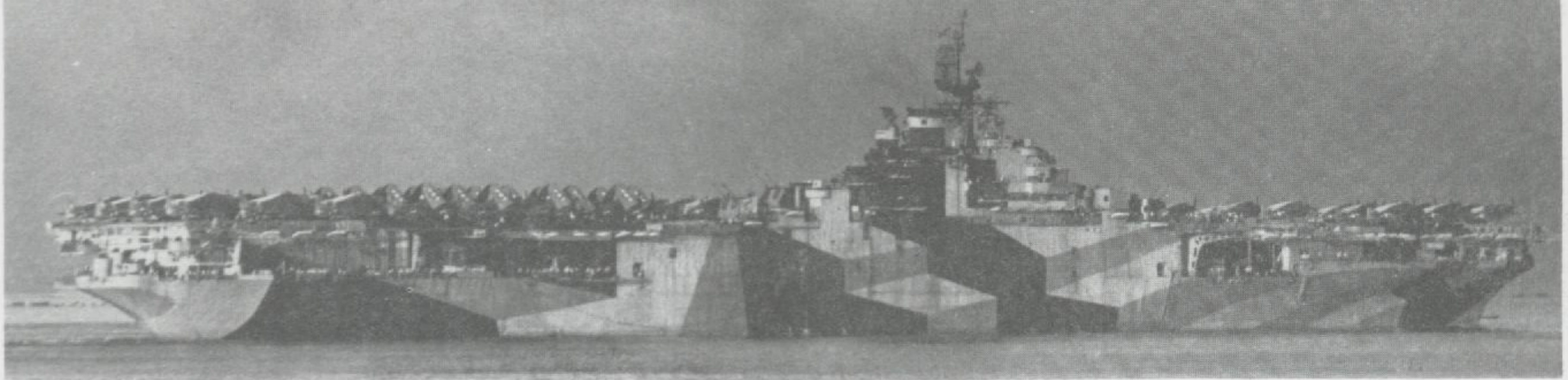
HORNET in Sept. '44. The ship has heavy shadow on her starboard side.

cially useful is a beautiful close-up of the starboard side of the island (in Design 3A). There's also a centerspread profile drawing of her after the June 1944 refit. Unfortunately, there is no color.

FAMOUS SHIPS OF WORLD WAR 2 by Chris Elis, is published by Blandford Press, Ltd. This book profiles a number of U.S. warships. This includes a brief write-up (generally good) accompanied by a full color rendering (generally terrible). Both







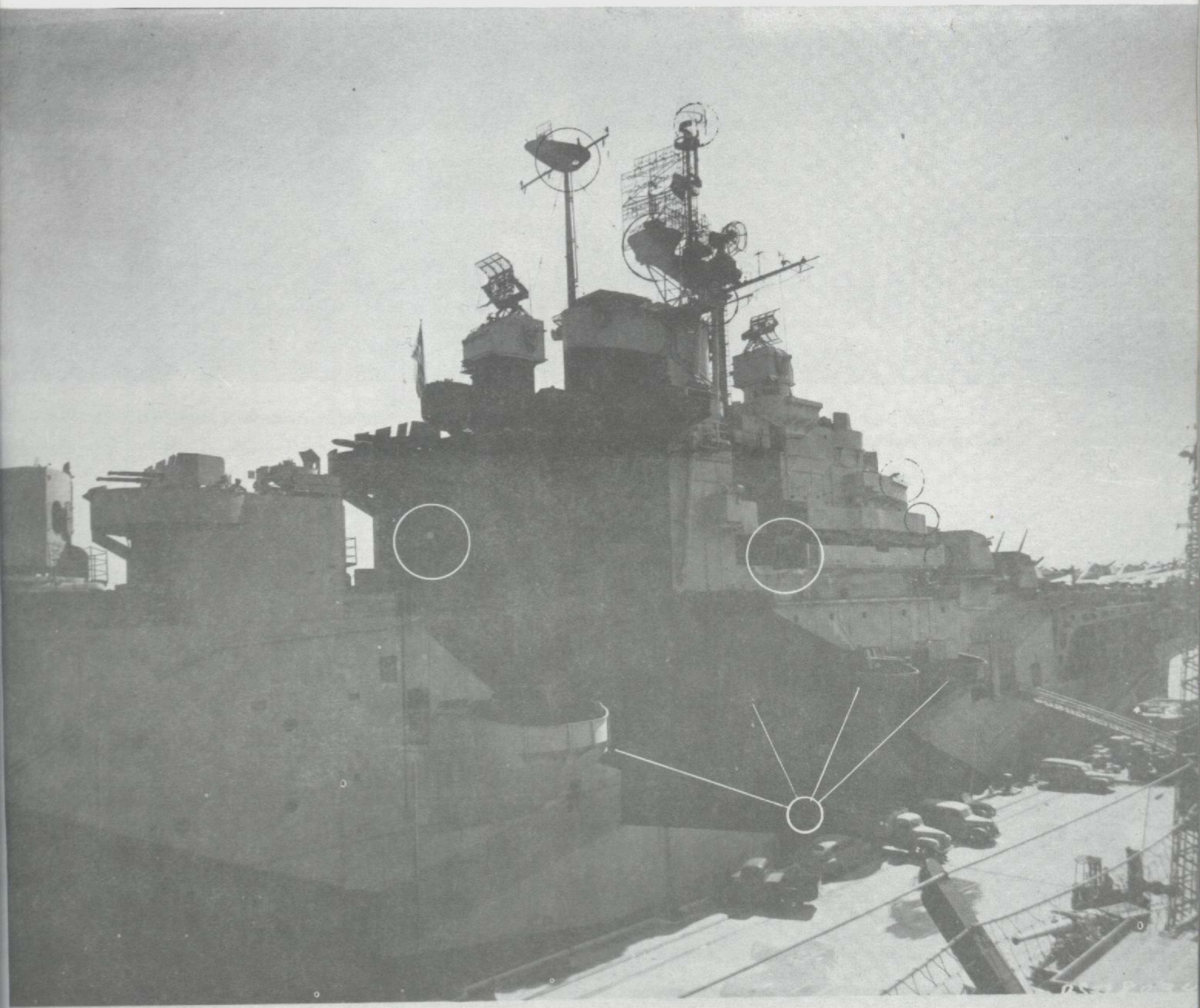
OPPOSITE: HANCOCK off Okinawa (the date is uncertain).

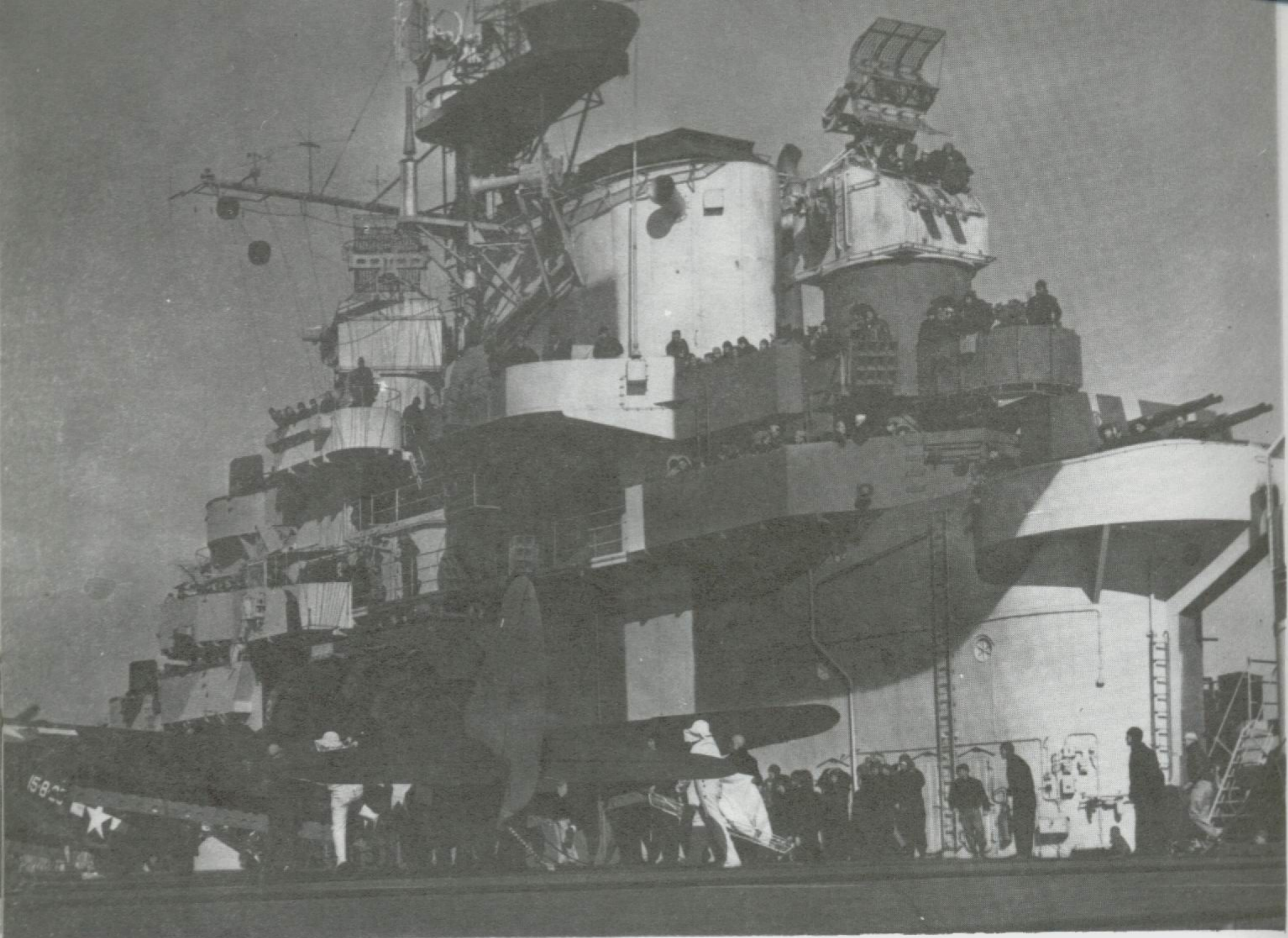
ABOVE: HANCOCK at Trinidad on July 7, 1944.

HORNET (CVs 8 & 12) and FRANKLIN were illustrated. The best that can be said for the artwork is that it is mediocre and highly unprofessional. The artist has no knowledge of the ships nor could he have used any photographs as a guide. HORNET (CV-12) is shown in pattern. However, the artist has mistakenly

put an approximation of her STARBOARD design on to her PORT side!!! HORNET (CV-8) is rendered in dapple pattern, right over her Measure 12 paint scheme! FRANKLIN, listed as Measure 14 (should be Measure 21), has little resemblance to an ESSEX class carrier.

INTREPID's starboard island showing details of the radar antenna's and the addition of the 40mm quad gun tubs. Wind and spray deflectors have been added to the flag bridge. Also added are the windshield, on the navigating bridge, and the yard arm midway on the top mast.





ABOVE: This close-up of HORNET's island was taken in July '44. Note that the navy blue (darkest color) has been sprayed on. In reflectance, it appears to be very close to the Helldiver's tail color.

BELOW: Port bow view of the INTREPID taken in 1944, leaving Hunter's Point for the Pacific.



On July 19, 1943, Everett Warner approved a simplified drawing of the ESSEX class which would be used as a blank master. Any number of camouflage designs could then be applied to copies of this line drawing.

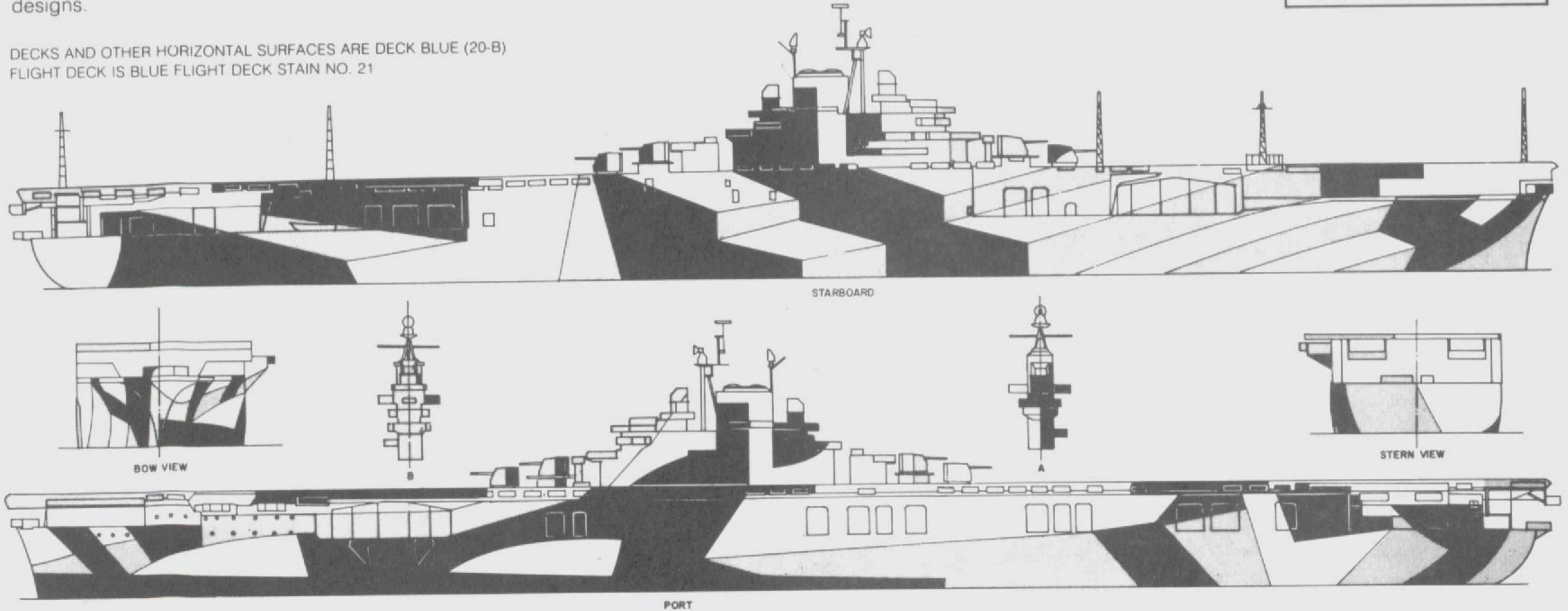
While final approval was given by the USN, only Mr. Warner dated his approval. Evidently, this practice did not begin initially because none of the early designs have any approval signature or dates. Only July 19, 1943 appears on all the ESSEX class designs.

NO APPROVAL DATE IS AVAILABLE,
BUT DEFINITELY PREPARED AFTER JULY 19, 1943.

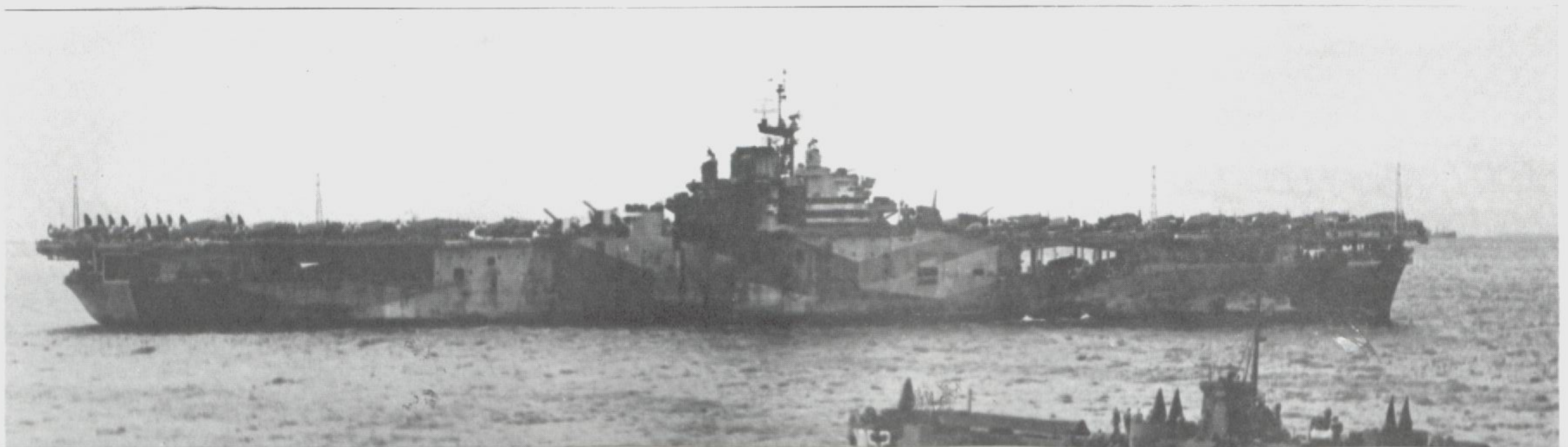
CV-9 class

measure 3_
camouflage design 3A

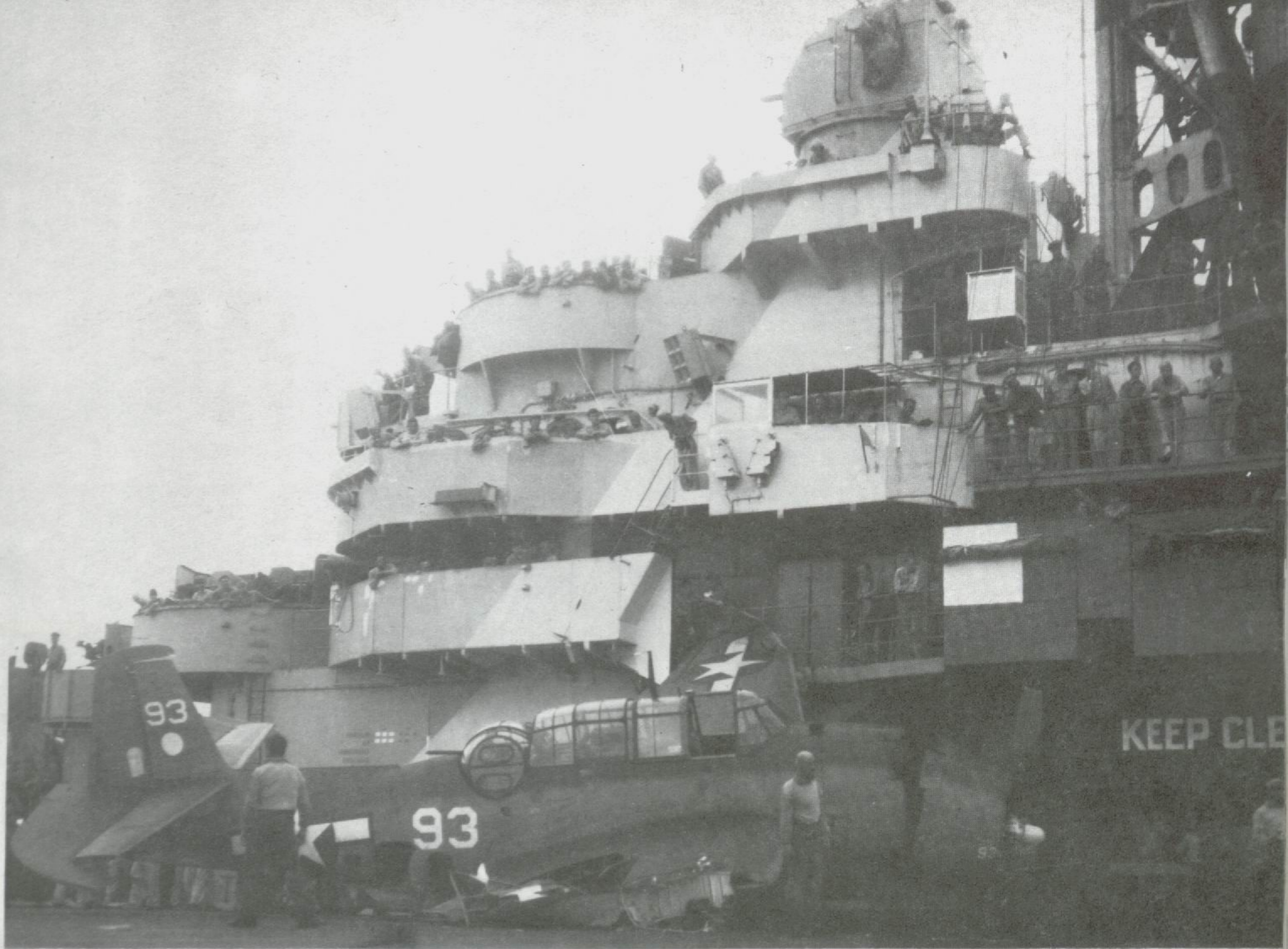
DECKS AND OTHER HORIZONTAL SURFACES ARE DECK BLUE (20-B)
FLIGHT DECK IS BLUE FLIGHT DECK STAIN NO. 21



A weathered HORNET at Majuro, May 29, 1944.

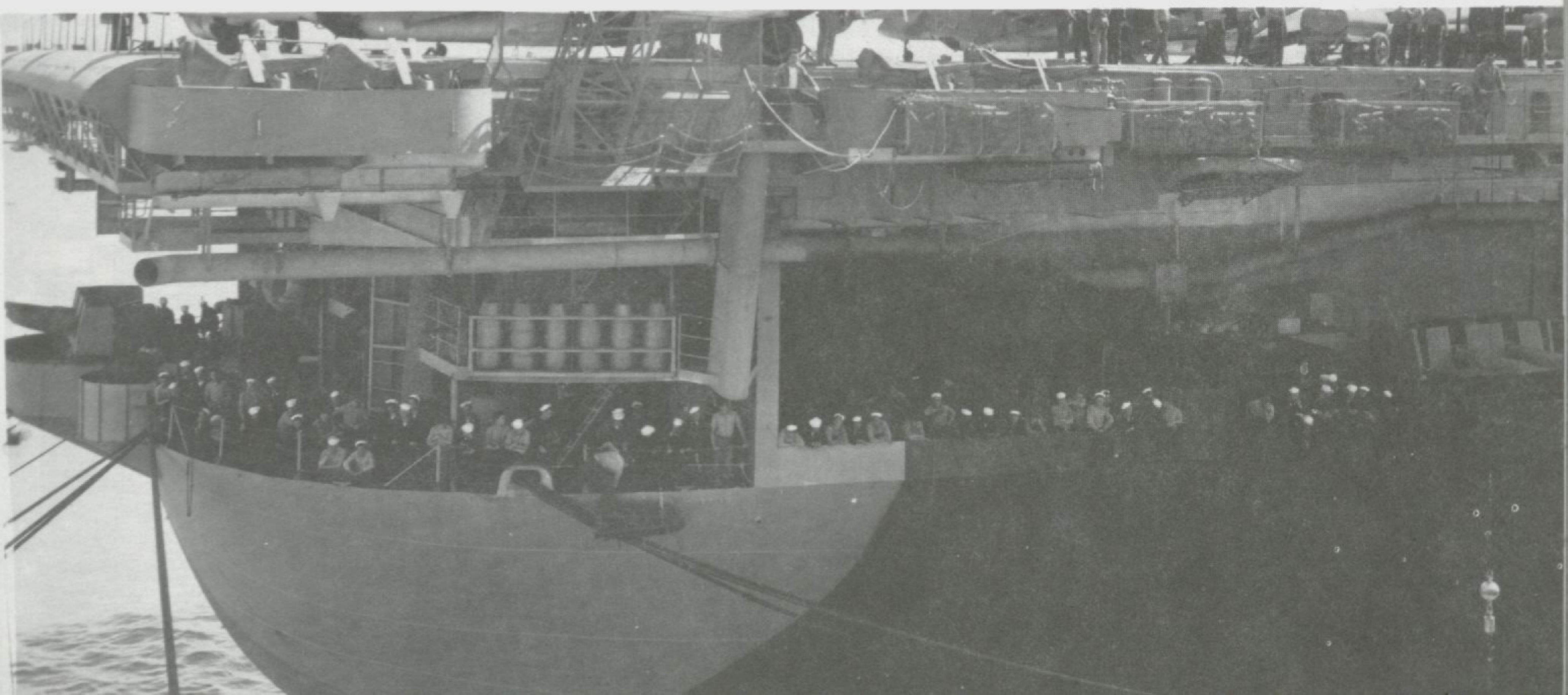


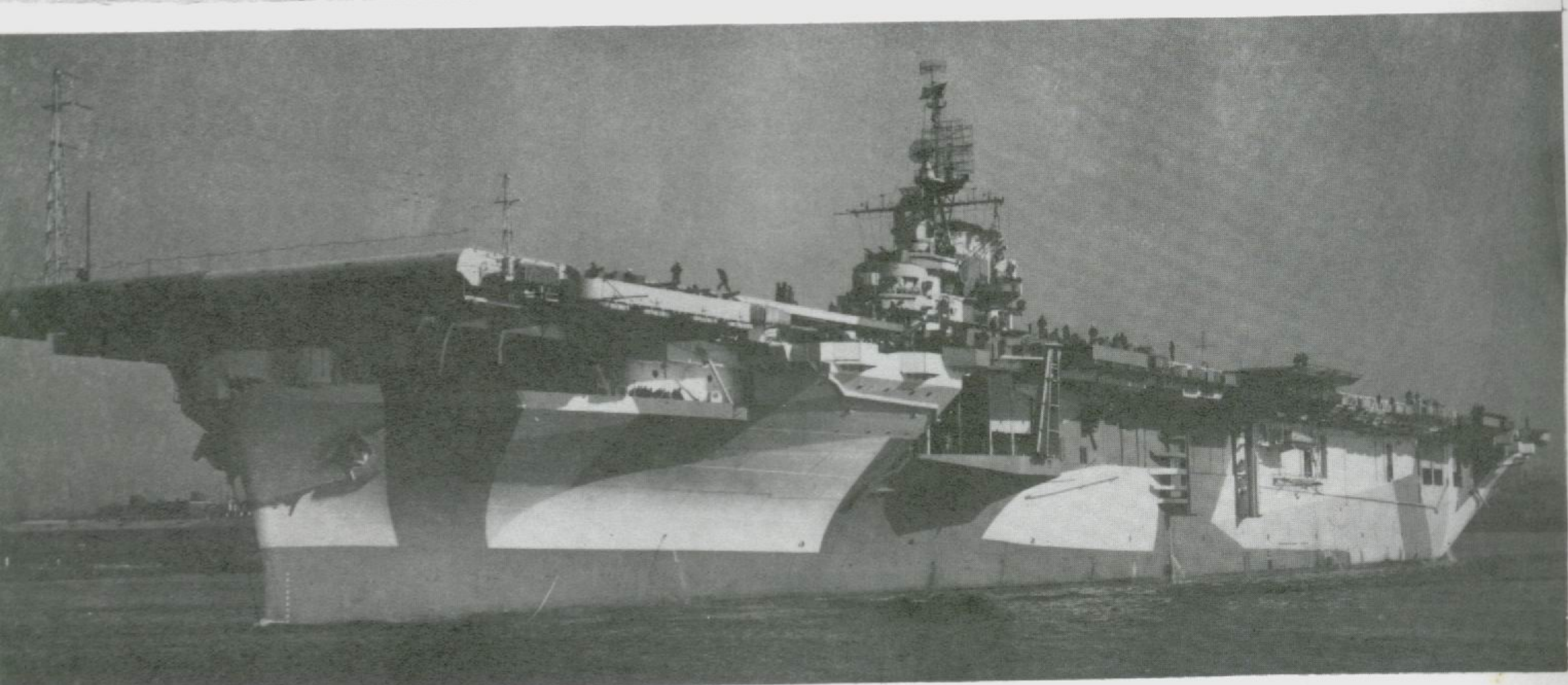
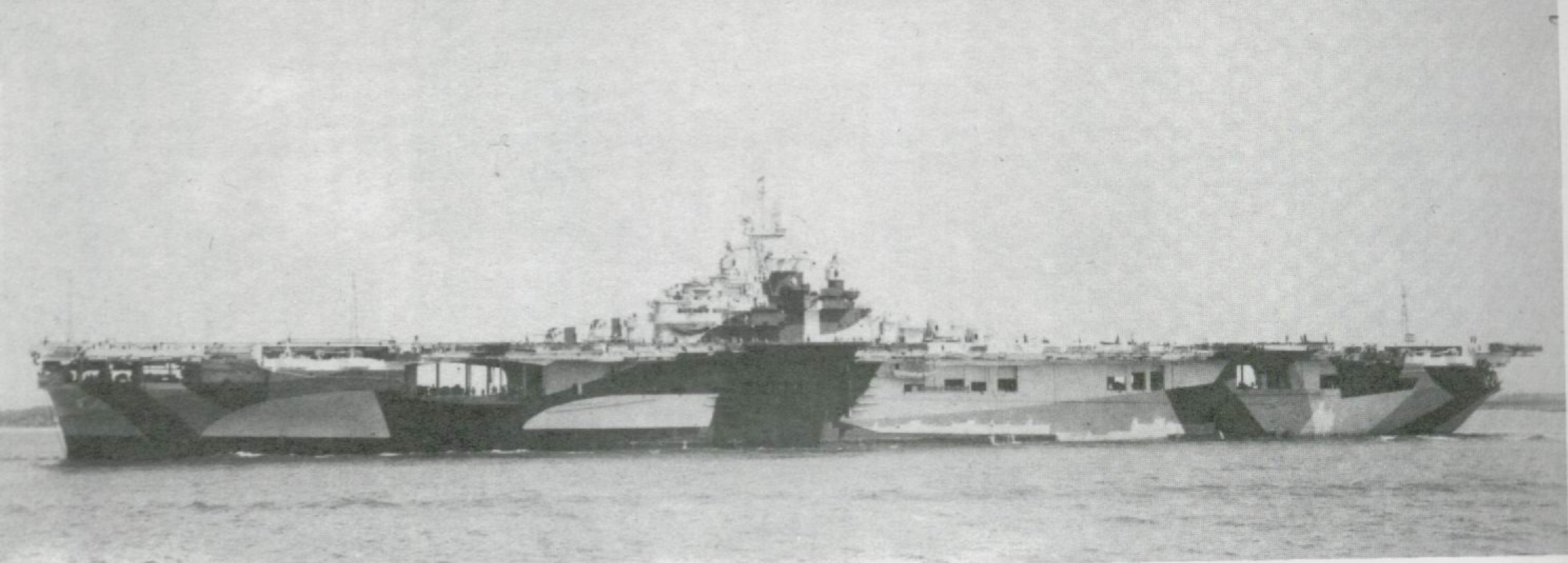




*OPPOSITE: HANCOCK loading bombs at the Boston Navy Yard.
 BELOW: Close up of INTREPID's fantail, starboard side, at Hunter's Point (June '44). The starboard quarter's aft quad 40 is just visible at the extreme right. In the next major refit, this mount was extended to overhang outboard, to match the forward quad 40 (see page 21.)*

ABOVE: Close up of the forward section of HORNET's island on June 13, 1944. This clearly shows the original bridge as carried by the eight early ESSEX sisterships. The forward quad 40 tub, which was later removed to make room for an extended flag bridge, is just above the damaged Avenger's tail section.

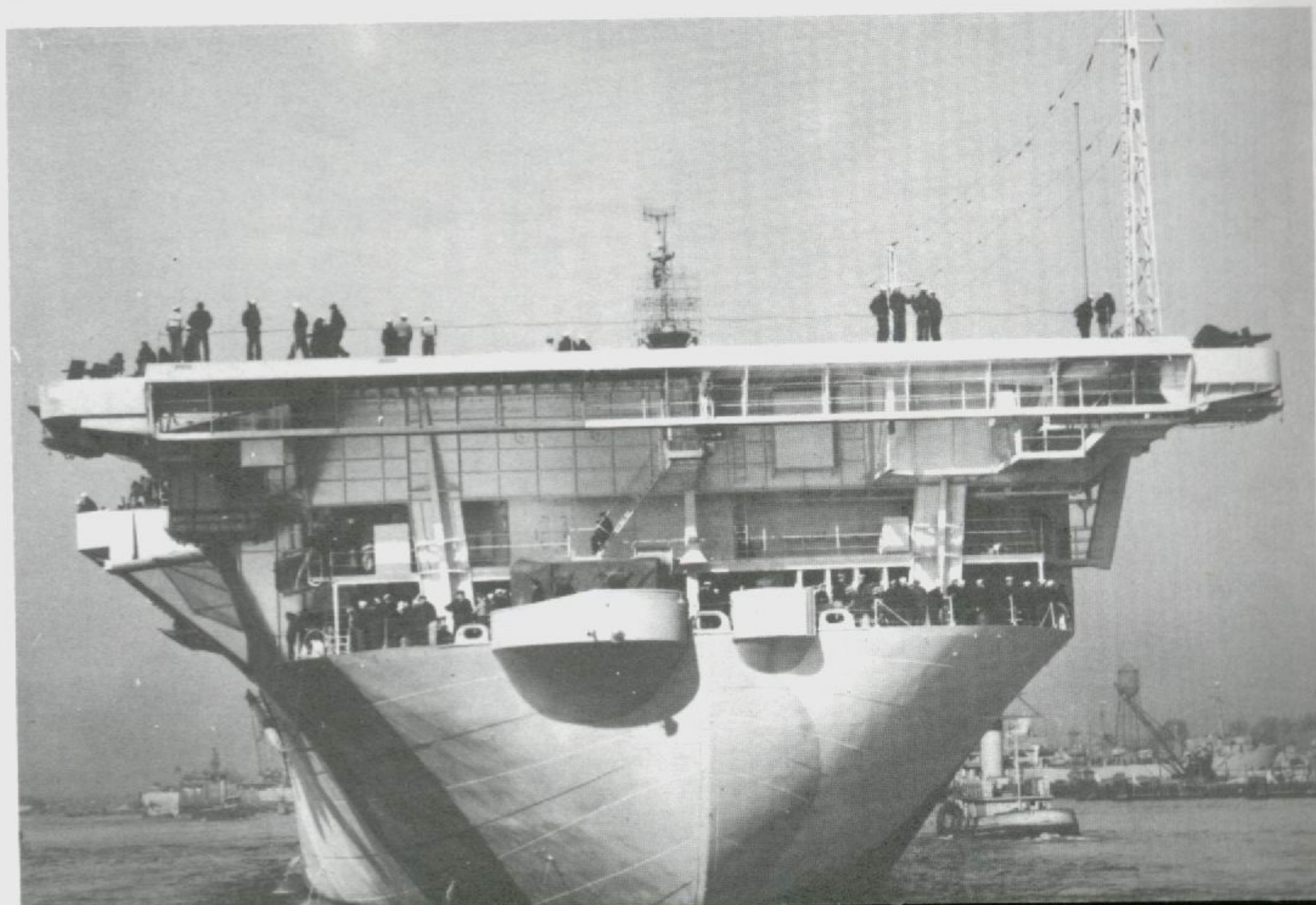


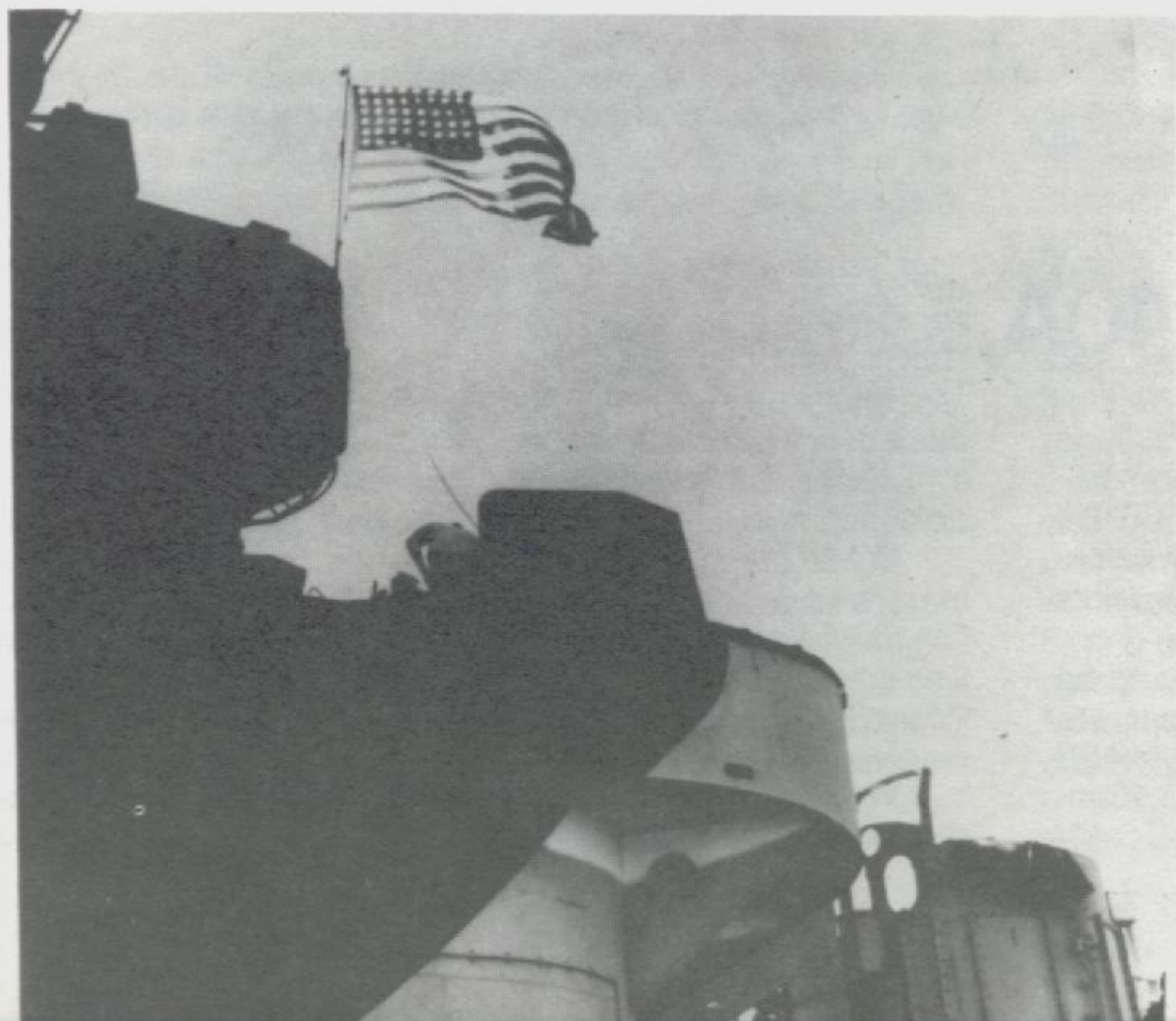
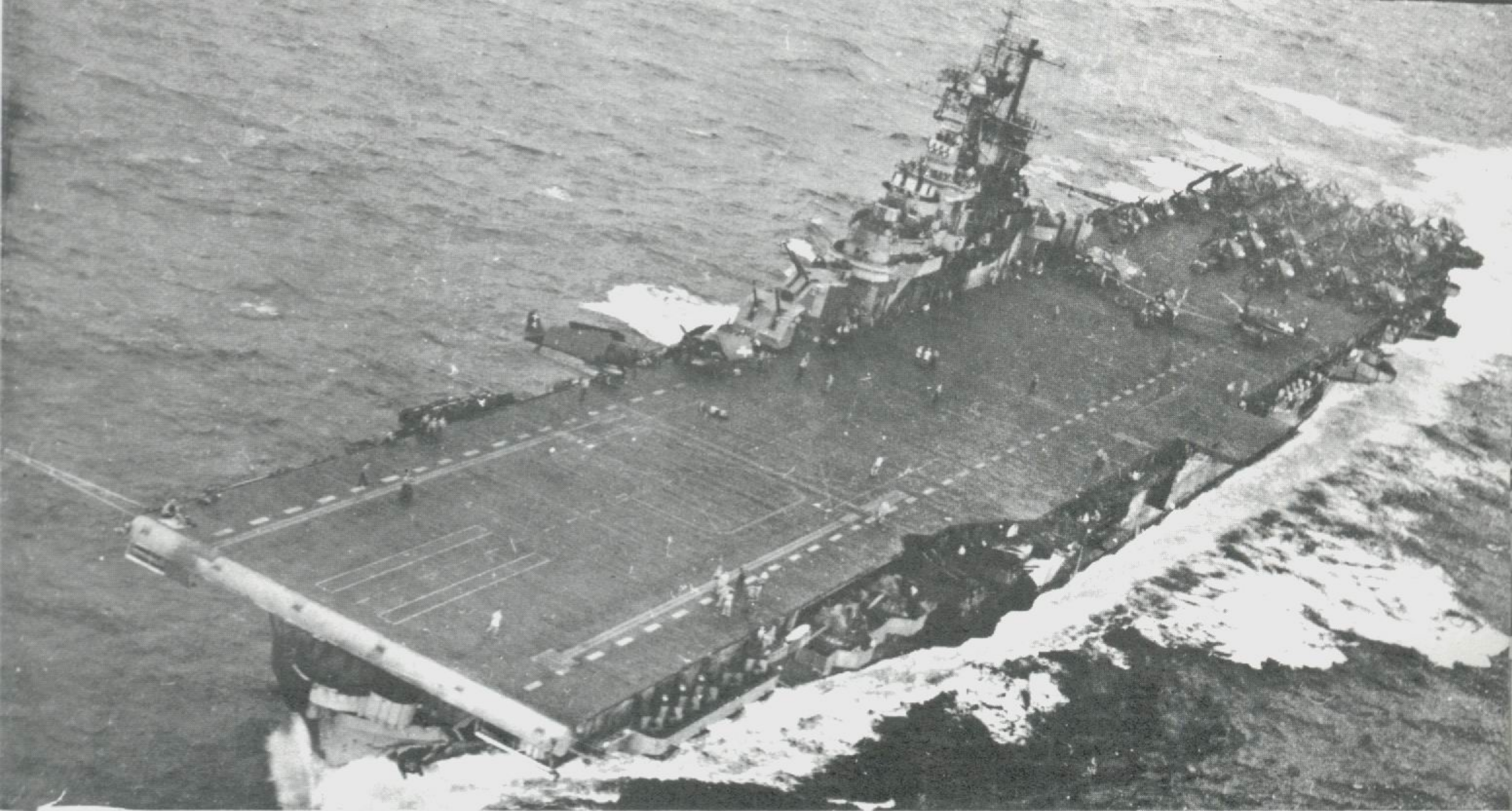


TOP: Another shot of FRANKLIN's repainted port side at Norfolk. The hangar deck catapult has been removed, but the quad 40's were not added to the catapult extension platform till her next refit at Puget Sound.

CENTER: HORNET also at Norfolk. The catapult extension leg is in the "up" position. Both photos again offer an excellent opportunity to compare measures. HORNET's colors look very light because of the strong sun.

RIGHT: "Stern on" of HORNET. Compare to FRANKLIN on the opposite page. While both port sides appear to be the same, their starboard patterns are obviously different.

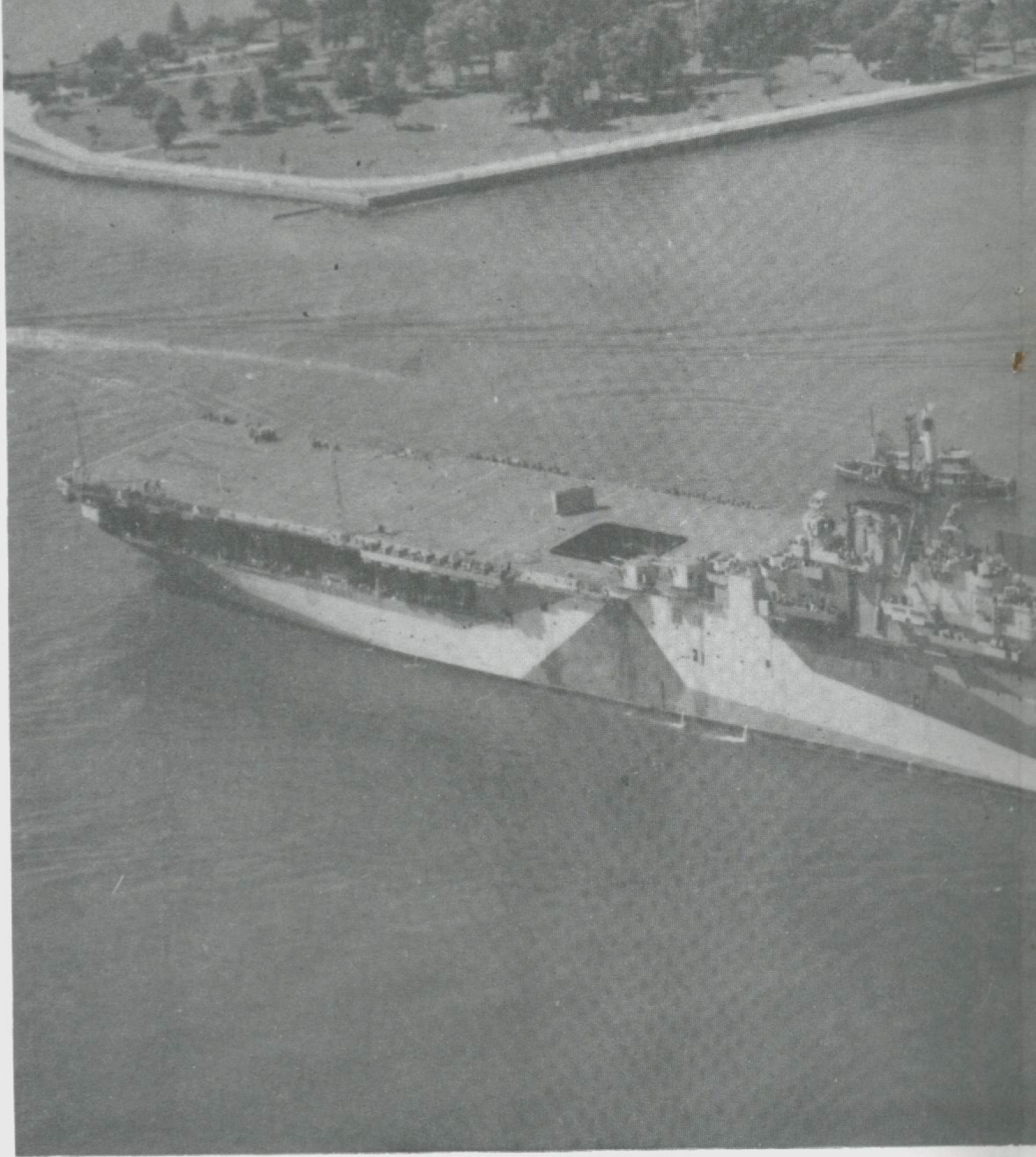




TOP: INTREPID off the Philippines during October '44. Although the flight deck is weathered, the yellow outlined numerals and elevators are visible.

CENTER: HORNET at Norfolk Dec. 19, 1943 in a fresh coat of design 3A.

LEFT: Another INTREPID view taken in 1944. The black panel of camouflage on the island makes all the detail much too dark. Notice the counter-shading under the 40mm gun tube.



The brand new TICONDEROGA (CV-14) underway at Norfolk, May 30, 1944. We decided to go very large with this picture to show some of the flight deck details. The dash lines should be white, but they look like light gray (22) or yellow. It would seem that the ship is too new for the white dashes to have weathered so quickly. SHANGRI LA had the same flight deck coloration.

DESIGN 10A, Chapter 8

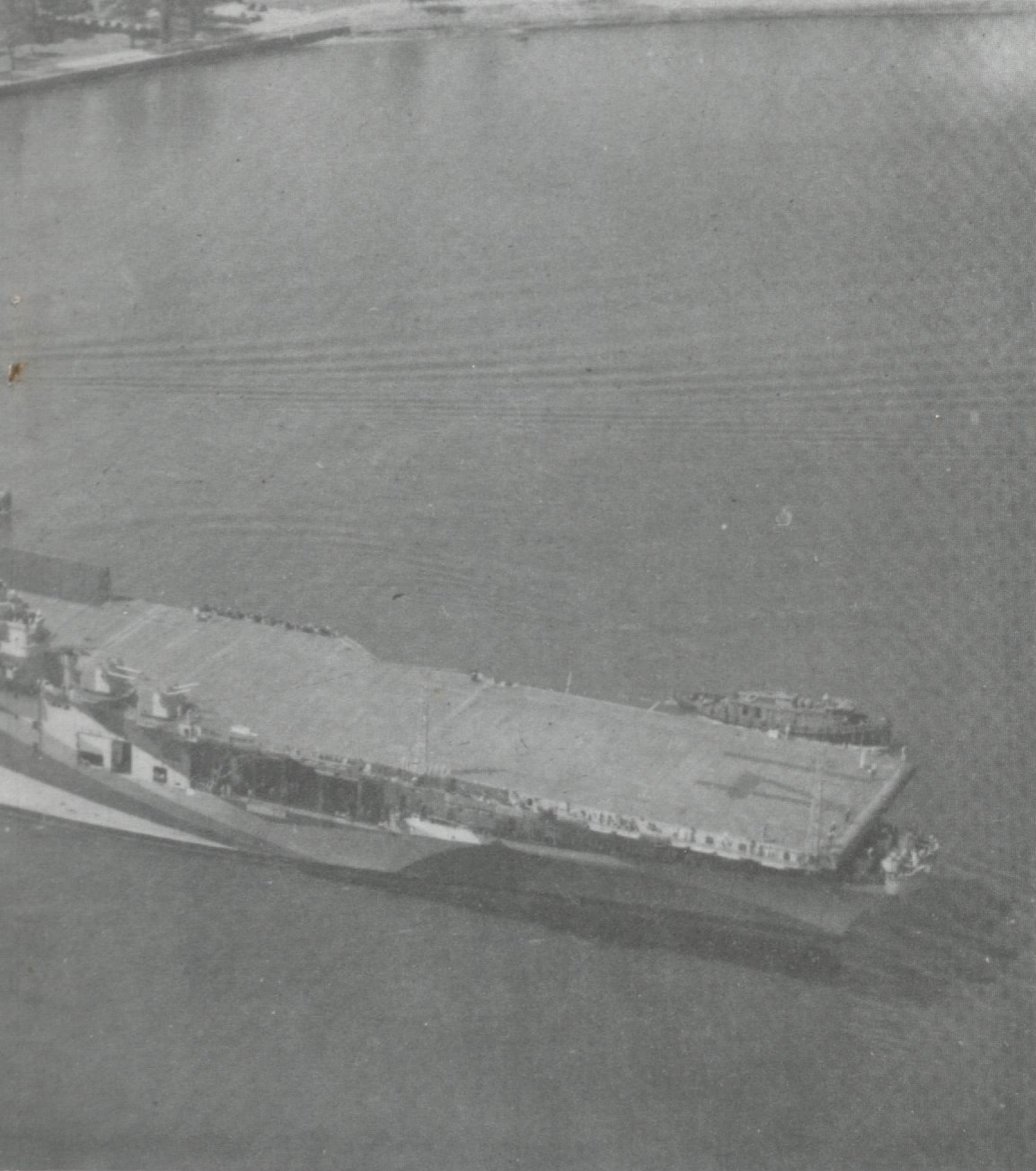
This design was the most graceful of all the carrier camouflage patterns. Design 10A was carried by the two short bow ESSEXES (WASP and YORKTOWN) and two long bow ESSEXES (TICONDEROGA and SHANGRI LA). The patterns and colors were followed quite closely. However, some of the light colors are questionable.

WASP (CV-18) appears to have been the first ship to be camouflaged in this design (March '44). We believe the colors to be pale gray (5-P), haze gray (5-H) and navy blue (5-N). WASP was a near twin for YORKTOWN (prior to September '44). Compare the two pictures on page 34. Structurally, YORKTOWN

carried: five radio lattice masts, a mainmast, the SC antenna on a raised lattice outboard of the funnel and the SK bedspring antenna in front of the topmast (on the radar platform).

WASP carried only four lattice masts, the SC behind the top mast (on the radar platform) and the SK outboard of the funnel. CV-18 was commissioned in Measure 21, then repainted into Design 10A at Boston. She carried this pattern till her refit at Puget Sound (June '45). At this time, she reverted to Ms21 and received all the outboard 40s, bridge extension, etc.

WASP'S flight deck coloration was standard except for the dull black numerals. In June '44, both read from the stern. In



January '45, both were outlined in yellow. In June '45, the forward numeral was turned around to read from the bow and the outlines were removed. In November '45, both numerals again read from the stern and the outlines are back!

YORKTOWN (CV-10) was commissioned in Ms21. Sometime prior to May '44 she was painted into Design 10A, either at Pearl Harbor or Majuro. At this time, she carried the standard early rig: hangar catapult, single quad 40 on the fantail and the original bridge with a quad 40 on the forward end of the island, etc. See page 34 for starboard side and refer to "Ships Data 7," page 44, for the port side (look closely for the caption does not point out the early rig).

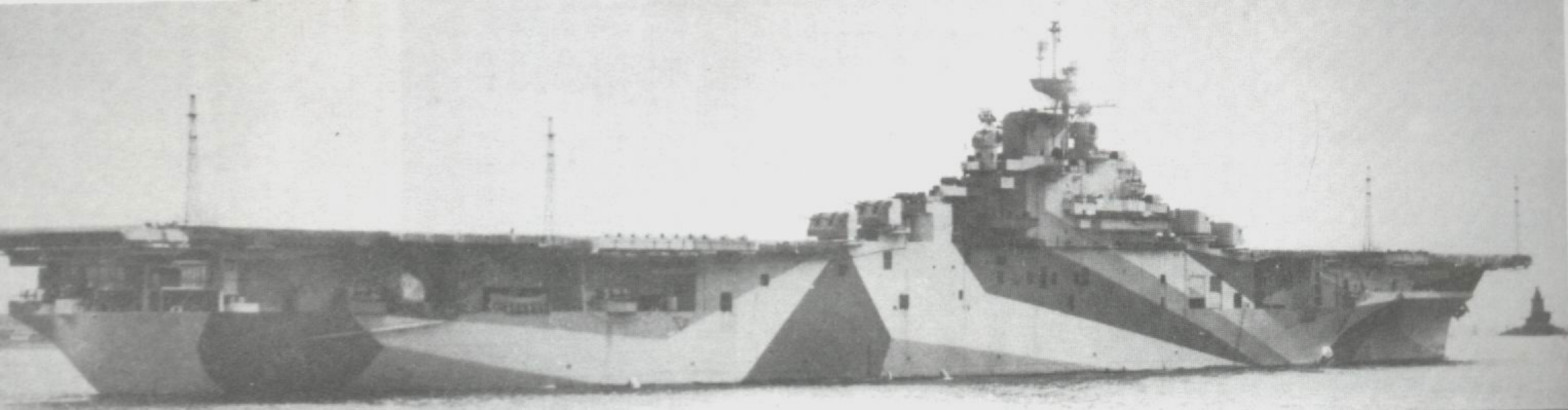
In September '44, YORKTOWN was refitted at Puget Sound. She retained her original camouflage pattern, Design 10A. "The Fighting Lady" emerged as the prettiest carrier in the fleet. Her bridge was extended, the SK resited, hangar catapult removed, three radio masts removed and her quad 40 mounts were upped to 17. Regrettably, we decided against printing many of the beautiful pictures of YORKTOWN which already

appear in "Ships Data 7." Our only wish is that Ships Data had printed them larger and lighter. Data's paper quality also leaves something to be desired. Compare the starboard view of CV-10 on page 23 of Camouflage I, next to the same picture on page 44 of Ships Data 7.

YORKTOWN's flight deck colors were standard, except for the position and length of the dash lines (see Ships Data 7). The flight deck stain appears to have been darkened to deck blue.

Both TICONDEROGA (CV-14) and SHANGRI LA (CV-38) were commissioned in Design 10A. Both were nearly identical except that CV-38 carried an SK-2 dish antenna. We believe that the many beautiful pictures of TICONDEROGA (in this chapter) will speak for themselves. Both carriers were in Ms21 by the Spring of 1945; but only CV-14 picked up the seven additional outboard quad 40s. She also received an SK-2, outboard of the funnel and her white (?) dashes were changed to black. We doubt that she had her flight deck darkened to deck blue.

Decent pictures of SHANGRI-LA are "hard to come by." We hope to find more in our continuing searches.



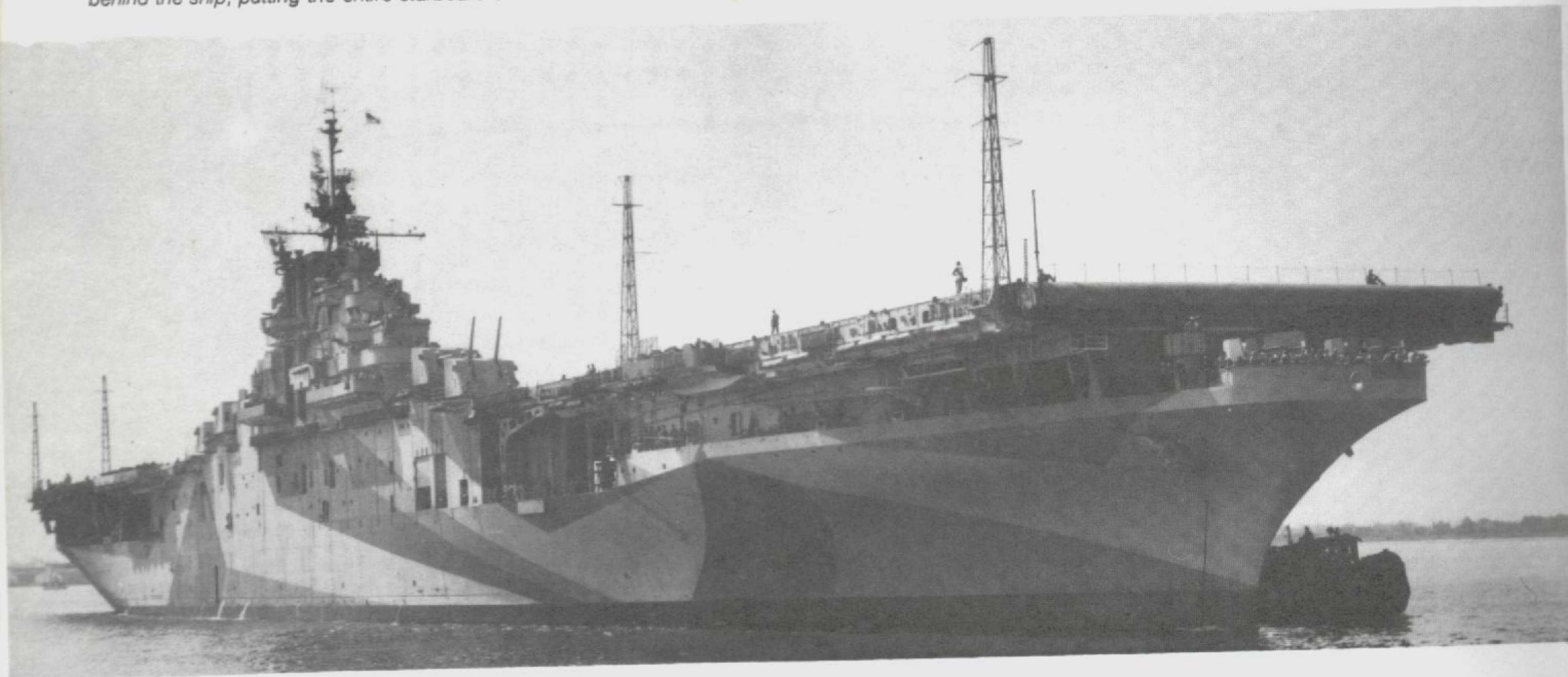
TOP: WASP (CV-18) out of Boston, March 15, 1944. Note the two quad 40s on the starboard quarter (hangar deck level) and the single quad 40 on the fantail.

ABOVE: YORKTOWN (CV-10) at Majuro during May '44. The sun is behind the ship, putting the entire starboard side in shadow.



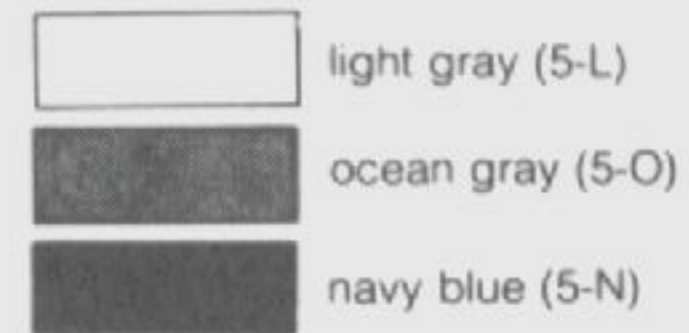
BELOW: TICONDEROGA (CV-14) out of Norfolk, May 30, 1944.

BOTTOM: SHANGRI-LA (CV-38) anchored at Trinidad (Dec. 15, 1944), during her "shake down." Again, the sun is behind the ship, putting the starboard side in shadow. The light streak running along the starboard side is a mark on the negative, not part of the design.



Compare this drawing to the design on page 22 of Camouflage I. There's an error in the paragraphs on that page. The last sentence should read, "All others carried three or more colors."

Reflected light can play tricks on anyone. In some of the pictures in this chapter, the light gray (5-L) definitely appears to be pale gray (5-P), especially on CV-10 and CV-18.

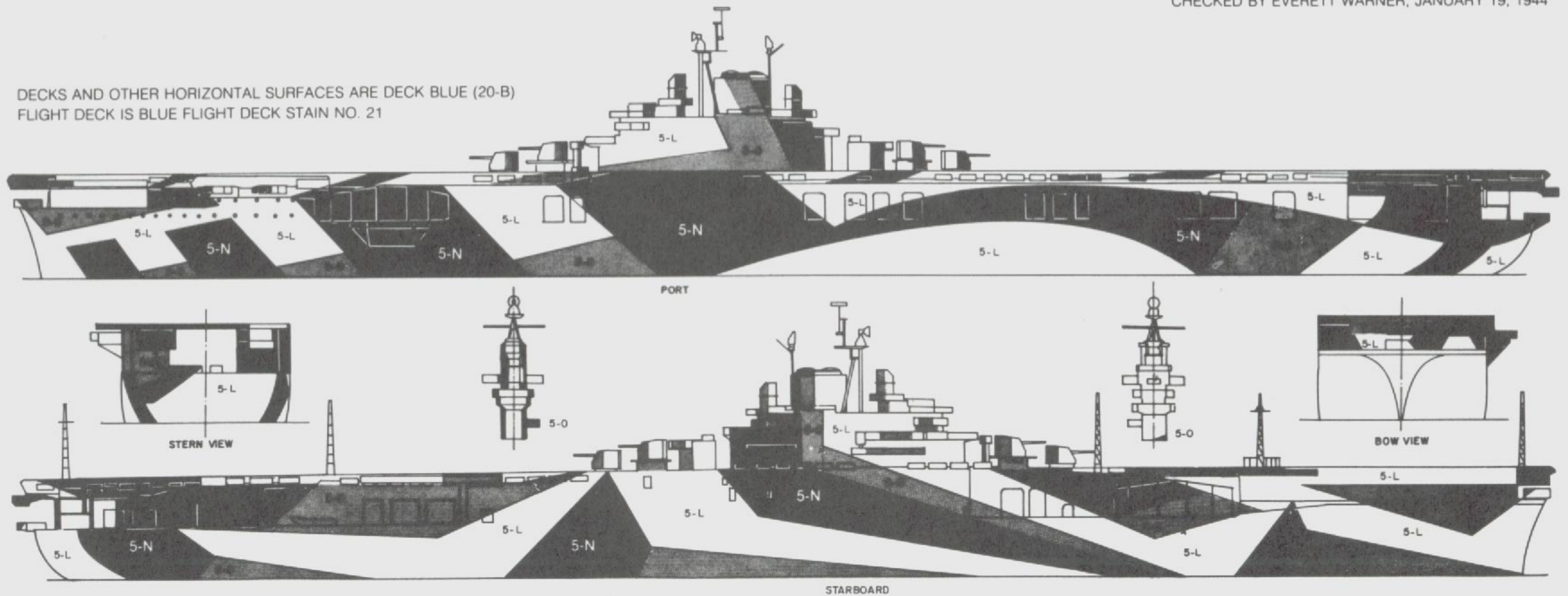


CV-9 class

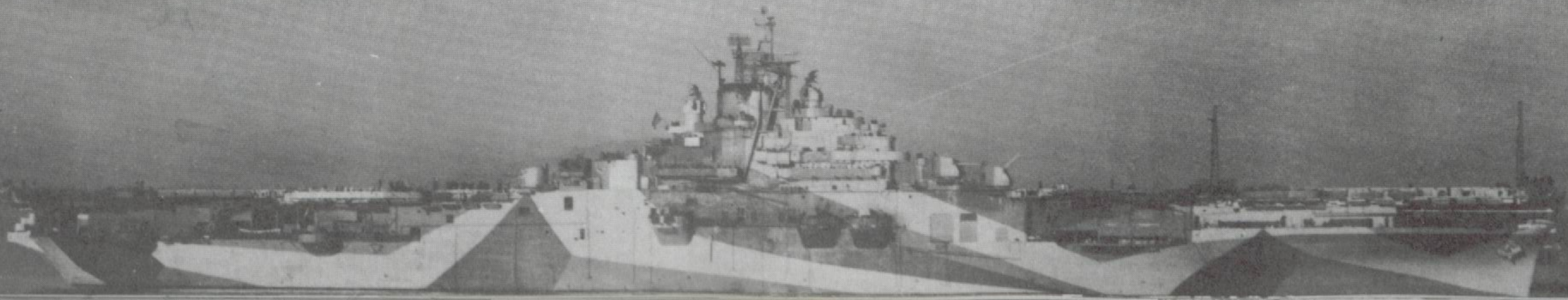
measure **33**
camouflage design **10A**

CHECKED BY EVERETT WARNER, JANUARY 19, 1944

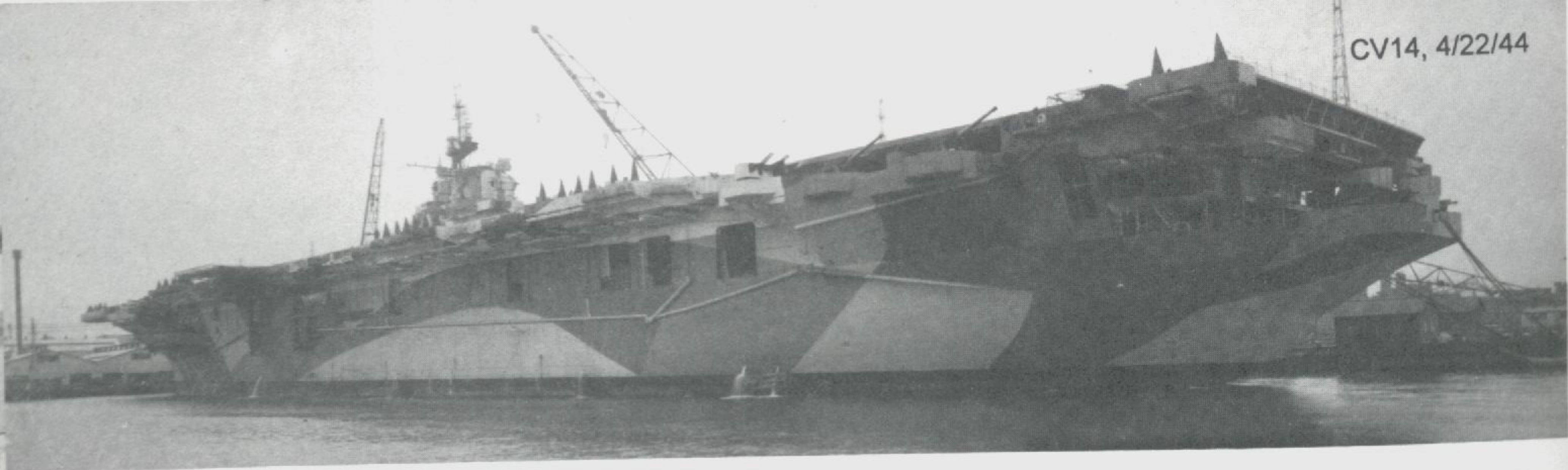
DECKS AND OTHER HORIZONTAL SURFACES ARE DECK BLUE (20-B)
FLIGHT DECK IS BLUE FLIGHT DECK STAIN NO. 21



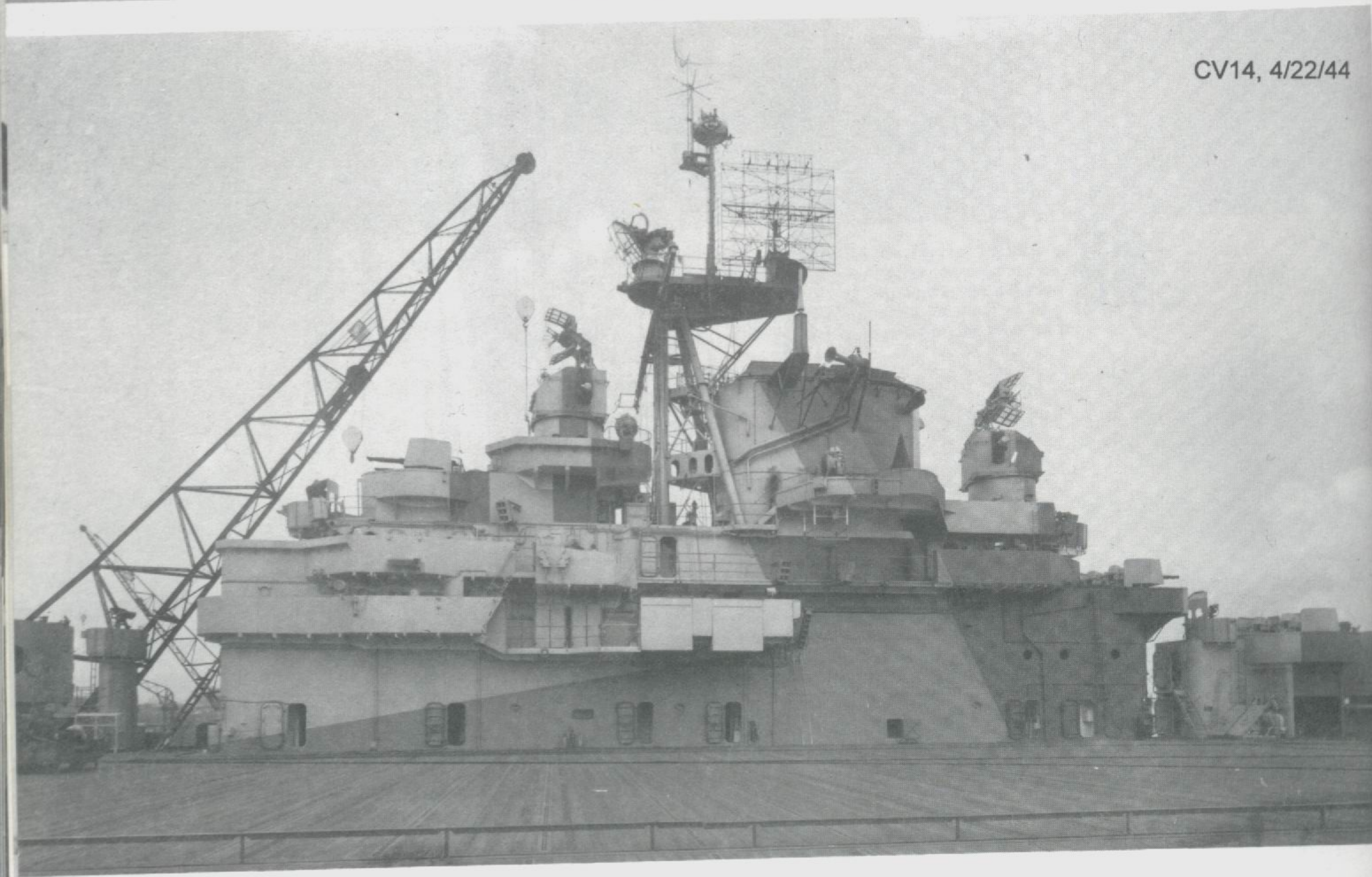
The refitted YORKTOWN in Puget Sound, October 6, 1944. This is a very dark photograph that makes the darkest color (navy blue) look black.



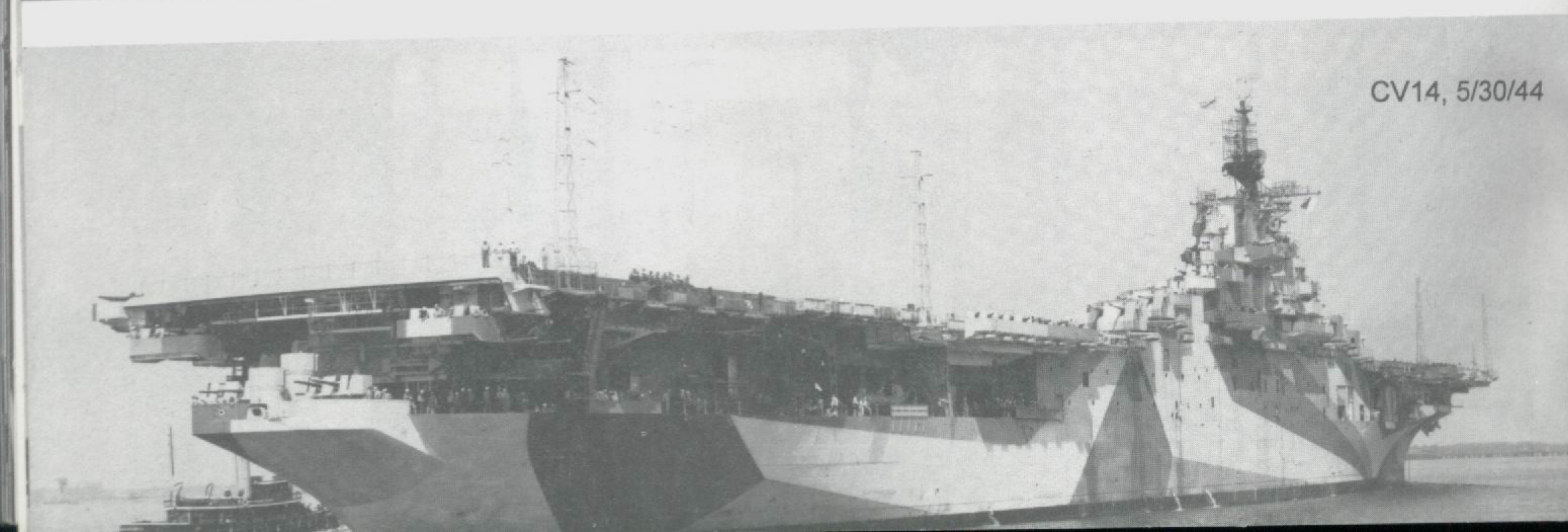
CV14, 4/22/44



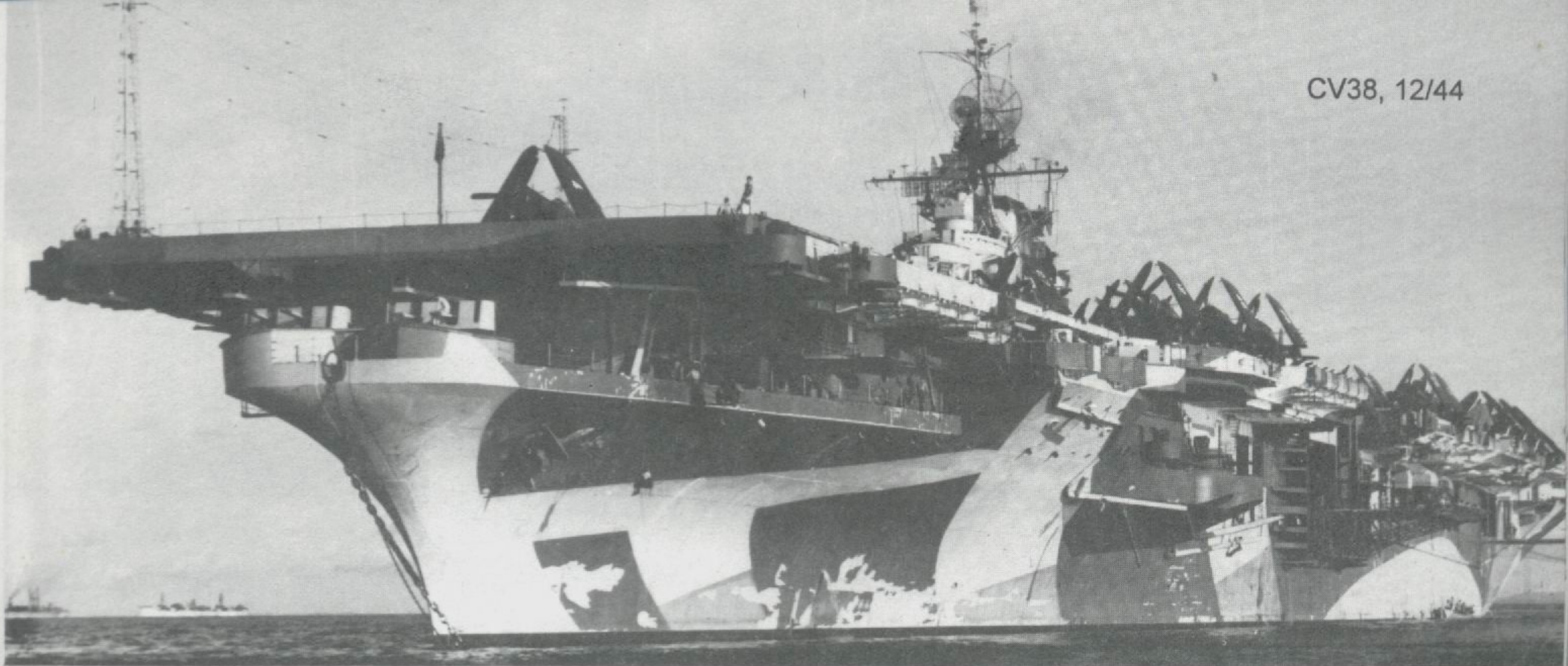
CV14, 4/22/44



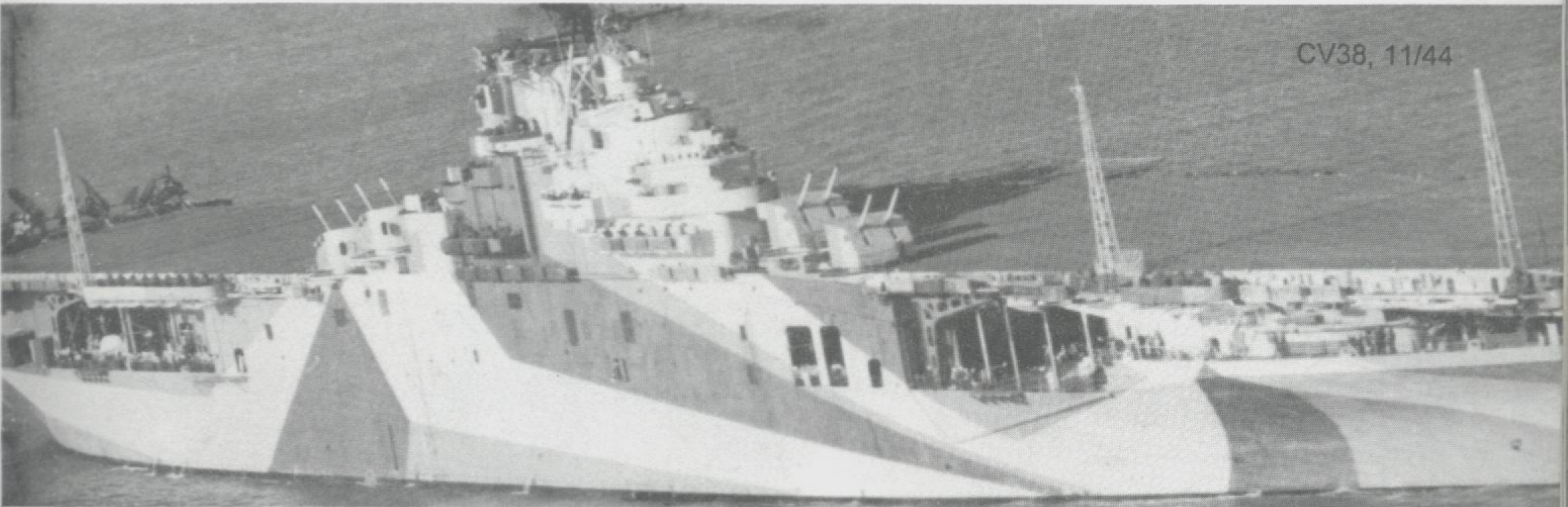
CV14, 5/30/44



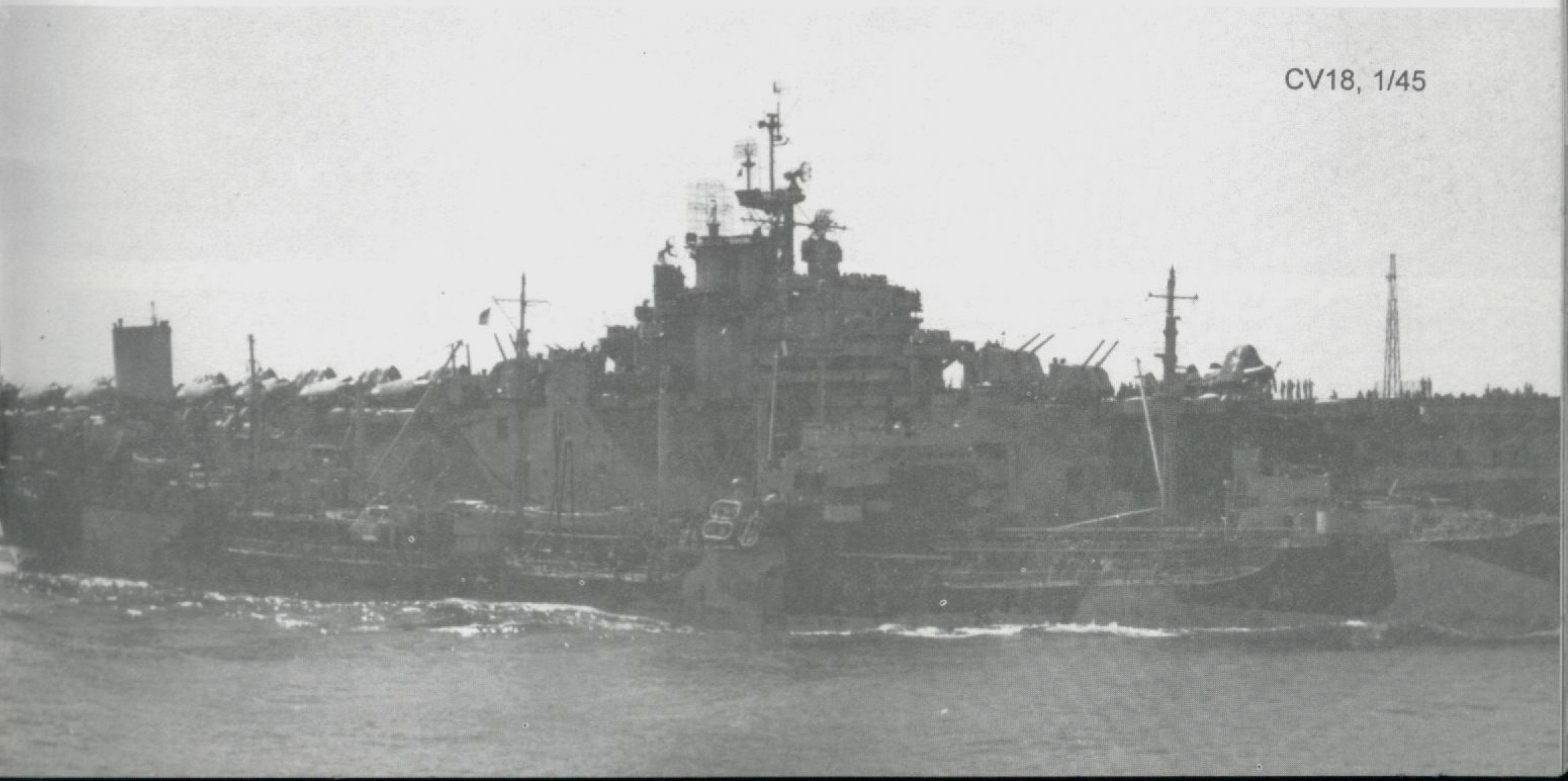
CV38, 12/44

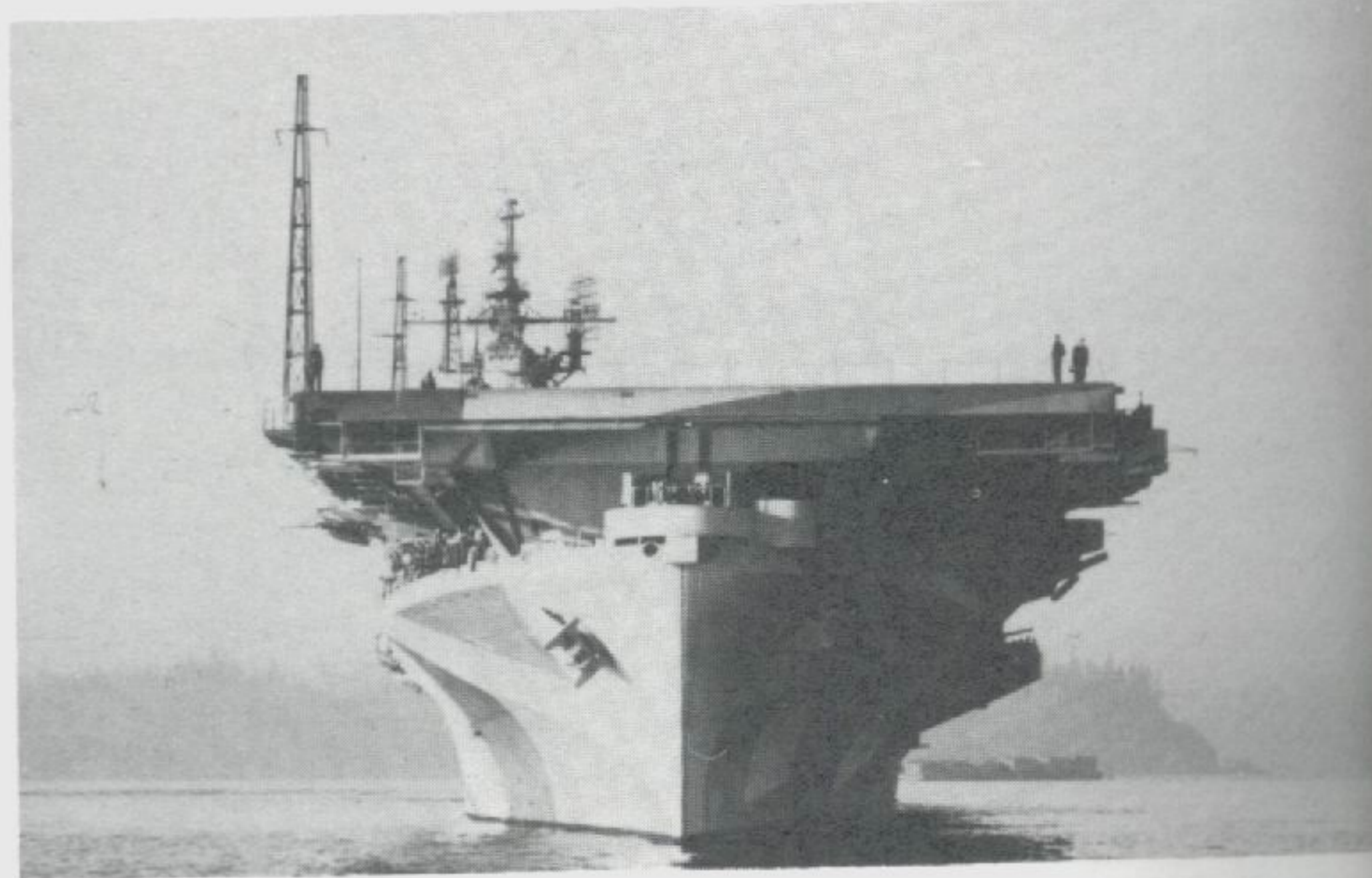
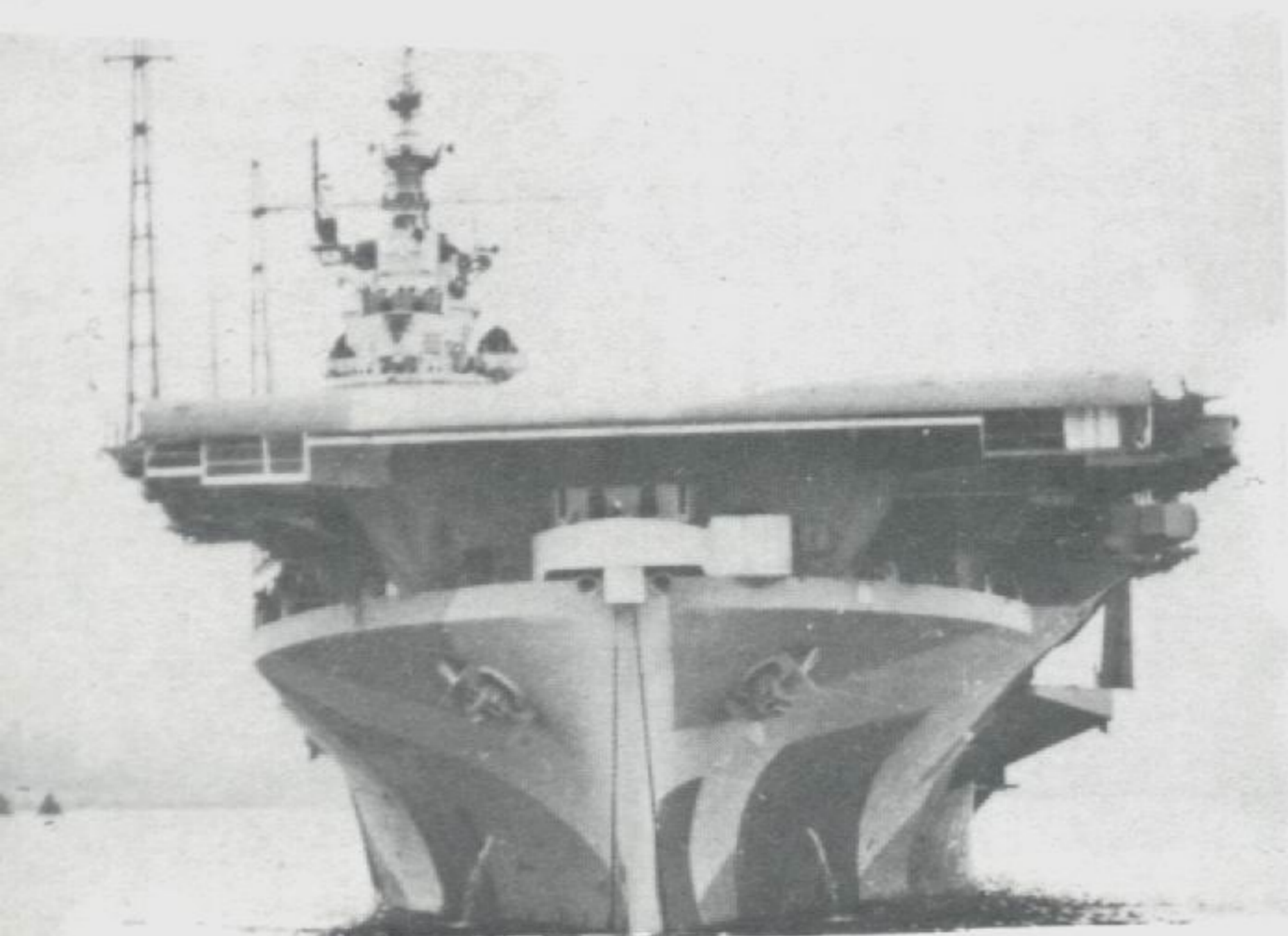
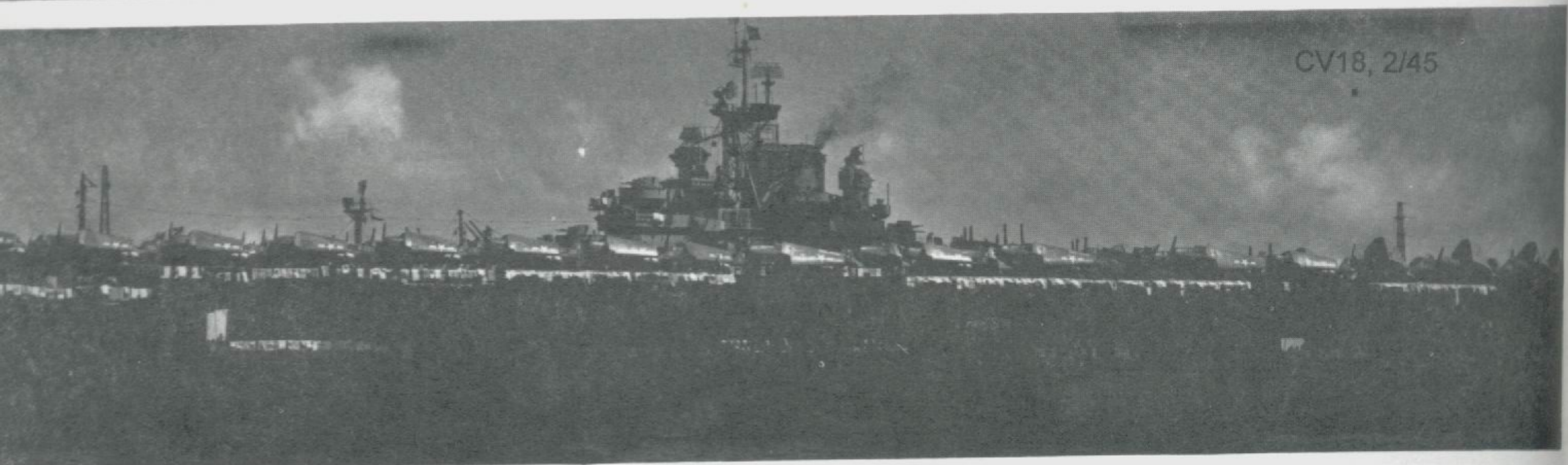
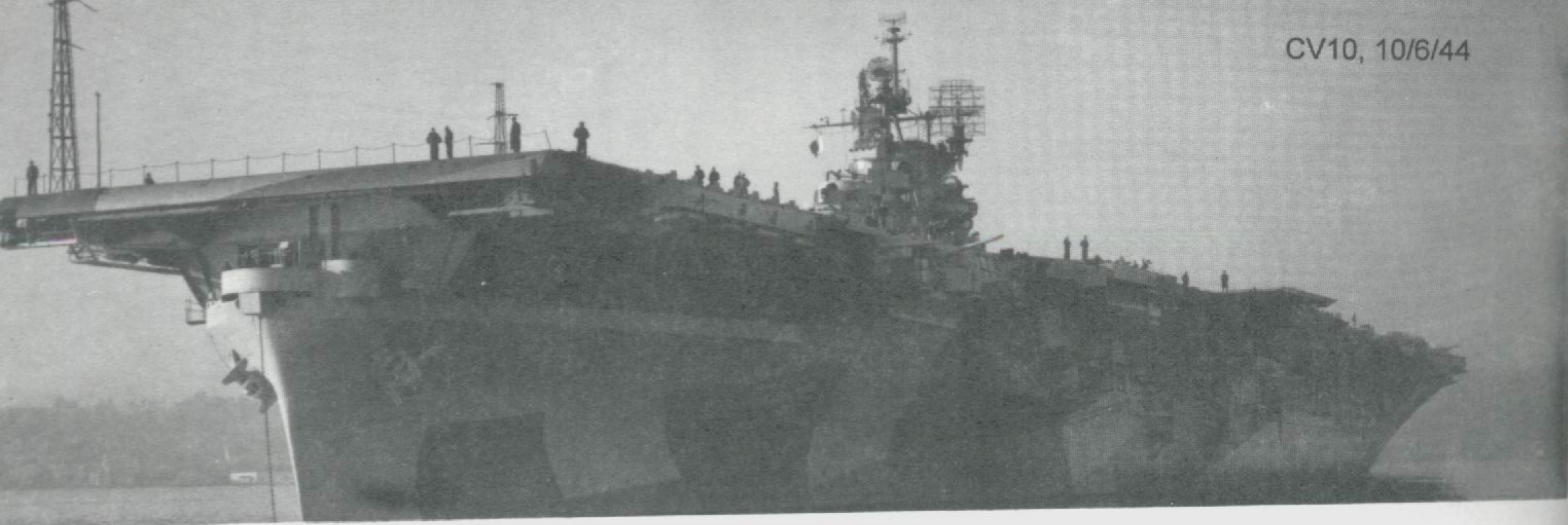


CV38, 11/44



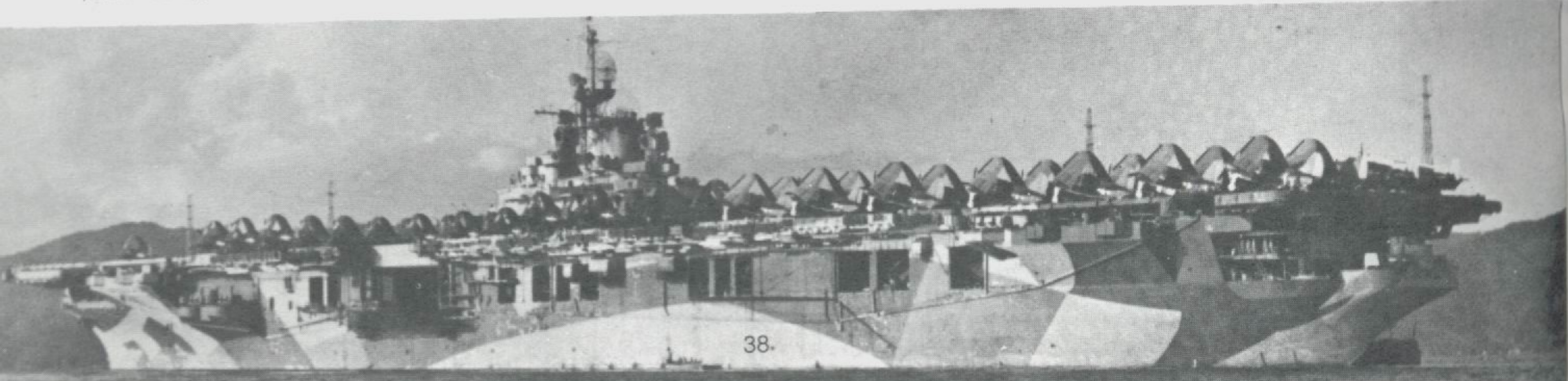
CV18, 1/45

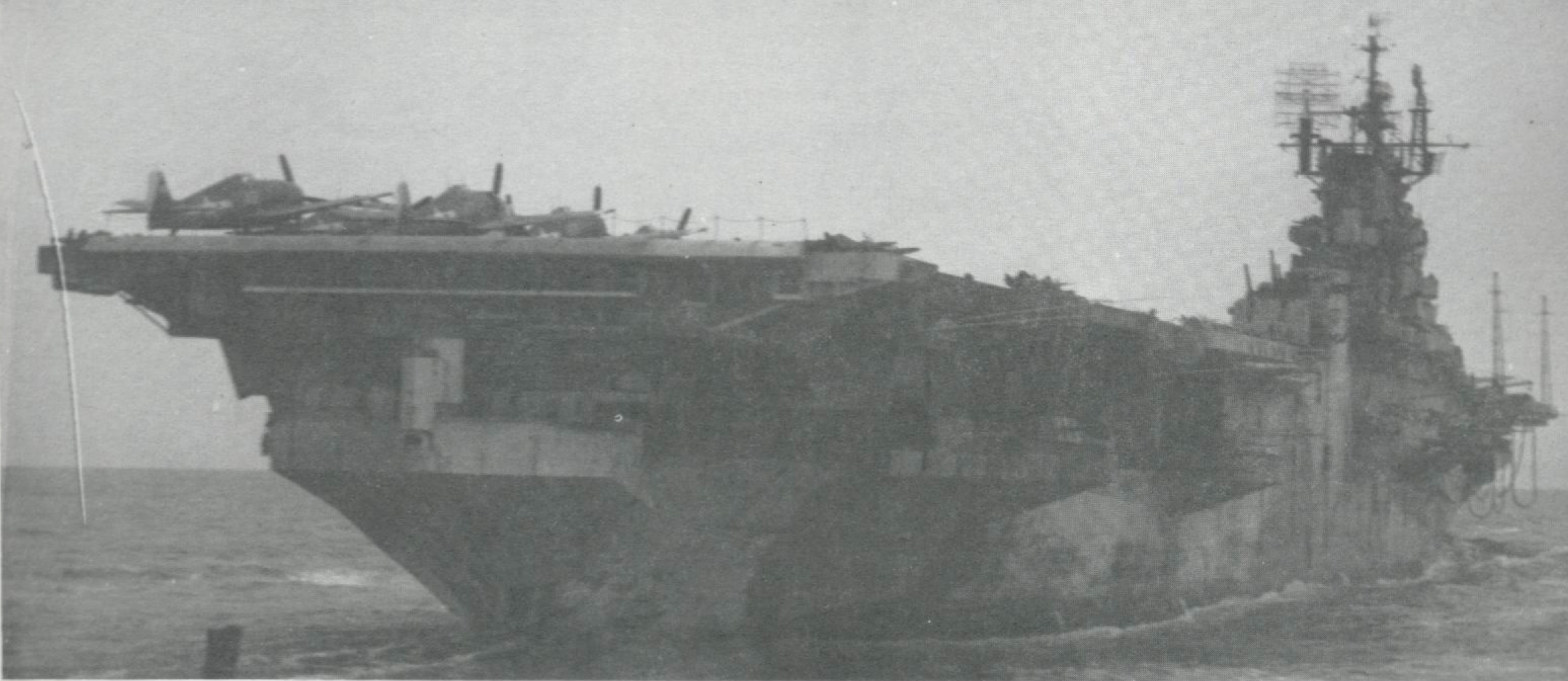




ABOVE: These two side-by-side "bow ons" of WASP (CV-18) and YORKTOWN (CV-10) show the slight differences between the same pattern as applied to two different ships.

BELOW: The worn off paint on SHANGRI-LA shows that the ship was painted overall light gray, then the darker colors were applied. Taken during her Caribbean shakedown.



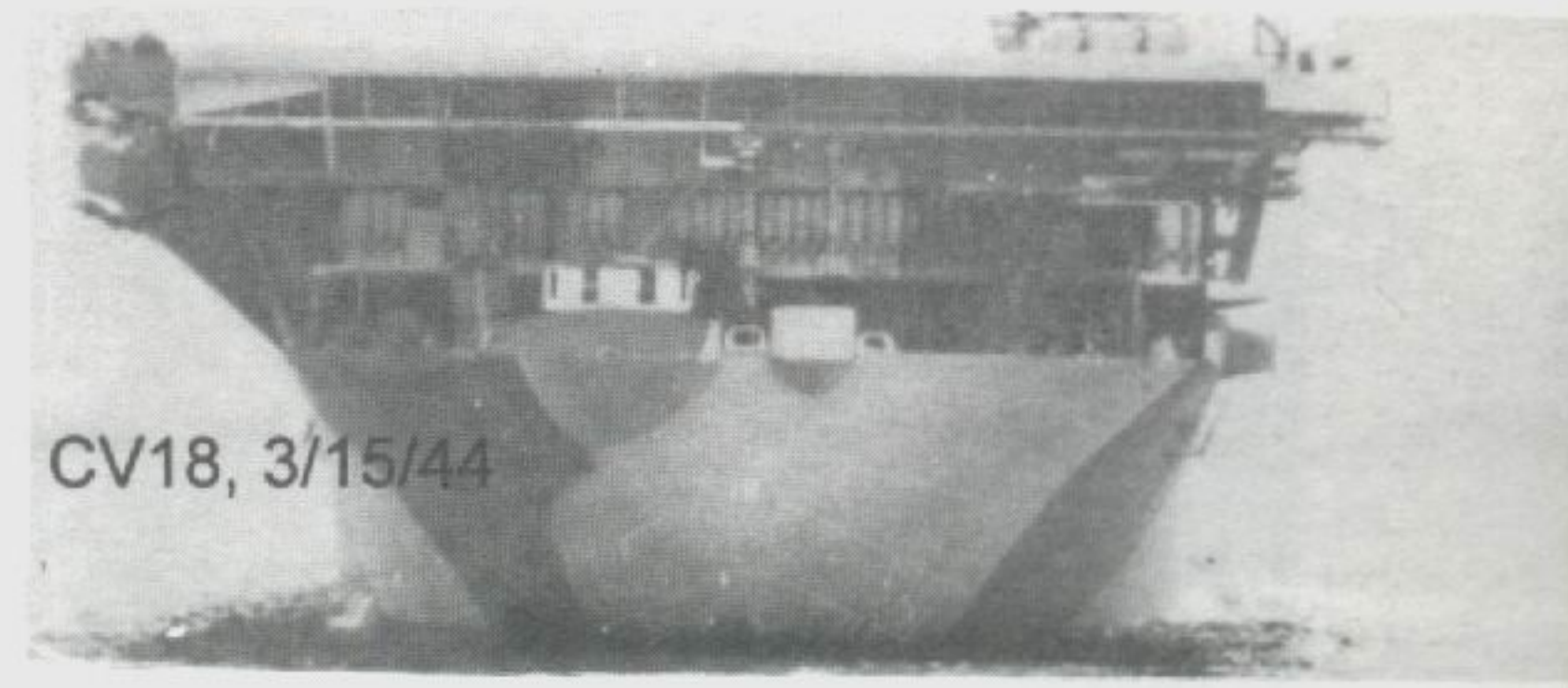


ABOVE: A heavily weathered YORKTOWN shows lots of rust and primer paint. Note the extended SK base (see Ships Data 7, page 31 for excellent closeups). This picture is slightly out of focus.

BELOW: Unfortunately, the two stern views had to be cropped to fit, but they do show the pattern and structural differences between the two types of fantail sponsons.



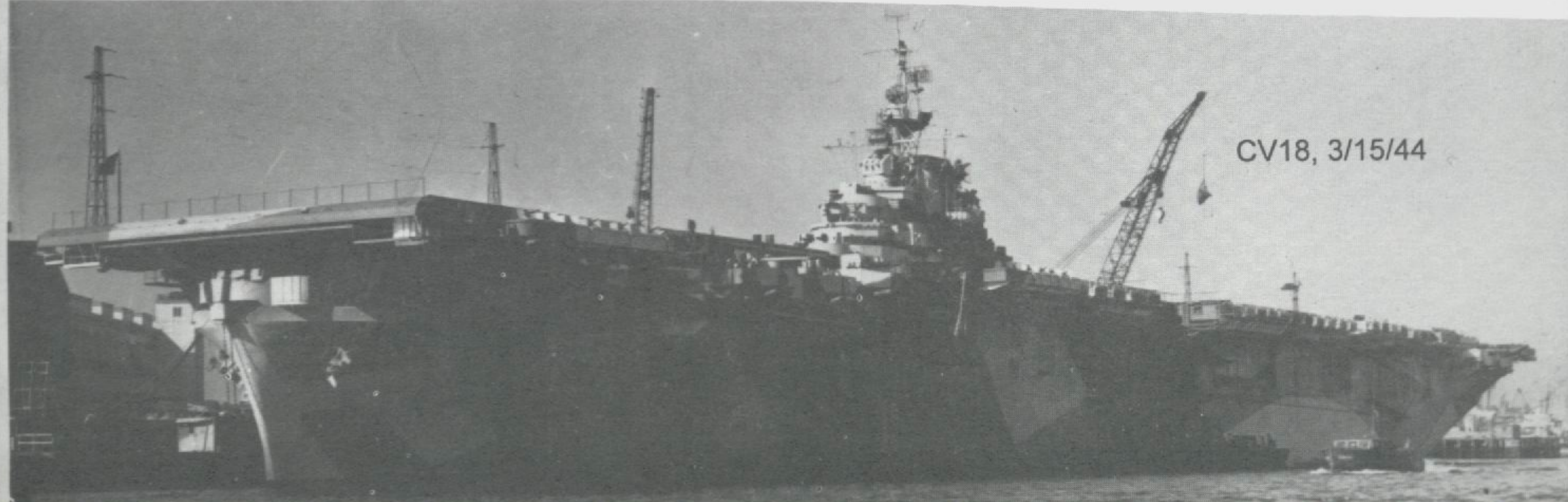
CV14, 5/30/44



CV18, 3/15/44



CV14, 5/8/44



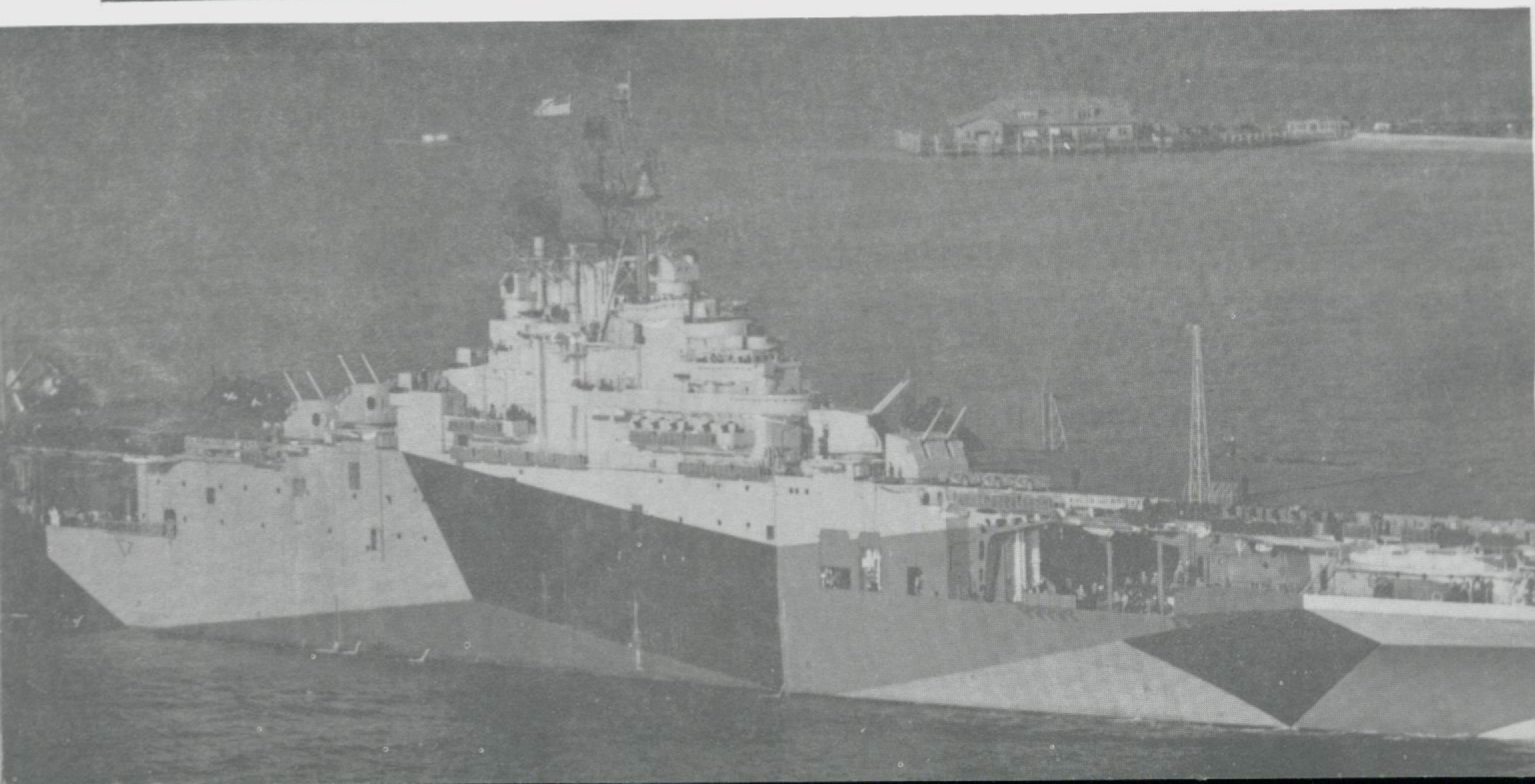
CV18, 3/15/44

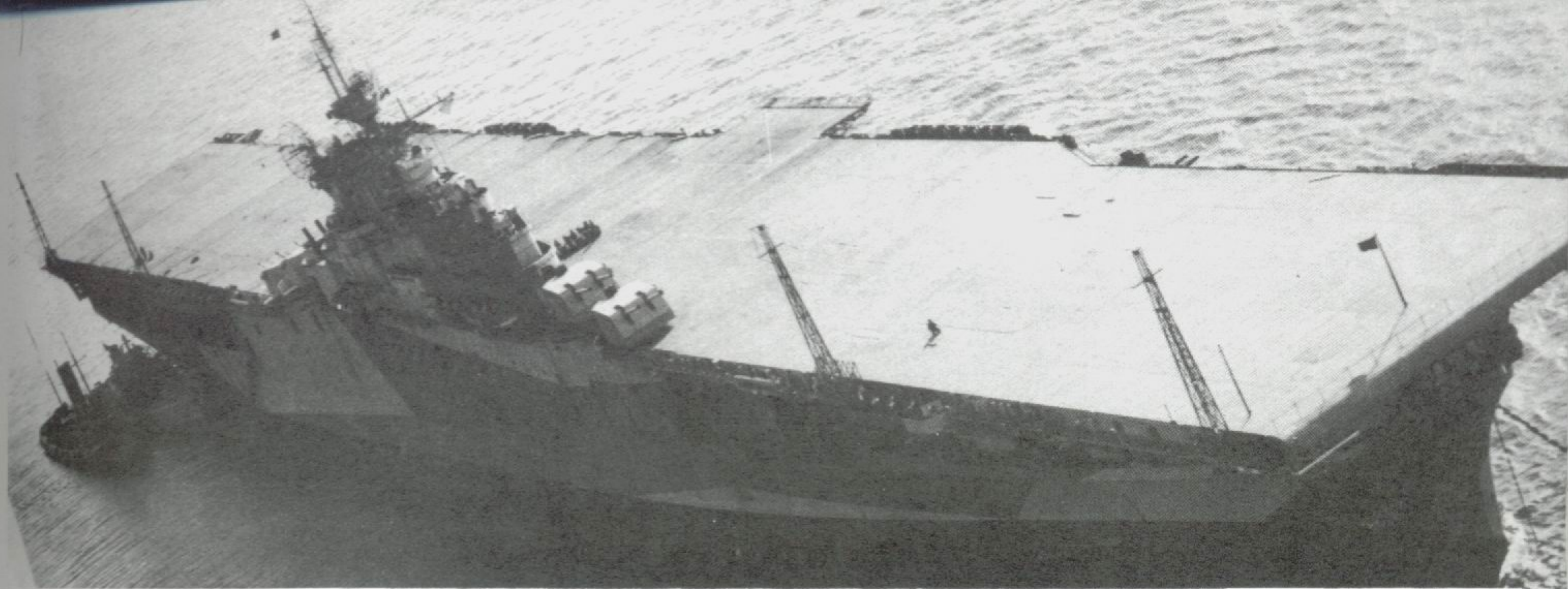


ABOVE: This interesting picture of WASP is a left-over from Chapter 8. While its location and date were not given, we believe it was taken at Boston, March 14, 1944. We apologize for having to delete a number of captions in the previous chapter. We hope that just the hull numbers and dates will be helpful.

BELOW: These two views of RANDOLPH were taken on November 5, 1944 off Norfolk. Note the subtle color variations and apparent changes in

the same colors caused by the different angles of the hull. The fresh paint shows the contrast between dull black and navy blue, between haze and navy blue and between ocean and light gray, etc., etc. Even white countershading is visible on some of the island's overhangs. It is rare to see haze gray (the after 5" mounts) next to light gray (the entire island). Compare this picture to the indicated colors on the master drawing on page 43.





ABOVE and BELOW: Two views of BENNINGTON taken December 13, 1944. The camouflage panel under the after 5" twins should be haze gray, but is actually light gray. Compare to the close-up of RANDOLPH on the bottom of the opposite page.

DESIGN 17A, part 1, Chapter 9

Design 17A is a little confusing since two separate design sheets were prepared under the same designator number. The first 17A design was approved by Everett Warner on June 2, 1944. It included pale gray (lightest color) and dull black (darkest color). Mr. Warner then spent several months observing ship camouflage in the Pacific (see Chapter 14). He concluded that carrier designs should have less contrast, but with larger patterns.

Design 17A was then redrawn taking the above conclusions into consideration. However, there still was a strong resemblance between the two designs. For this reason, we've reproduced them side by side on page 43.

Similarities end at the pattern shapes, because the colors designated for each were drastically different.

For ease of identification, we've broken design 17A into two chapters. This chapter (part one), deals with RANDOLPH (CV-15) and BENNINGTON (CV-20). Both CVs wore the initial version of Design 17A which specified six colors! This is the only six color pattern that we've come across (for any U.S. fleet warship). The pictures in this chapter are invaluable for they offer the very rare opportunity to compare the entire range of camouflage colors on the same ship, in the same picture, under the

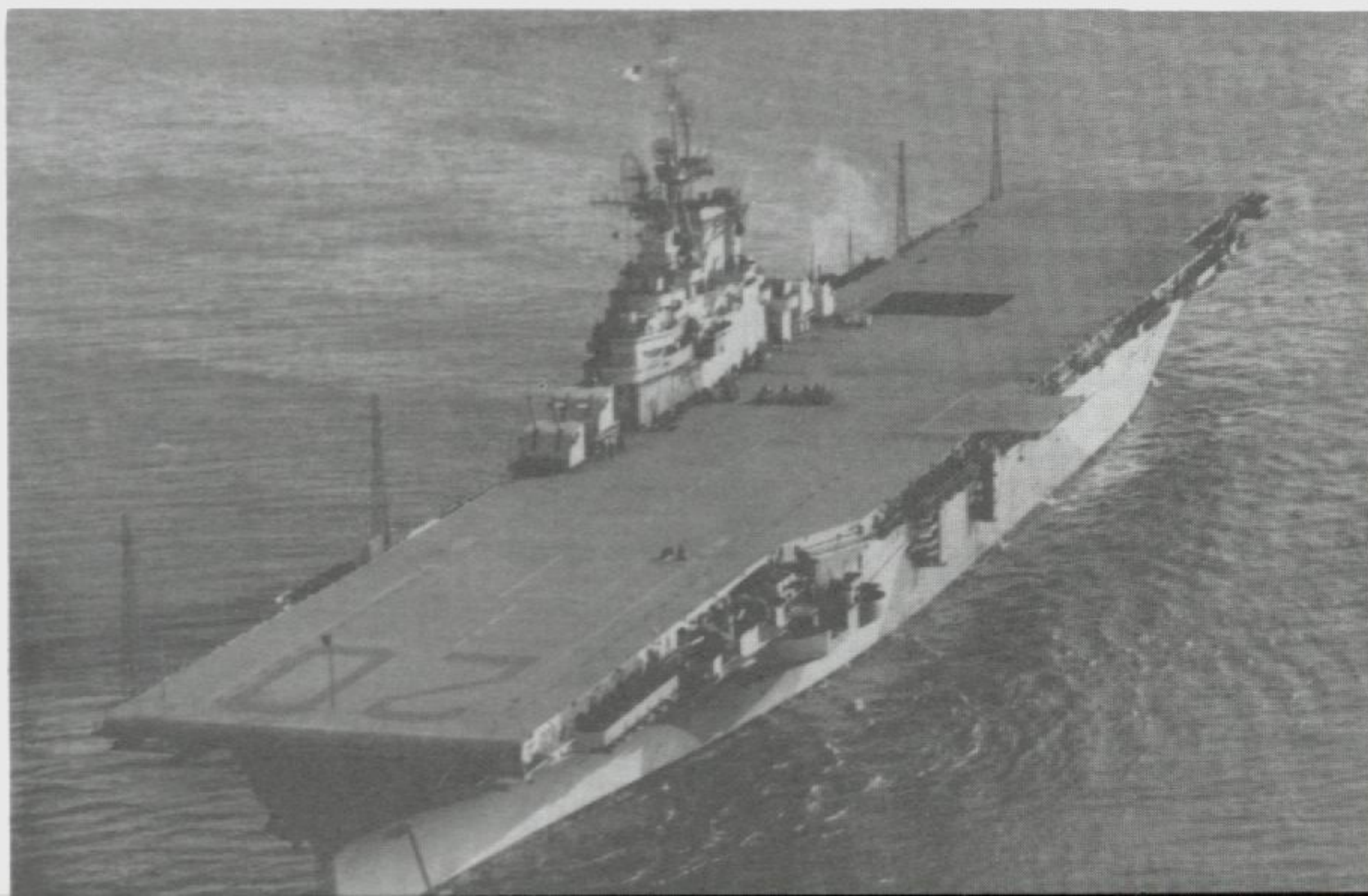
same light conditions.

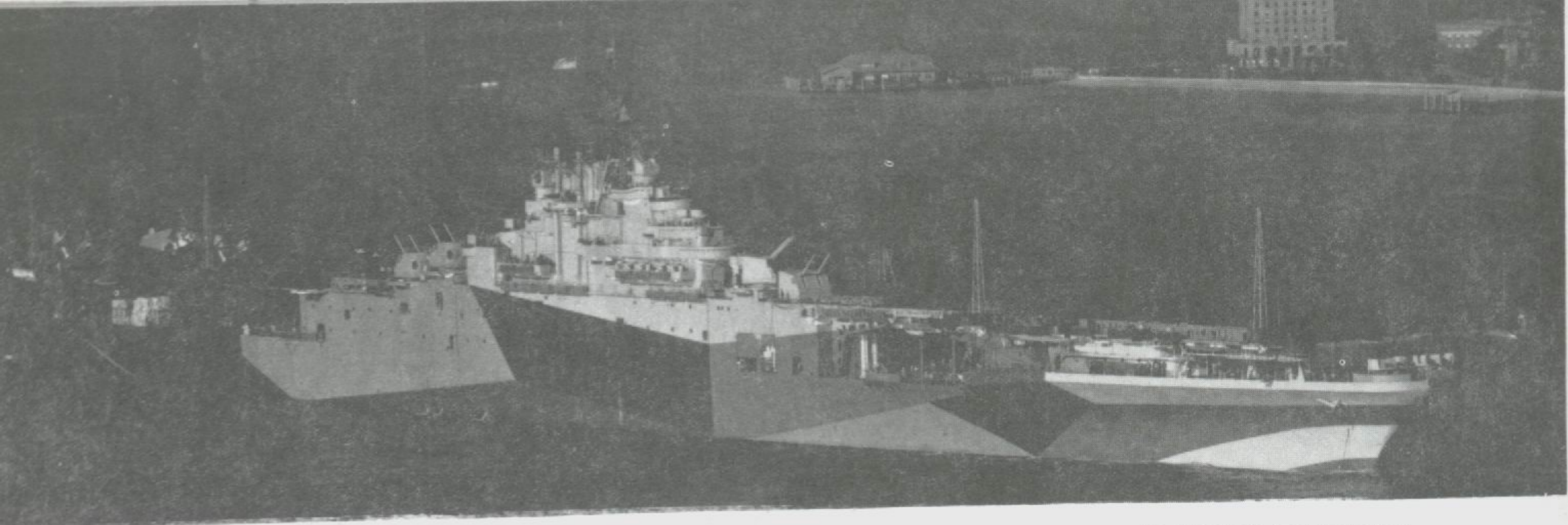
BENNINGTON was commissioned in Design 17A on August 6, 1944 at the Brooklyn Navy Yard. In December the pattern was repainted into Design 17A (part 2)!! The flight deck was stained blue with painted dull black numerals and dash lines (no centerline dash or elevator outlines).

CV-20 was the first short bow ESSEX to be completed with the standard wartime modifications. Even though she saw a lot of action in the Pacific, she never received the seven outboard quad 40s (two on port, five on starboard).

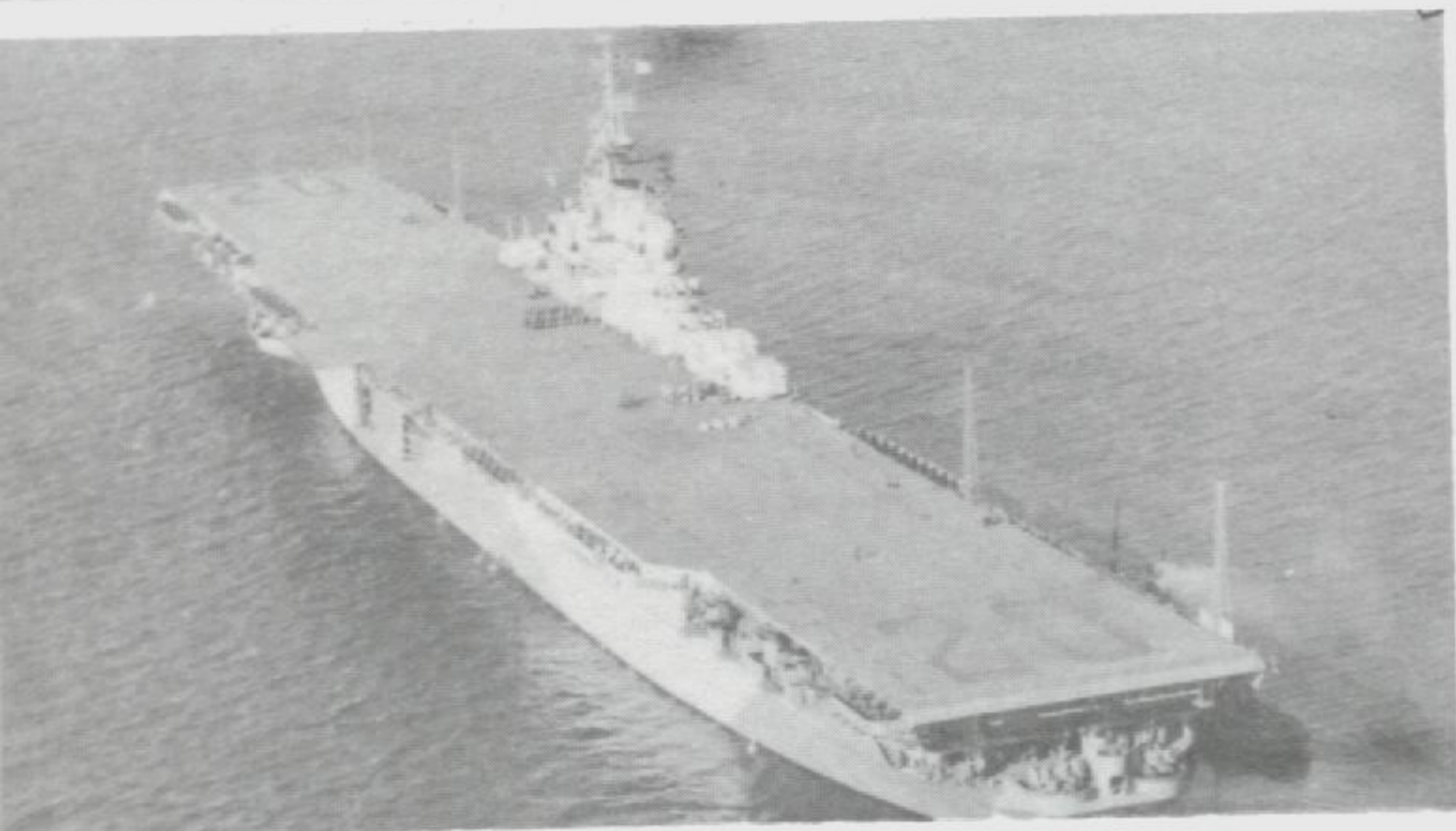
RANDOLPH was commissioned in Design 17A on October 9, 1944 at Norfolk. The fact that she was a long bow ESSEX did not affect the bow patterns. Her flight deck was stained with the darker deck blue stain. Thus, her painted dull black numerals were rather hard to see. The dash lines appear to be slate (pale) gray instead of white. During her January '45 refit at Hunter's Point, the black numerals were painted over into white. As such, RANDOLPH was the first wartime carrier to wear white flight deck numerals. Also during this refit, she repainted into Measure 21 and had the seven outboard quad 40s added.

Neither carrier went "on the line" in Design 17A's six color pattern.

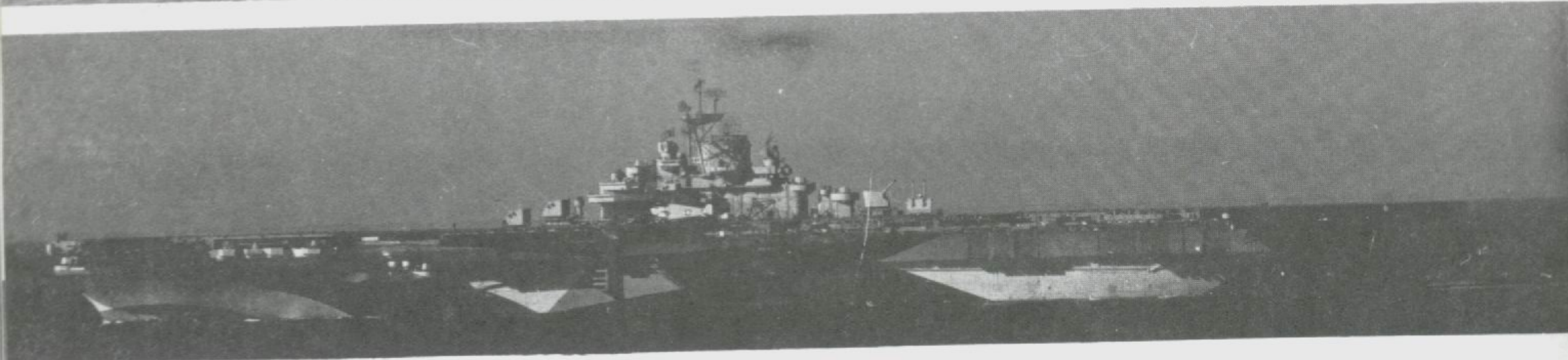




ABOVE: Full view of the close-up of RANDOLPH, from the bottom of page 40.

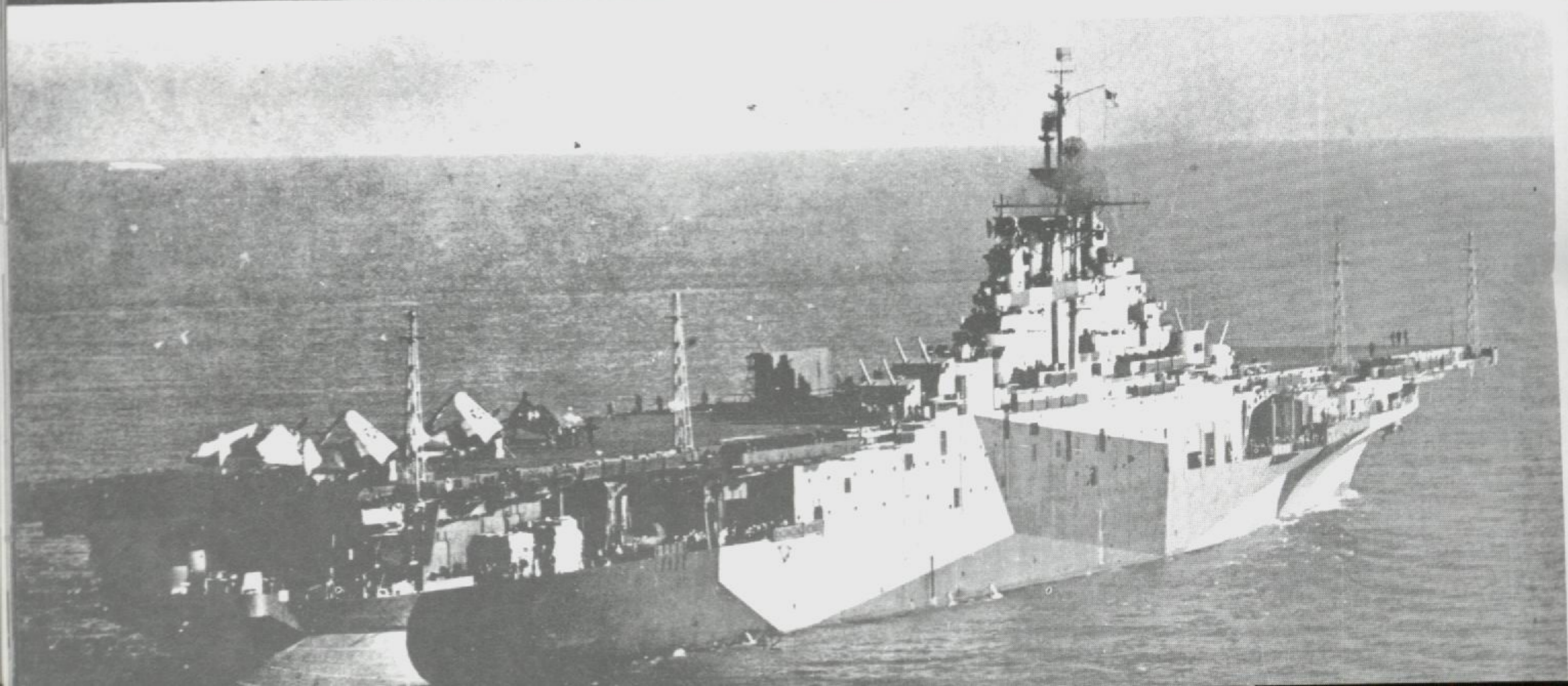


LEFT: This overhead of BENNINGTON clearly shows the lightness of the flight deck's stain. Since this is a "shakedown cruise" picture, this could possibly be an unstained, natural wood flight deck.



CENTER: A rare picture of RANDOLPH's port side (Nov. '44). While the shadows make it difficult to judge, the fantail pattern does match the design drawing.

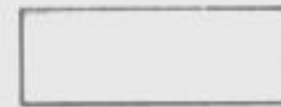

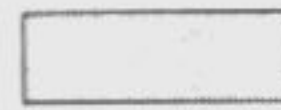

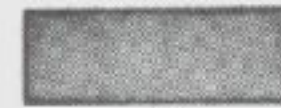

BELOW: Note how light RANDOLPH's midship black panel appears at this angle. The deck edge elevator is rigged upward for a narrow passage. Taken off Norfolk on November 5, 1944.

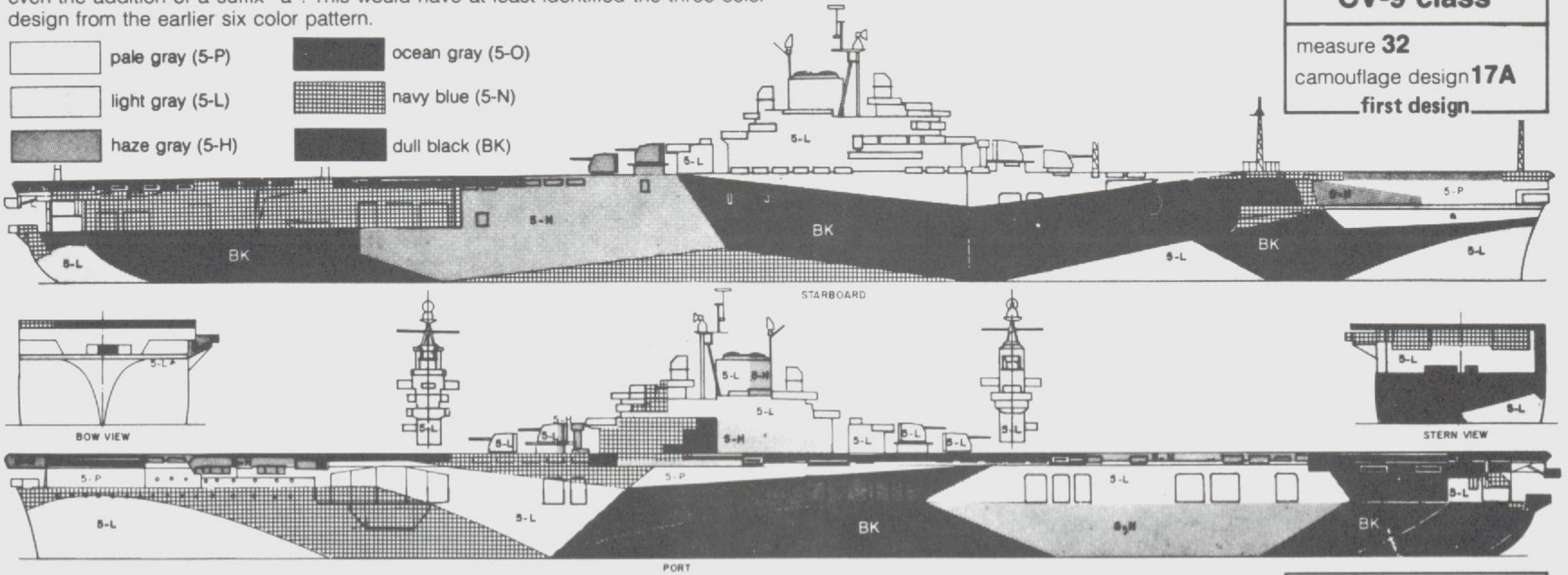


It is curious that these two designs would keep the same designator number, without even the addition of a suffix "a". This would have at least identified the three color design from the earlier six color pattern.

CHECKED BY EVERETT WARNER, JUNE 2, 1944

CV-9 class
measure **32**
camouflage design **17A**
first design

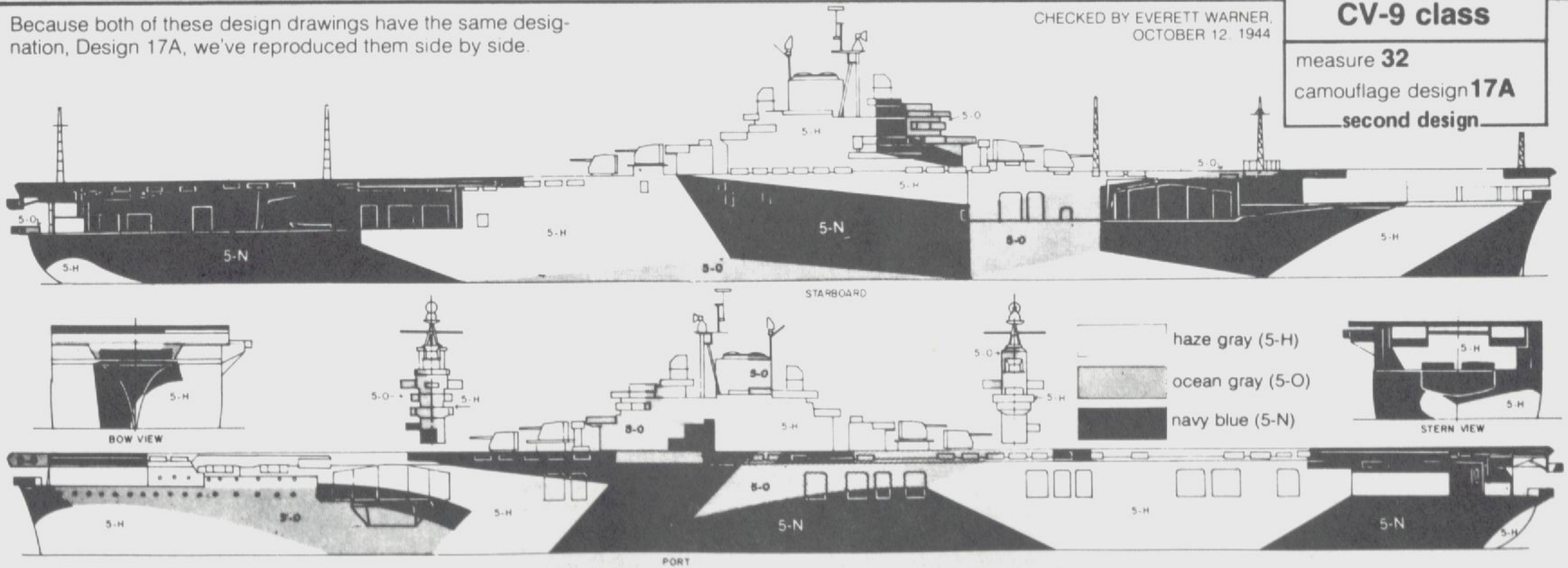
- | | | | |
|---|------------------|---|------------------|
|  | pale gray (5-P) |  | ocean gray (5-O) |
|  | light gray (5-L) |  | navy blue (5-N) |
|  | haze gray (5-H) |  | dull black (BK) |

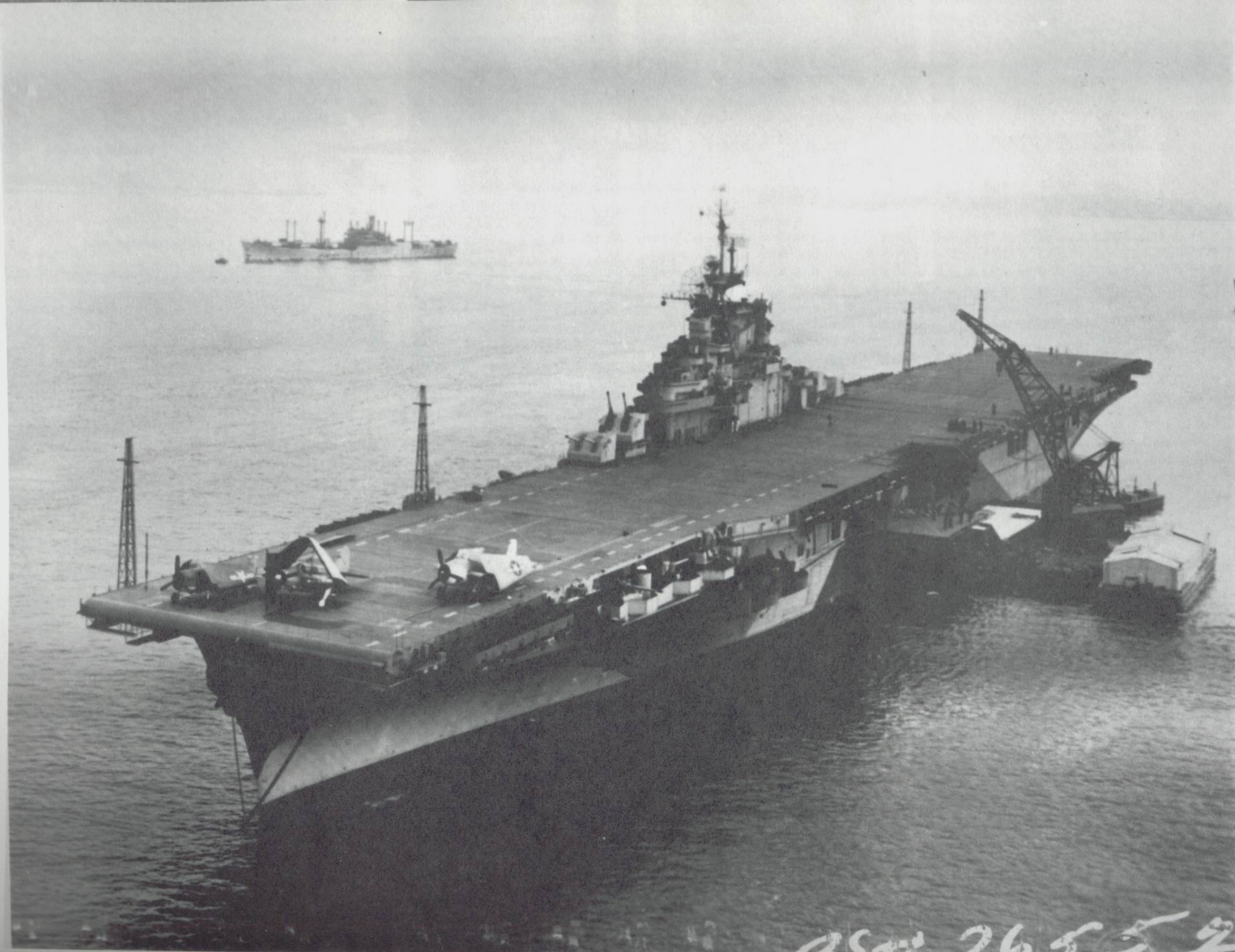


Because both of these design drawings have the same designation, Design 17A, we've reproduced them side by side.

CHECKED BY EVERETT WARNER,
OCTOBER 12, 1944

CV-9 class
measure **32**
camouflage design **17A**
second design





AS 71 2655 2



OPPOSITE: *BON HOMME RICHARD* off Brooklyn (Jan. 9, 1945) ABOVE: *BON HOMME RICHARD* during inclining experiments December 22, 1944.

DESIGN 17A, part 2, Chapter 10

The revised 17A design was approved by Everett Warner on October 12, 1944. It was the last fleet carrier design to be prepared. This new three color design was applied to BENNINGTON (CV-20), BON HOMME RICHARD (CV-31) and to the long bow ANTIETAM (CV-36).

It's curious that this design was given a Measure 32 designation. It uses the same colors as Measure 31A; haze gray (5-H), ocean gray (5-O) and navy blue (5-N). Refer to the Supplement at the end of this book.

As noted in the previous chapter, BENNINGTON was repainted into this version of Design 17A, while at the Brooklyn Navy Yard during Dec. '44. She remained in this pattern until a typhoon (June '45) crumpled her forward flight deck. As initially

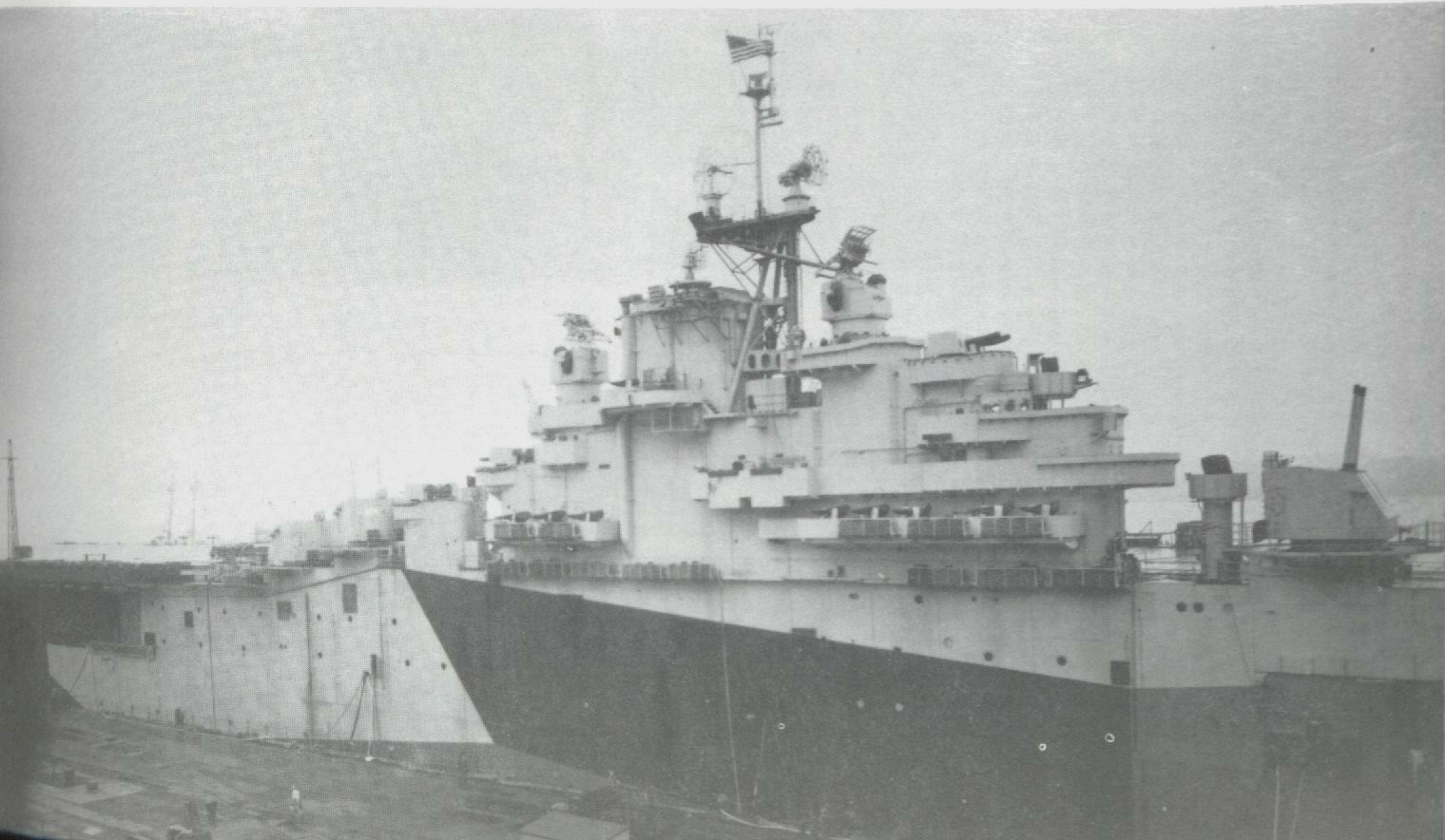
repainted, BENNINGTON's lightest color was much too light to be haze gray (5-H). It must be either light gray (5-L) or even pale gray (5-P). Later pictures of CV-20, taken in the Pacific, definitely show that this light color was discontinued in favor of haze gray (see page 23).

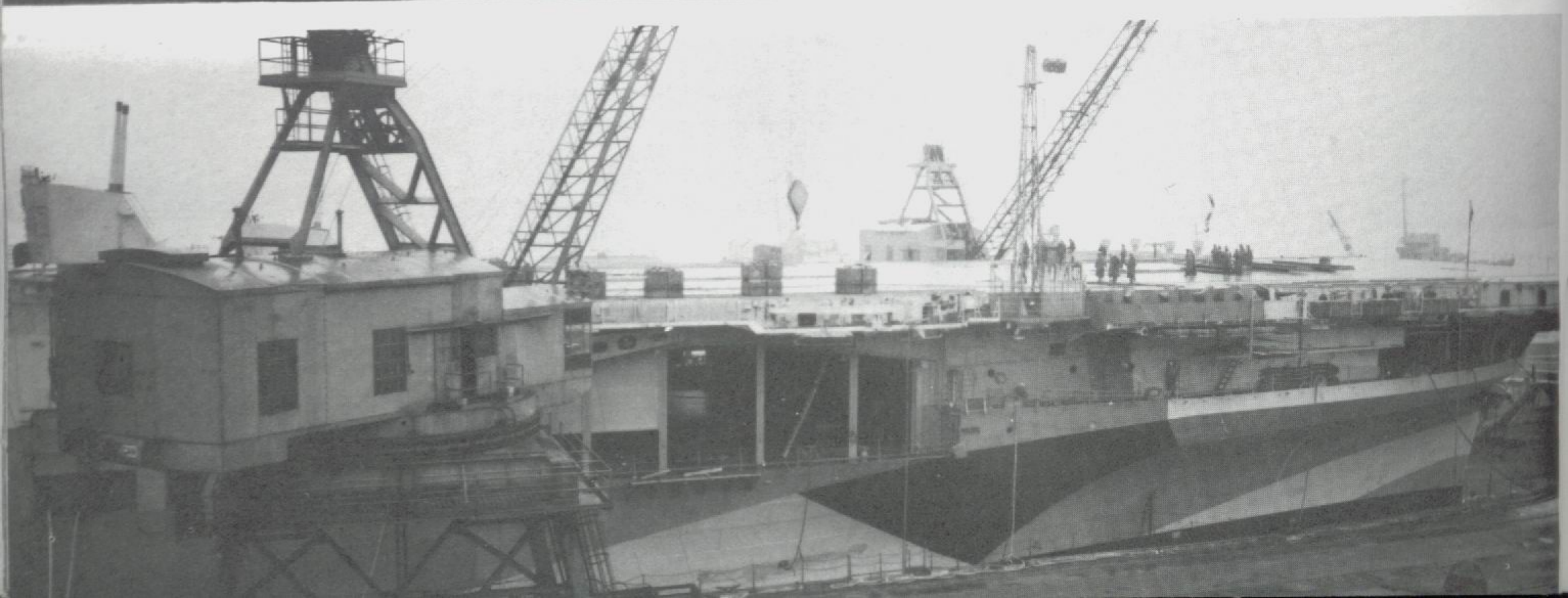
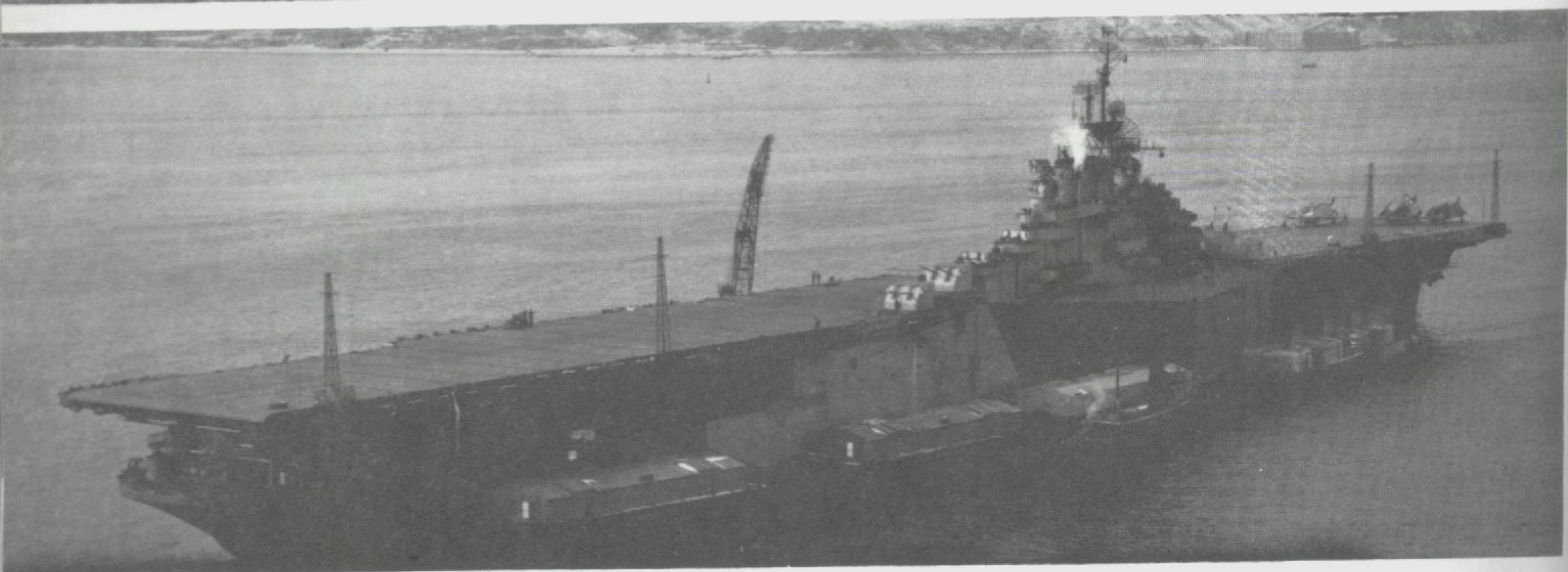
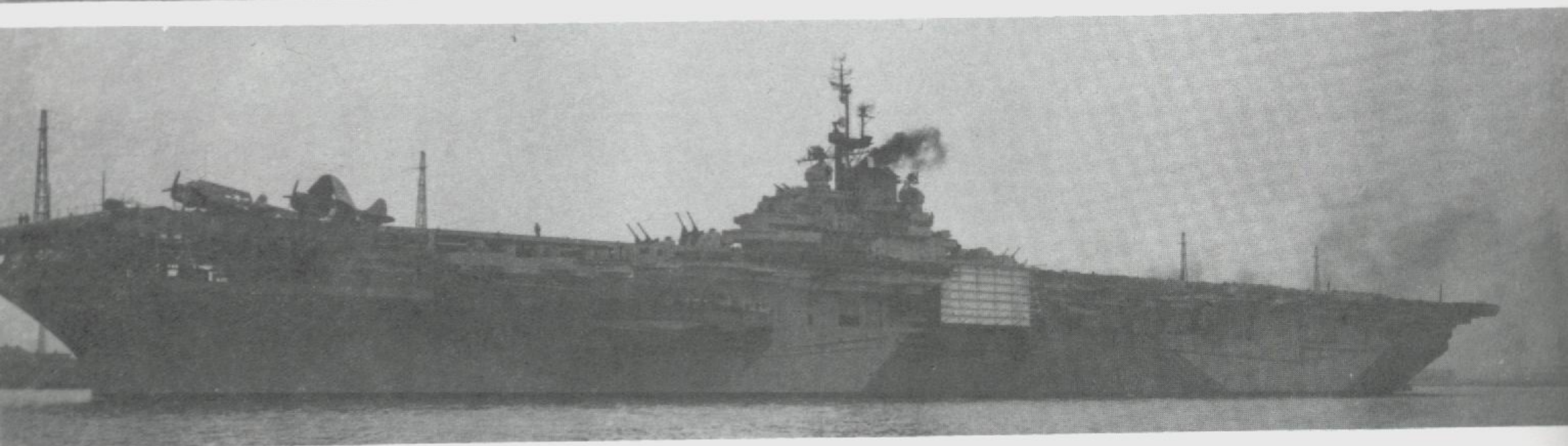
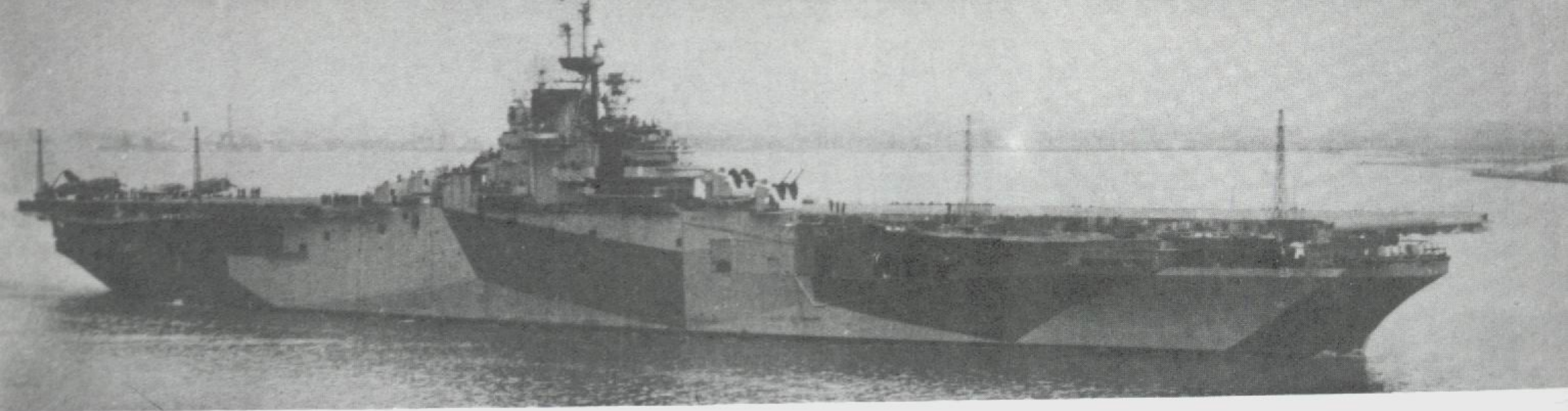
Also during the pattern repainting, BENNINGTON's flight deck was darkened with deck blue stain. A white centerline dash and yellow elevator "Xs" were also added.

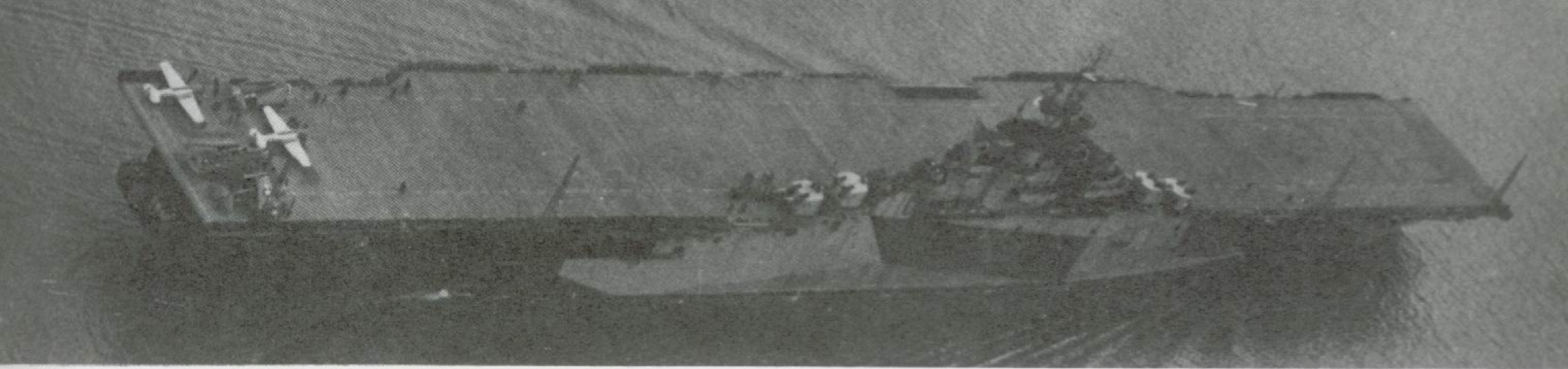
BENNINGTON was painted into Measure 21, with white flight deck numerals at Leyte in July '45. Structurally, she remained the same "as commissioned."

BON HOMME RICHARD was commissioned at Brooklyn on November 26, 1944—about the same time that BENNINGTON

BENNINGTON at Navy Yard New York, September 19, 1944. Note how pale the lightest color is—even though it is in shadow.







OPPOSITE PAGE: The two top pictures are port and starboard views of ANTIETAM at Philadelphia (April 28, 1945). The ocean gray (5-O) panels are almost invisible. While weathering is evident, this may also have been caused by a light mix of 5-O. **CENTER** shows BON HOMME RICHARD's starboard quarter, as seen off Brooklyn on Jan. 9, 1945. **BOTTOM** is of BENNINGTON, also off Brooklyn (Dec. 13, 1944). The bright sun shows

the lightest color to be almost white. Compare this to the picture on the bottom of this page. Both were taken on the same day, but from opposite angles to the sun.

ABOVE: Another angle of ANTIETAM off Philadelphia. The SK2 dish is on the funnel, but it is hidden by the radar platform atop the tripod mast.

was repainted into this design. CV-31 followed suit, but appears to have matched all of the designated color specifications. While at Norfolk, in March '45, BON HOMME RICHARD was repainted into Measure 12 (see Camouflage I, page 44 and Supplement, Chapter 14). At Pearl Harbor, in May '45, all the outboard quad 40s were added.

BHR's flight deck appears to be the standard blue stain, with painted dull black numerals, white dashes and yellow "Xs" on the elevators. The flight deck colors remained the same after Measure 12 replaced Measure 32/17A.

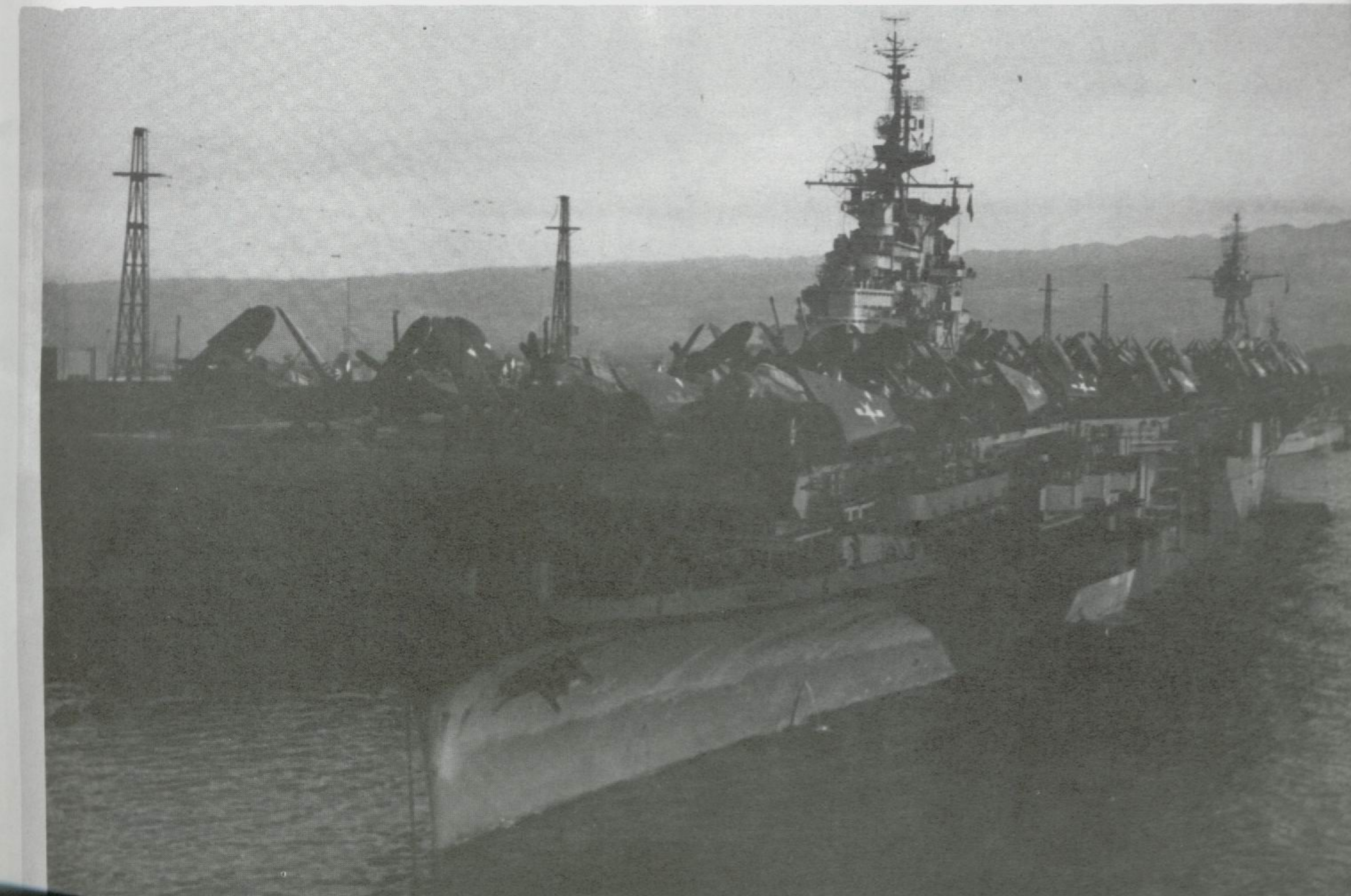
The third ESSEX to wear design 17A's three color pattern was ANTIETAM (CV-36). The "big A" commissioned in this design at Philadelphia on January 28, 1945 (see Camouflage I,

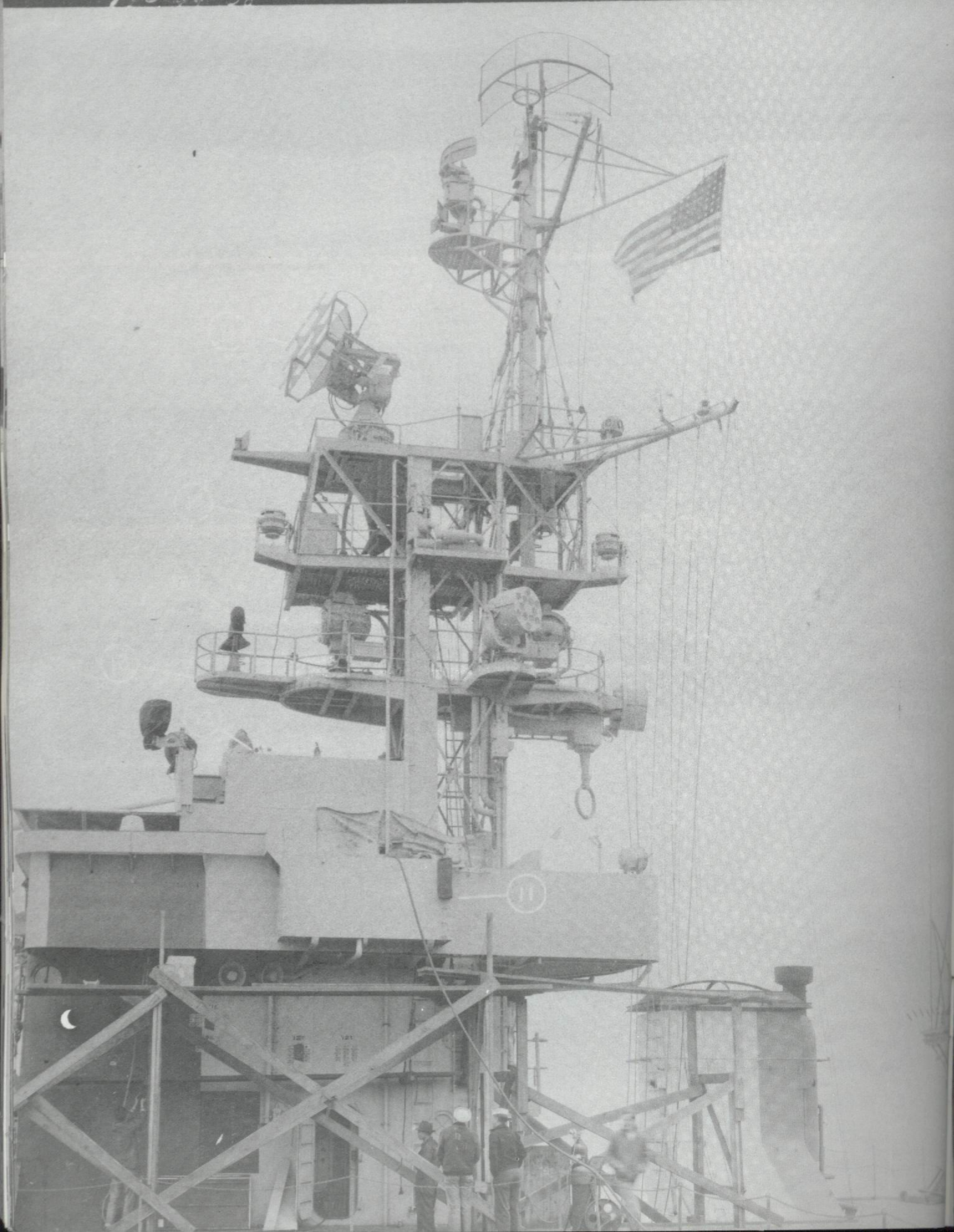
page 42). The pictures taken on April 28, 1945 show the pattern to be heavily weathered. Evidently, the entire ship was painted haze gray, then ocean gray and navy blue were added on top. The ocean gray has somewhat worn off and is almost imperceptible next to the haze gray. We're not sure exactly when CV-36 repainted into Measure 21. It was shortly after April. She arrived too late to take part in the war in the Pacific. None of the seven outboard quad 40s were ever added.

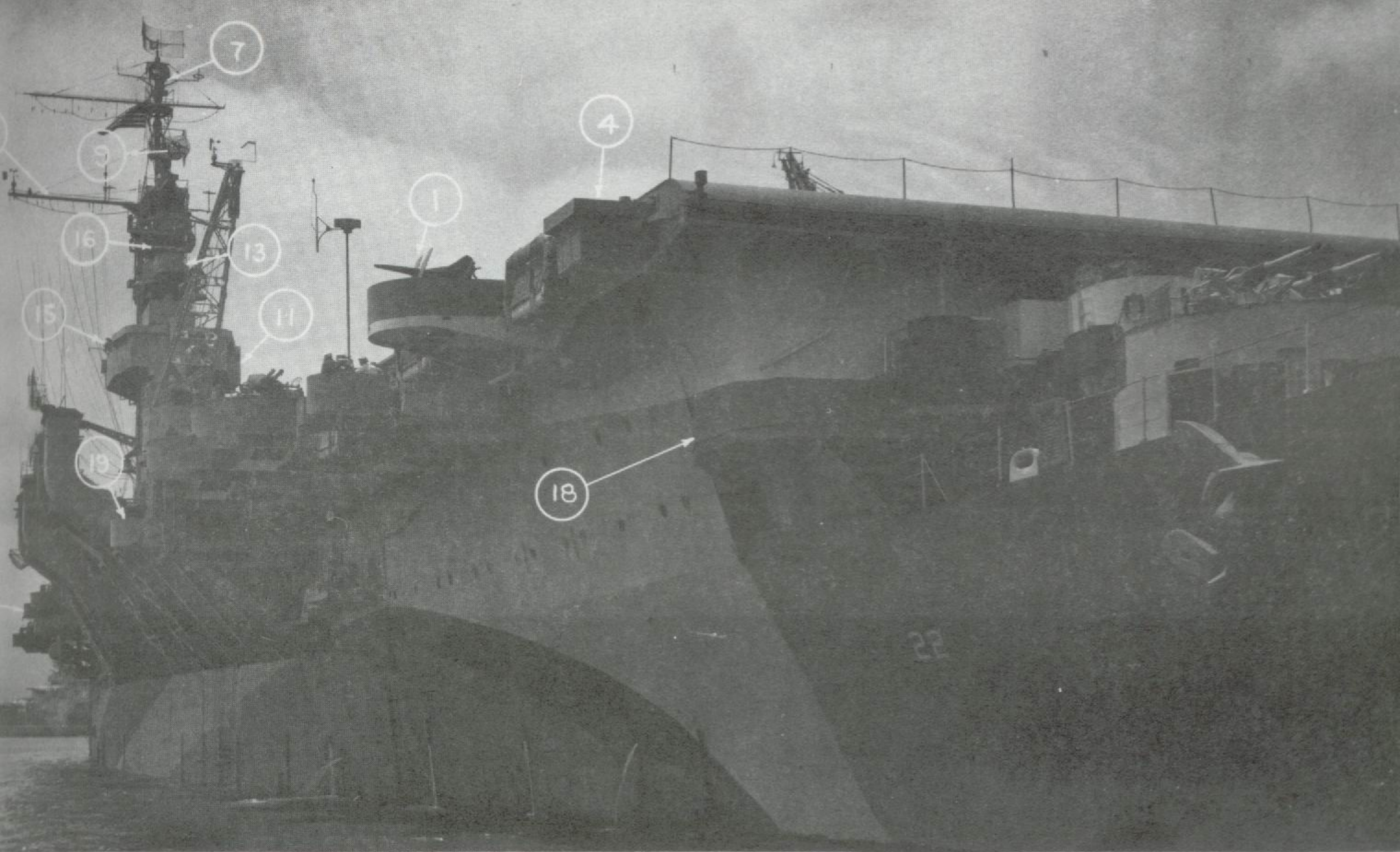
The aerial photographs we have of ANTIETAM are rather poor, but they do show the standard blue stained flight deck, with dull black numerals and white dash lines.

Only BENNINGTON went to war in Design 17A's three color pattern.

BENNINGTON as she ties up at Ford Island, Pearl Harbor, for the first time on January 25, 1945.







OPPOSITE: Portside of INDEPENDENCE's island at Hunters Point on June 19, 1944. The CVLs carried two types of island and radar platform configurations. Compare this picture to that of SAN JACINTO on page 54.

ABOVE and BELOW: INDEPENDENCE at Hunters Point, same date. The diminished contrast between the medium color and navy blue suggest ocean gray instead of haze gray.

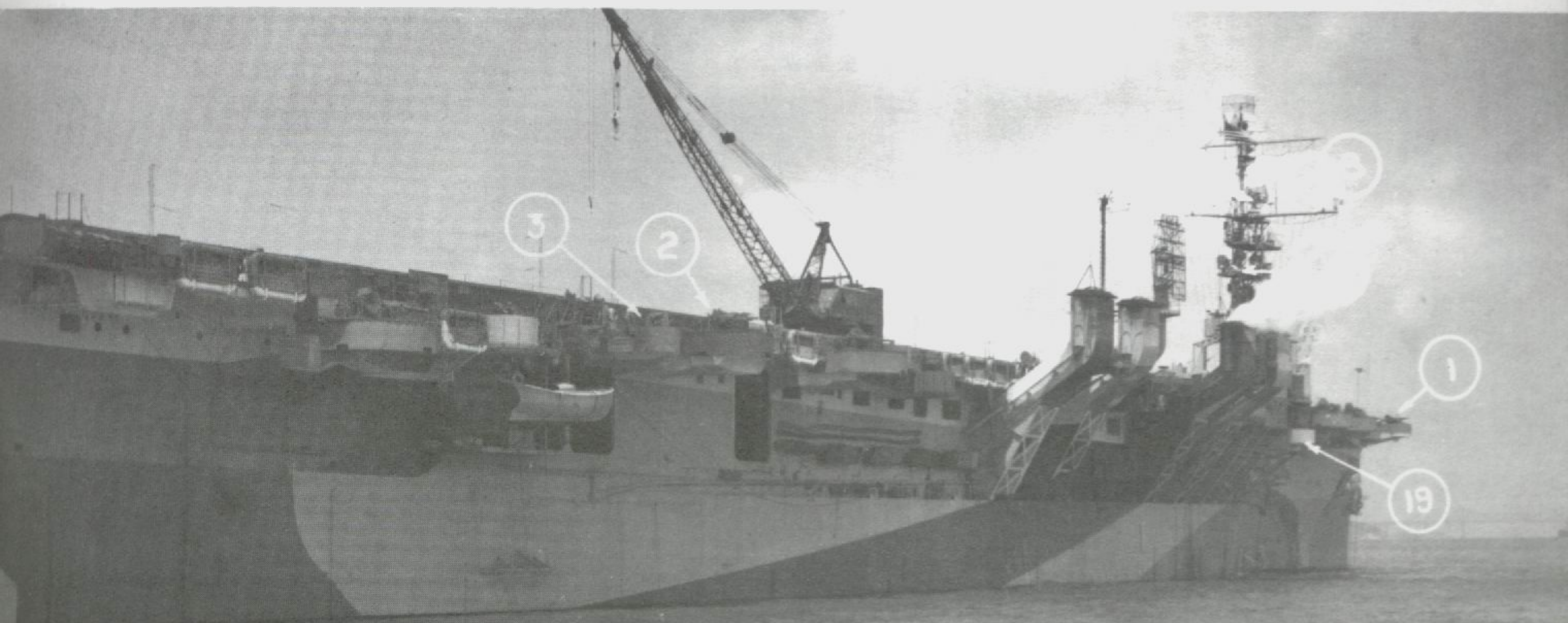
DESIGN 8A, Chapter 11

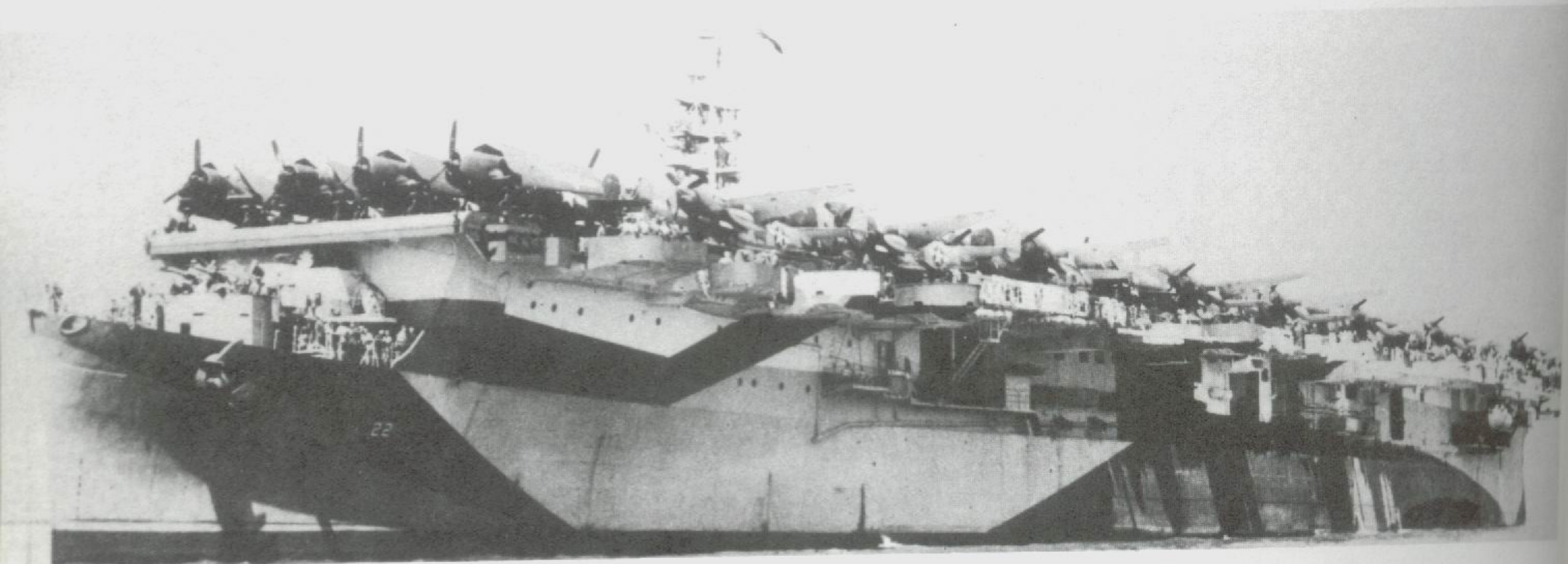
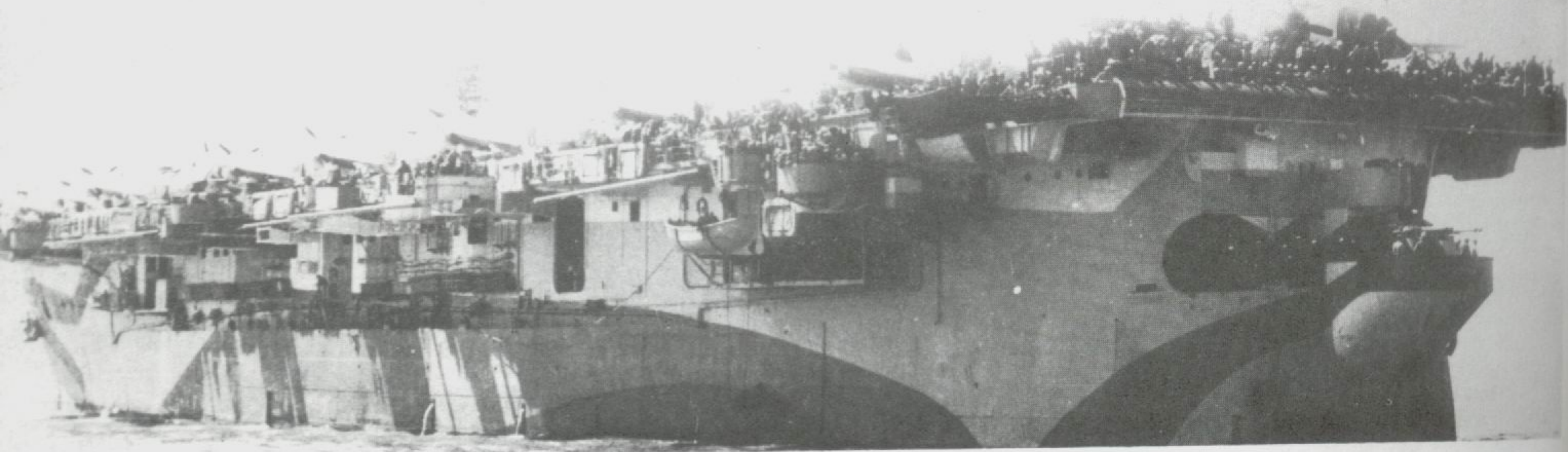
This "open" measure design specified only one color—white (5-U)—to be used under some sections of the overhangs. Both INDEPENDENCE (CVL-22) and BATAAN (CVL-29) wore this pattern. The color range appears to be Ms 33, but this is suspect. While navy blue (5-N) was the darkest color used on both ships, it looks as though light gray (5-L) and ocean gray (5-O)

were the light and medium colors on CVL-22. BATAAN used the more common pale gray (5-P) and haze gray (5-H).

INDEPENDENCE had Design 8A painted on during an overhaul at Hunters Point, San Francisco (during Spring '44).

BATAAN matched INDEPENDENCE's pattern, six months later, also at Hunter's Point. Both appear to have carried the





ABOVE: These two poor pictures are all that we have of INDEPENDENCE's port side. The high contrast copy prints have caused the navy blue shapes to appear to be black. The pictures were taken at Hunters Point in June. Later pictures show that the color remained navy blue.

standard flight deck coloration.

There were few significant modifications to the INDEPENDENCE class light carriers. Most noticeable include: improved

radars, addition of a top yardarm, removal of the single 20mm guns on the bow and stern quadrants and addition of 20mm sponsons to the flight deck level (both port and starboard).

BELOW: BATTAN off the Philadelphia Navy Yard in March 2, 1944. The darkest color is Navy Blue.



This design was originally prepared as Ms 32/8A, but the designator was removed to make it an "open" measure design. The single 5" open mounts on the bow and stern represent the INDEPENDENCE class as originally designed. They were included on all the master camouflage design sheets.

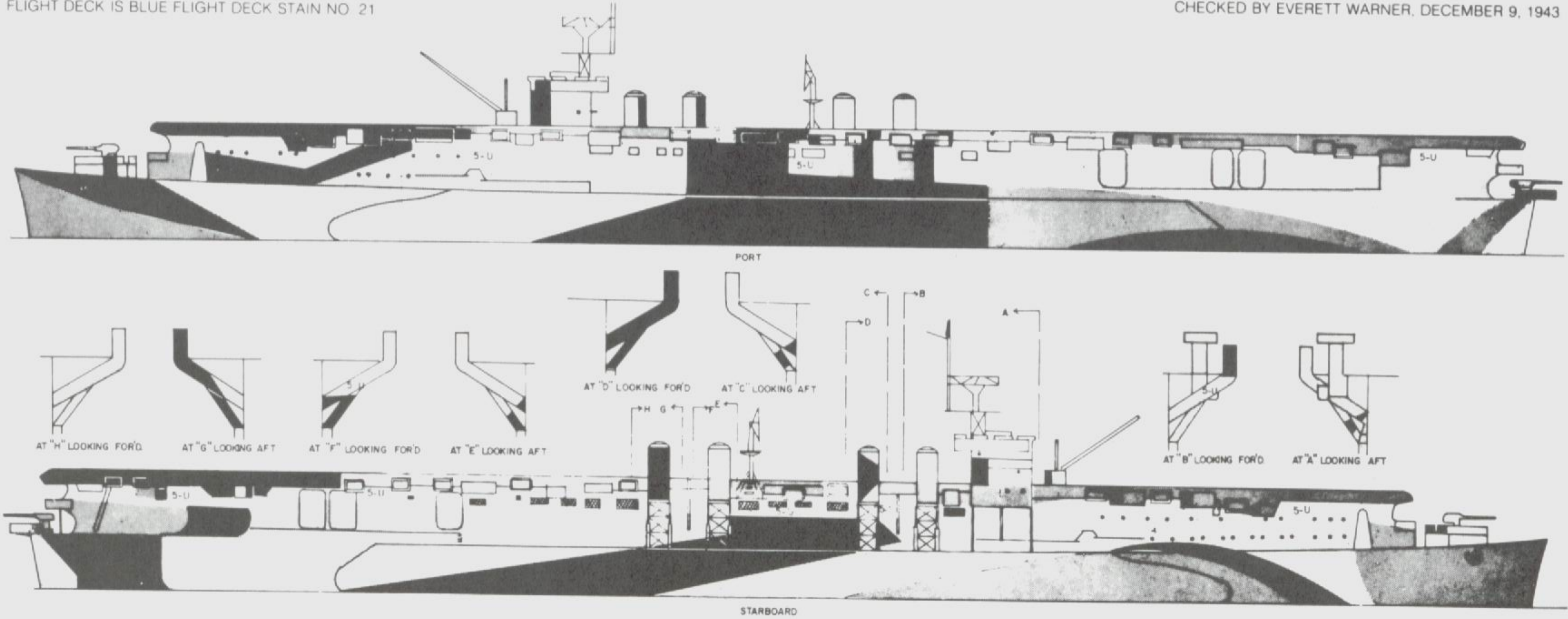
COUNTERSHADING INSTRUCTION —
PAINT WHITE (5-U) — UNDERSIDES OF ALL OVERHANGING HORIZONTAL SURFACES AND ALL VISIBLE VERTICAL SURFACES IN DEEP RECESS

CVL-22 class
measure 3_
camouflage design 8A

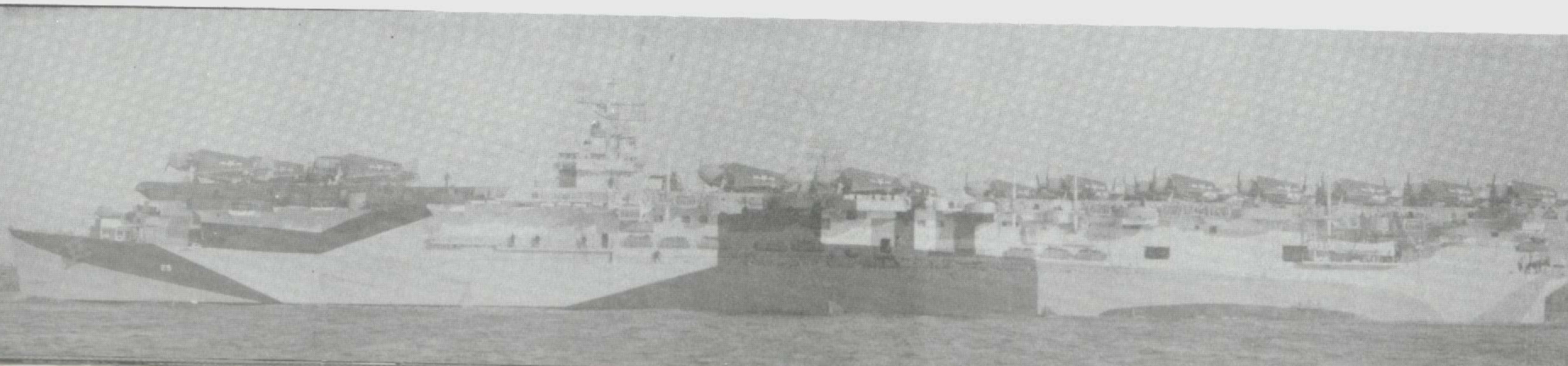
DECKS AND OTHER HORIZONTAL SURFACES ARE DECK BLUE (20-B)
FLIGHT DECK IS BLUE FLIGHT DECK STAIN NO. 21

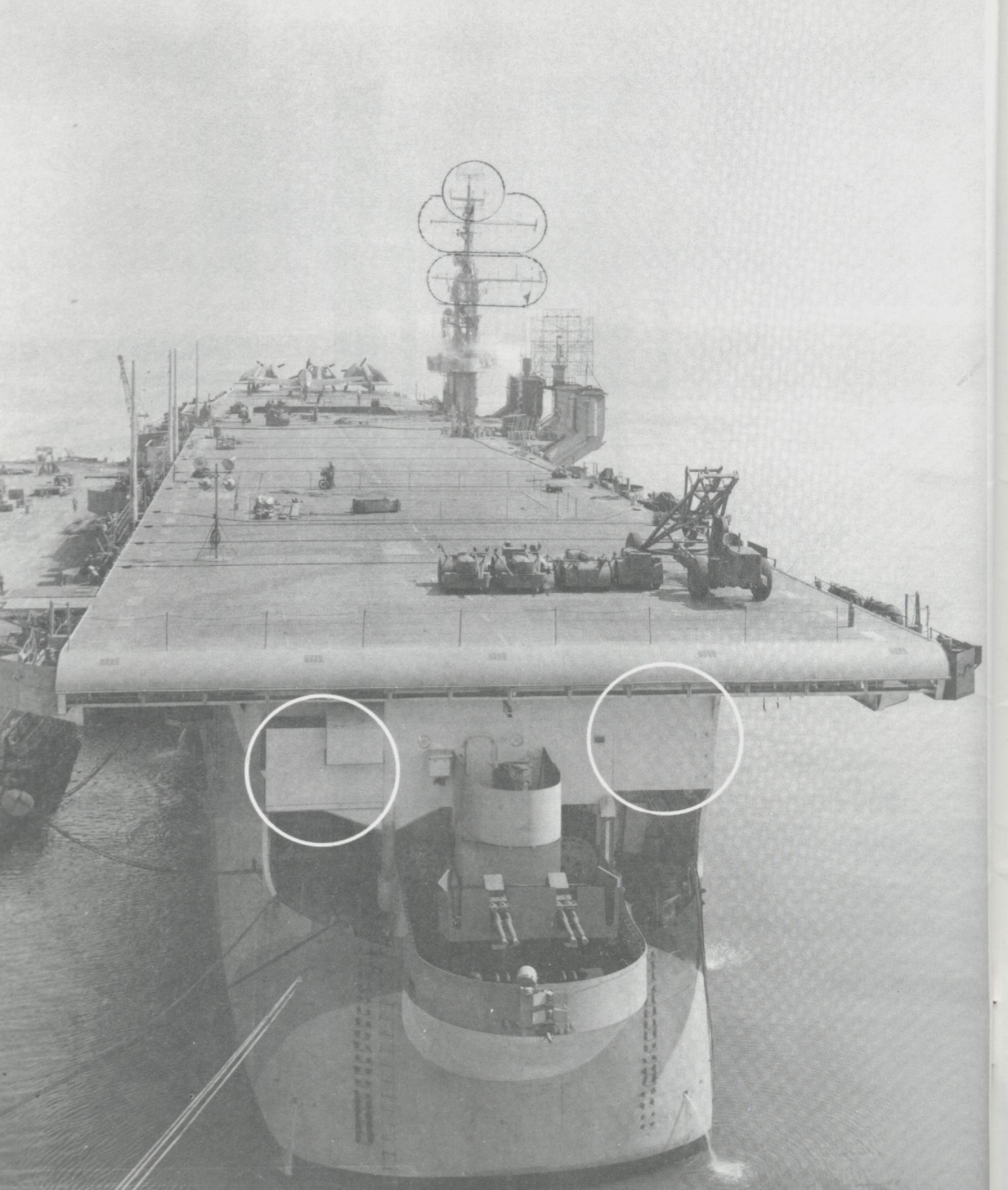
PAINT ALL THIN SUPERSTRUCTURE CONSTRUCTIONS WITH 5-P

CHECKED BY EVERETT WARNER, DECEMBER 9, 1943

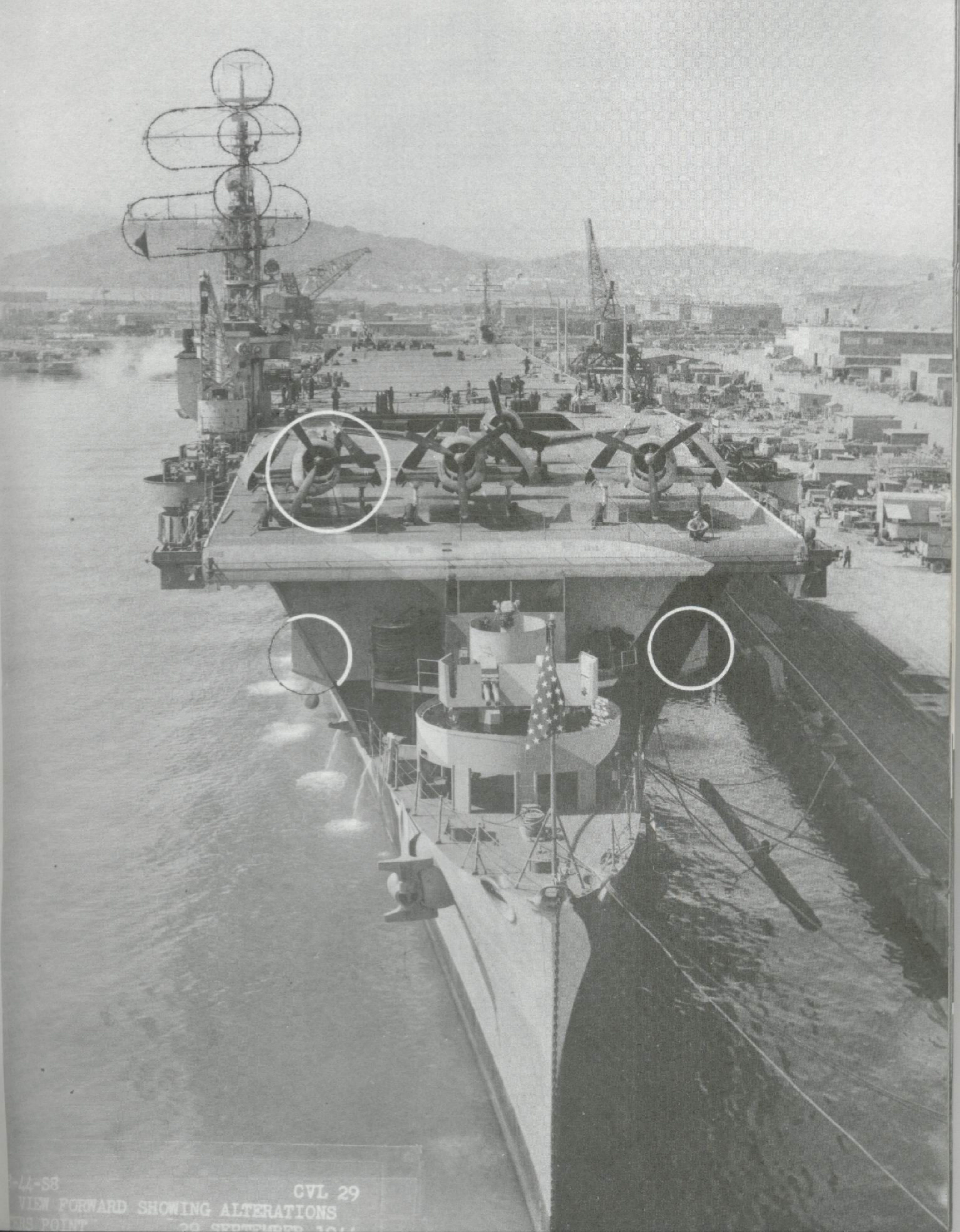


BATTAN off Philadelphia in March 1944.



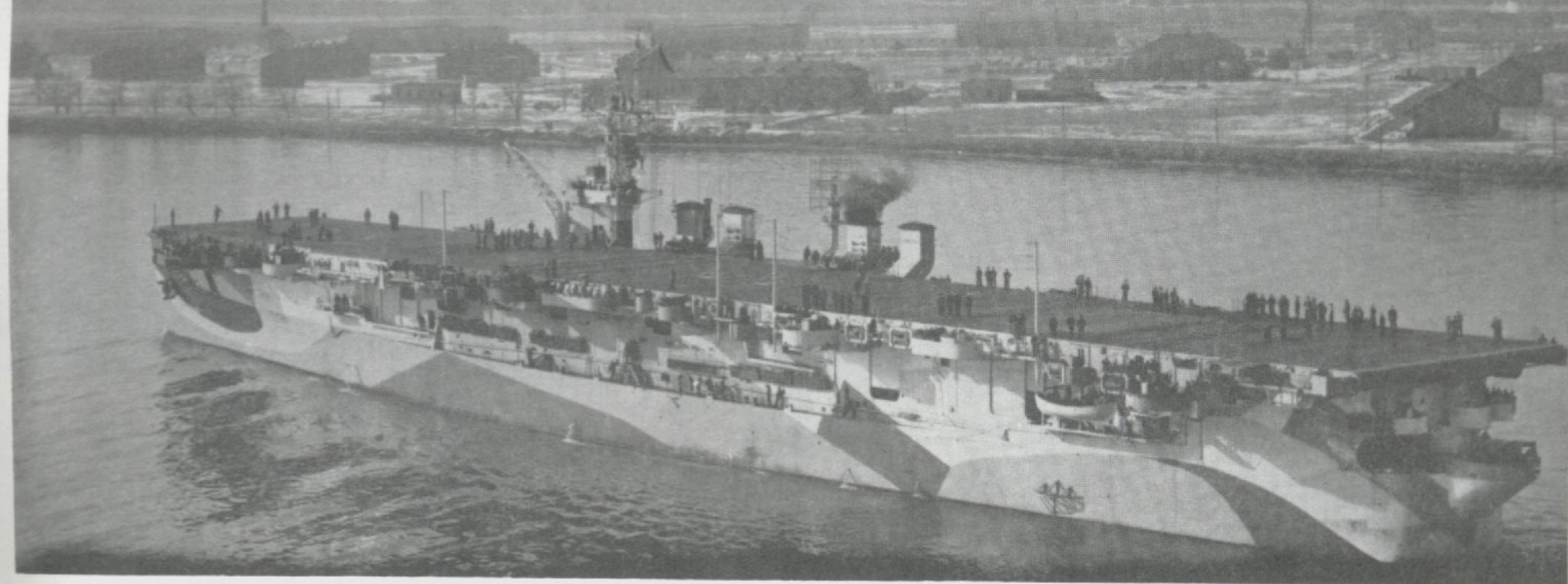


-44-58 CVL 29
VIEW AFT SHOWING ALTERATIONS
ERS POINT 29 SEPTEMBER 1944



44-58 CVL 29
VIEW FORWARD SHOWING ALTERATIONS
THIS POINT 20 SEPTEMBER 1944





OPPOSITE: Close up of SAN JACINTO's island and radar platforms, June 19, 1944. This magnificent picture was buried under the caption "displaying the flag of Texas . . ." ABOVE: SAN JACINTO off the Philadelphia Navy Yard on January 17, 1944.

DESIGN 7A, Chapter 12

Design 7A was given a Ms 33 designation, but—except for white under the overhangs and recesses—no other colors were indicated. All three of the INDEPENDENCE class carriers which carried this design used the Ms 33 colors of pale gray (5-P, haze gray (5-H) and navy blue (5-N). Possibly, COWPENS carried dull black instead of Navy blue. White (5-U) was used primarily as countershading to reduce dark shadows under some of the overhangs and thereby flatten and distort some of the ship's characteristics.

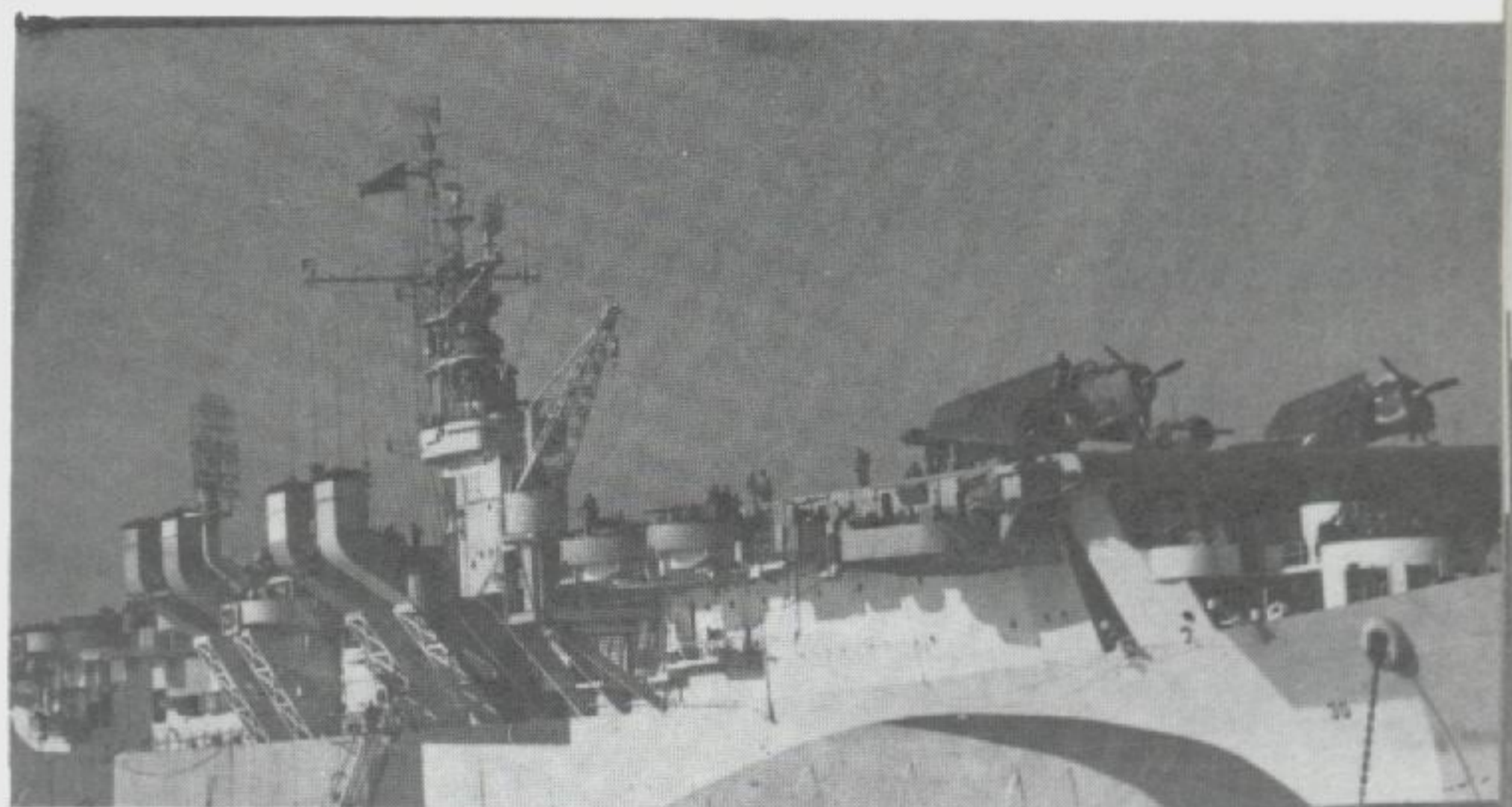
While SAN JACINTO (CVL-30), COWPENS (CVL-25) and PRINCETON (CVL-23) all wore Design 7A, only CVL-30 had any decent photo coverage.

SAN JACINTO was commissioned in this design on November 15, 1943 at Philadelphia. We don't know how long she carried the pattern. It was at least into March '45. Her flight deck was stained blue with dull black numerals and white dashes. See picture on page 57.

PRINCETON was repainted into Design 7A either at Bremerton (Jan. '44) or at Pearl Harbor (May '44). After an extensive search, the only pictures we found of her, in pattern, are on the day she was lost—October 24, 1944, off Luzon. None of the

photos are very clear, but they definitely prove that she carried Design 7A. We have nothing on her flight deck colors.

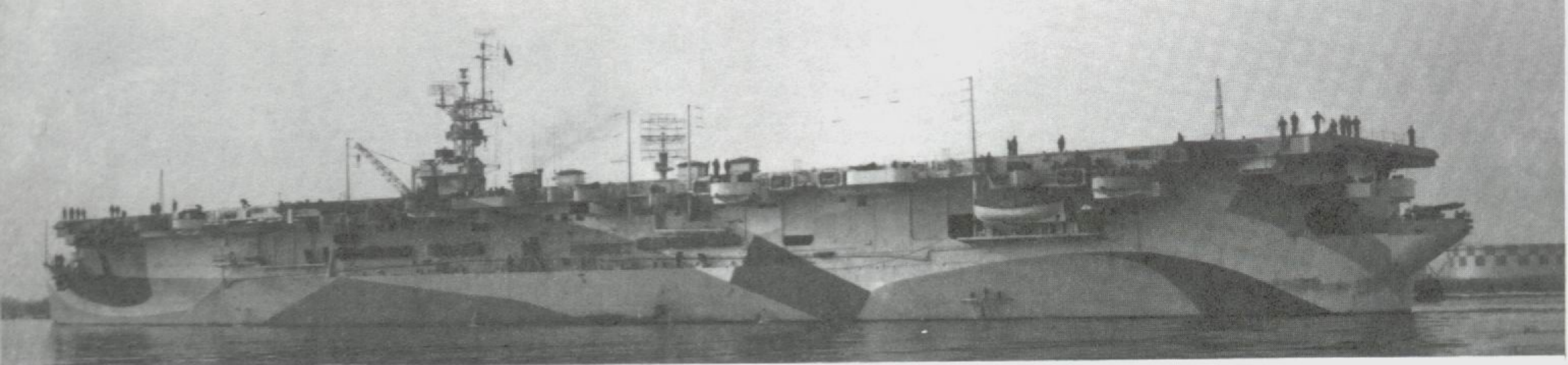
COWPENS was commissioned in Ms 21, then "dazzled" into Design 7A at Pearl Harbor (August '44). During her March '45 refit at Mare Island, she was over-painted into Ms 12. The one picture that we have of COWPENS leads us to assume that black was used in place of navy blue, but this could've been caused by the film. The flight deck looks like deck blue stain.



RIGHT: SAN JACINTO at anchor Jan. 22, 1944. Note that the Hull Number has been painted a dark color (maybe navy blue) against the light colored hull.

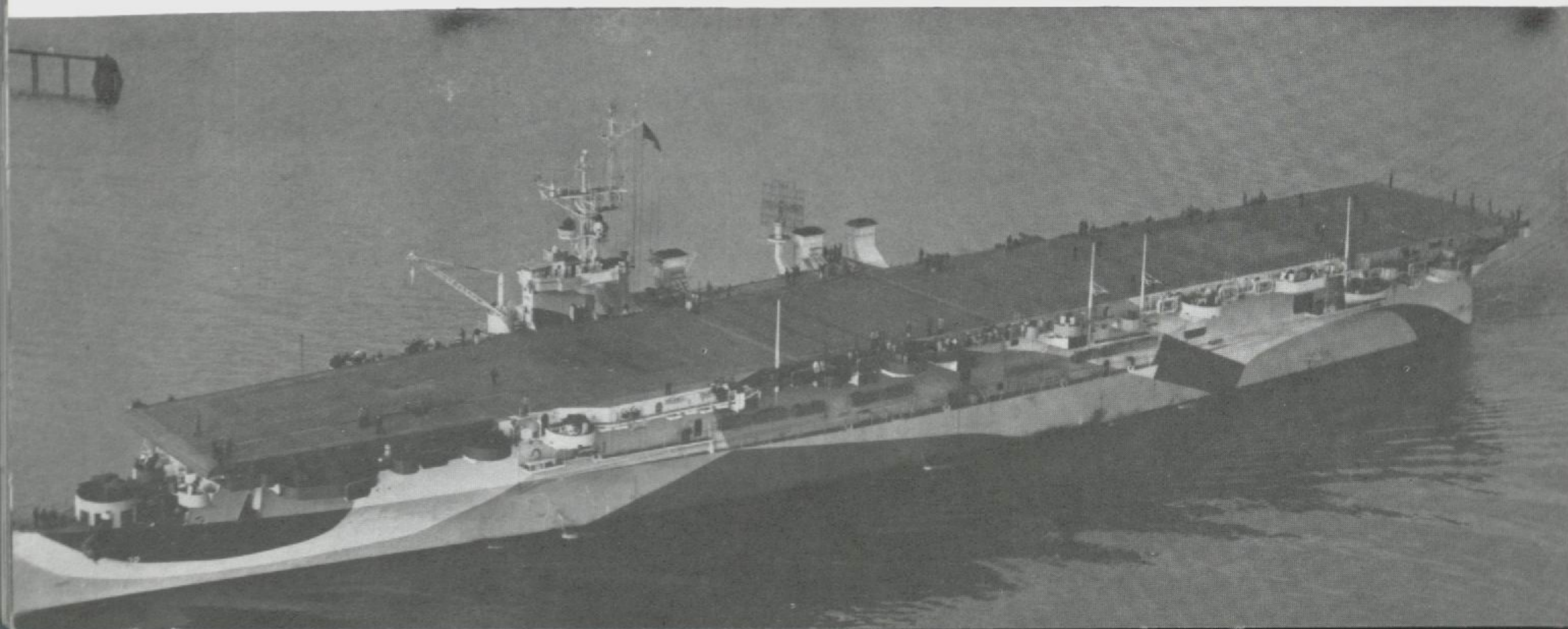
BELOW: SAN JACINTO off Philadelphia.





SAN JACINTO off Philadelphia Jan. 17, 1944.

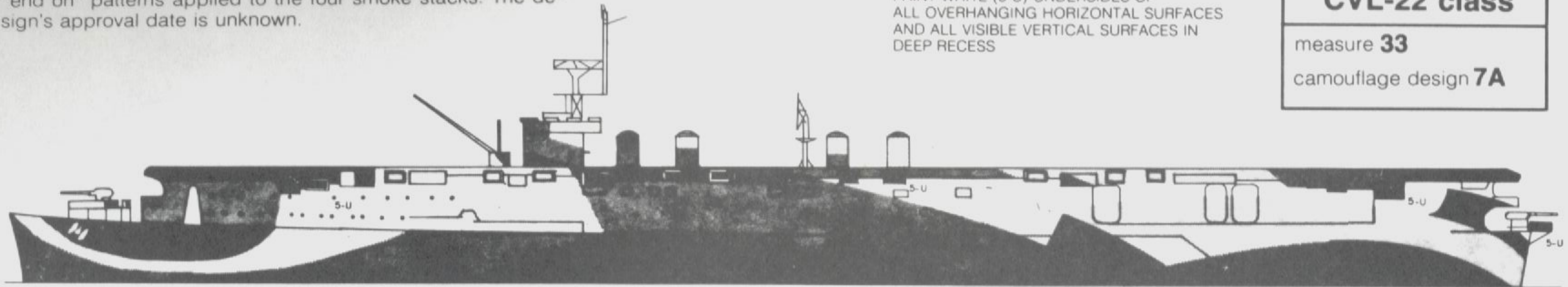
COWPENS off Philadelphia Naval Yard in January 1944. The darkest color is black.



Unlike Design 8A, no drawings were prepared showing the "end on" patterns applied to the four smoke stacks. The design's approval date is unknown.

COUNTERSHADING INSTRUCTION —
PAINT WHITE (5-U) UNDERSIDES OF ALL OVERHANGING HORIZONTAL SURFACES AND ALL VISIBLE VERTICAL SURFACES IN DEEP RECESS

CVL-22 class
measure **33**
camouflage design **7A**



PORT

NO APPROVAL DATE IS AVAILABLE

DECKS AND OTHER HORIZONTAL SURFACES ARE DECK BLUE (20-B)
FLIGHT DECK IS BLUE FLIGHT DECK STAIN NO 21

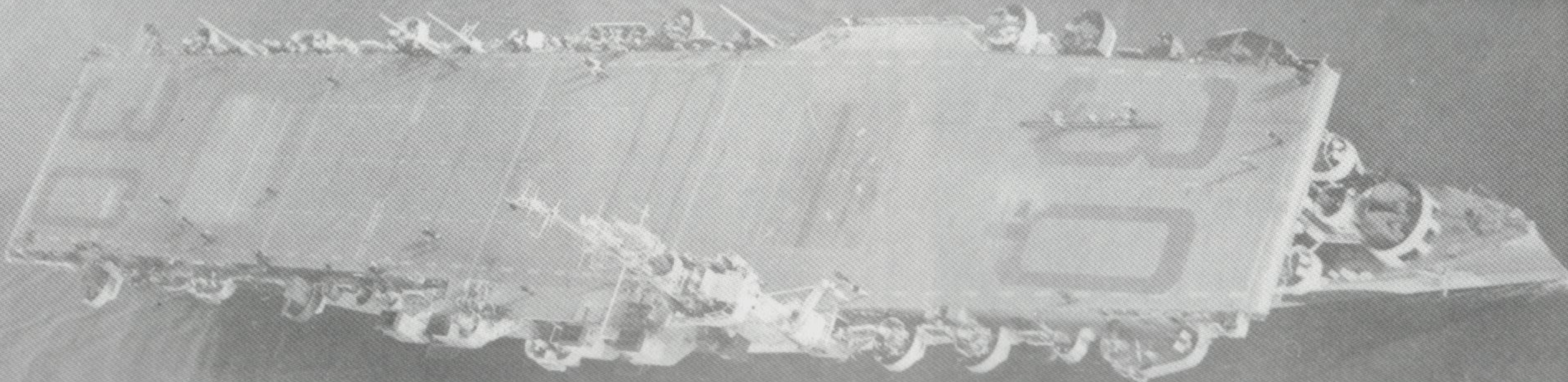
PAINT ALL THIN SUPERSTRUCTURE CONSTRUCTIONS WITH 5-P

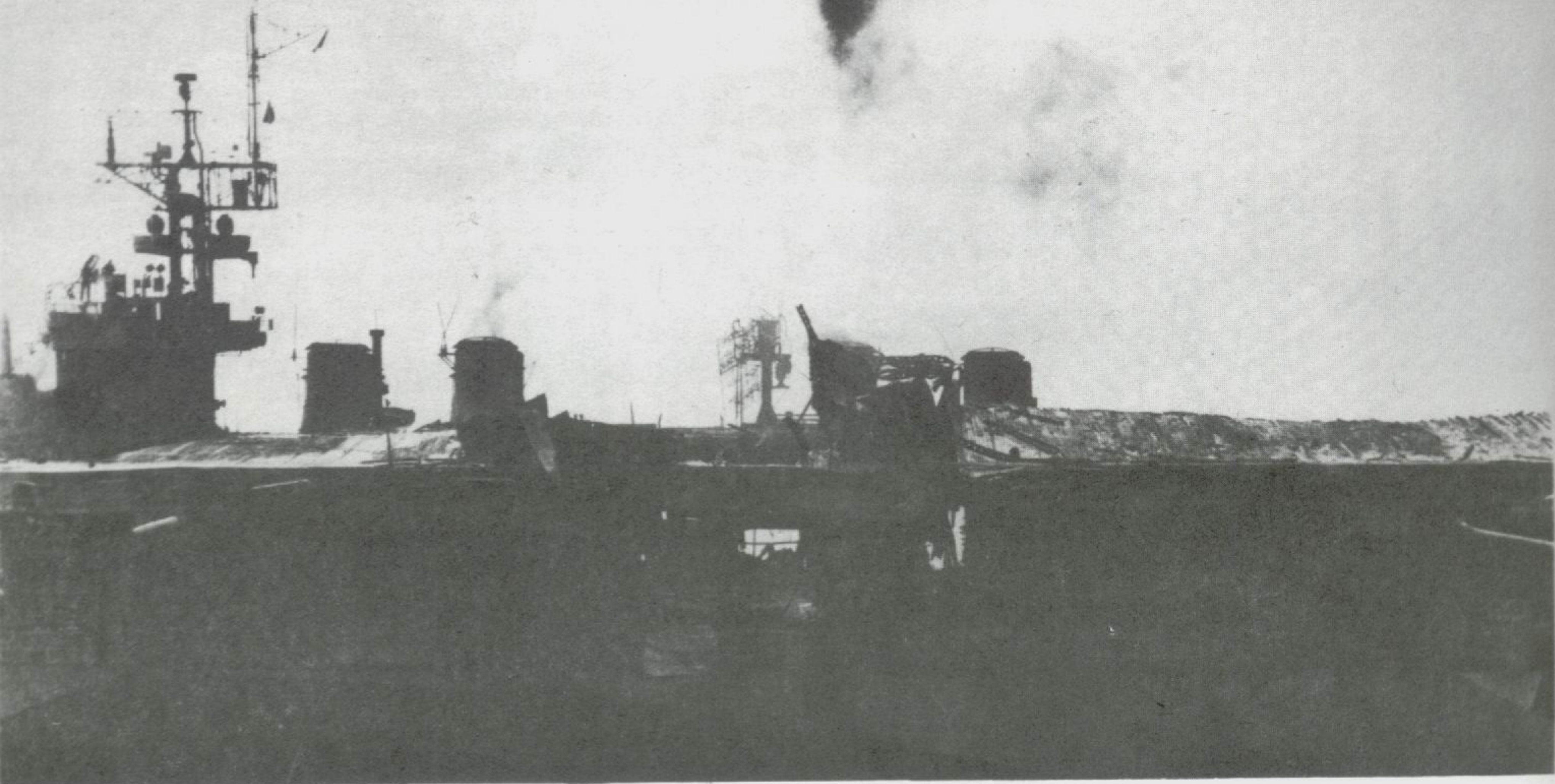


STARBOARD

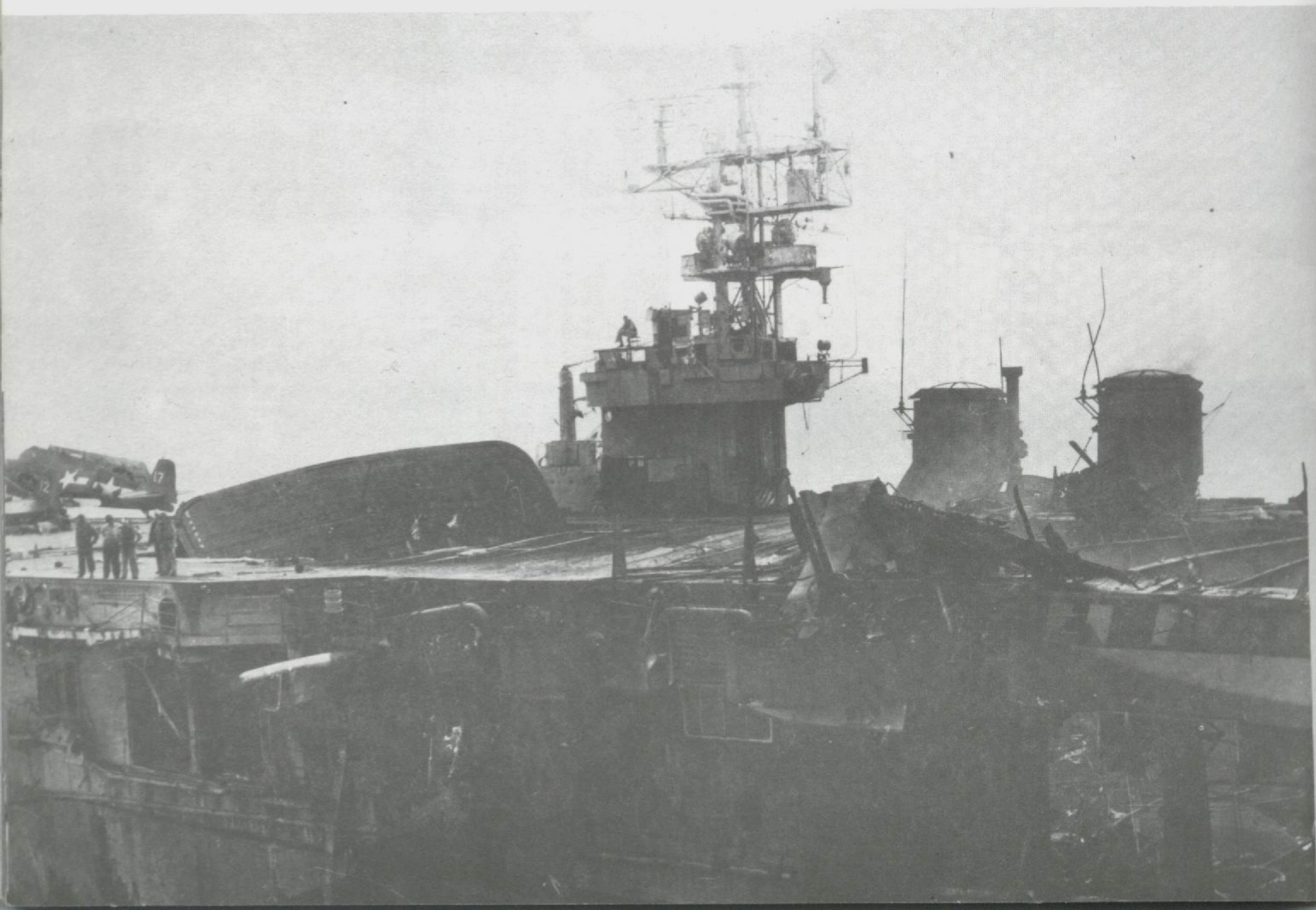
SAN JACINTO off Philadelphia on January 17, 1944. Note the color change between the port and starboard overhangs (steel covered) next to the wooden flight deck. The forward black

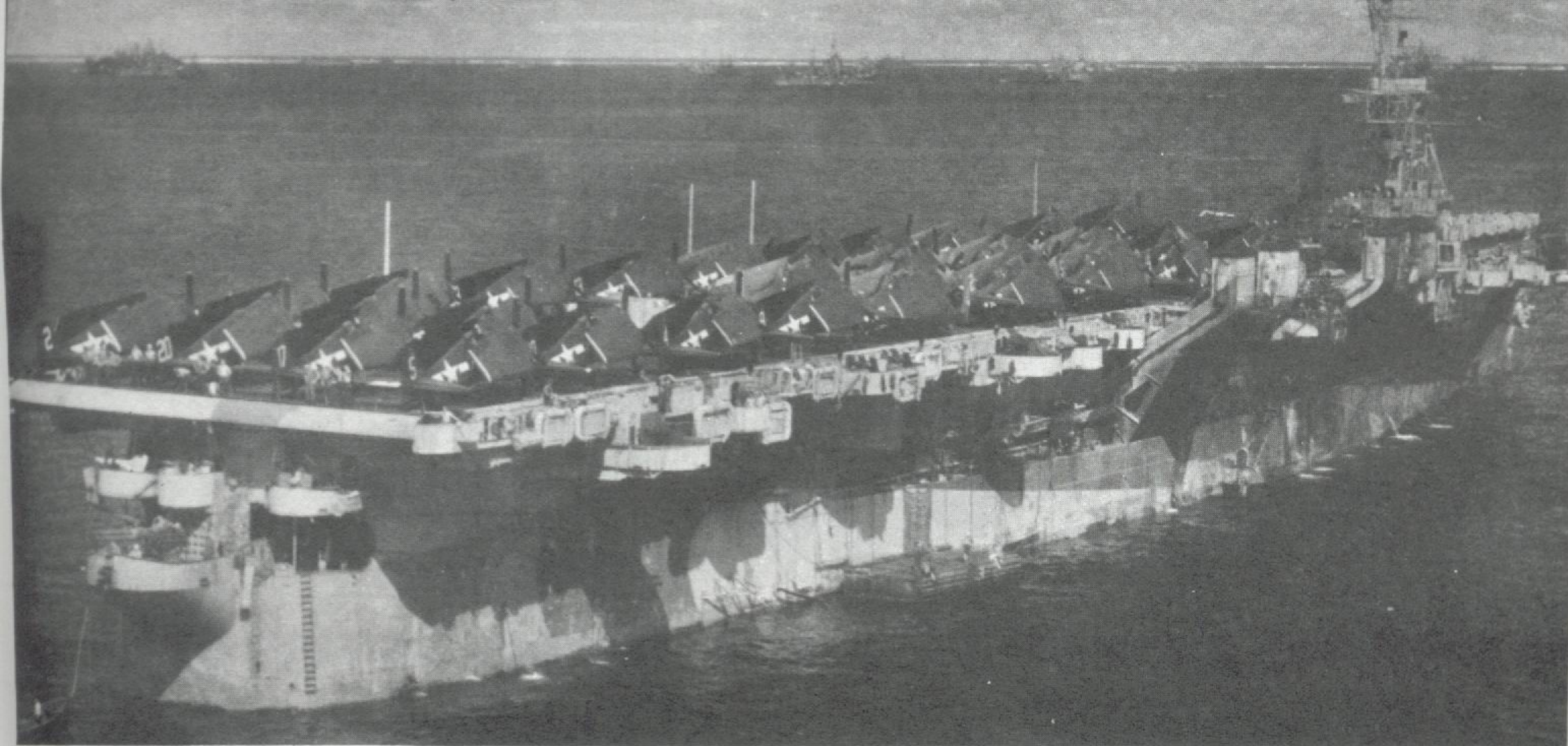
numeral has been painted on top of the dash lines, about 30 feet short of the deck edge. Three thin dashes start on the fantail, but only the centerline runs the entire length of the flight deck.





These two views of the PRINCETON after receiving her damage but before her explosion do show her in Measure 33 Design 7A camouflage.





A heavily weathered MONTEREY at Ulithi on November 24, 1944. All of the other pictures of this ship were too small for reproduction.

DESIGN 3D, Chapter 13

One of the most often seen designs, it was initially prepared for destroyers, then redrawn for the INDEPENDENCE class.

Two CVLs carried Design 3D, MONTEREY (CVL-26) and BELLEAU WOOD (CVL-24). Both ships were painted into this pattern at Pearl Harbor Navy Yard during July and August '44. As with the case of most Pearl Harbor overhauled ships, there's very little photo coverage on either carrier. It is curious that while both CVL designs in Chapters 11 and 12 recommended lots of white, Design 3D used none at all.

Everett Warner mentions (in his Nov. '44 Camouflage Survey) that MONTEREY was painted in the Ms 33 colors of pale gray (5-P), haze gray (5-H) and navy blue (5-N). She was completed in Ms 22 (see Camouflage I, page 13). During MONTEREY's January '45 refit at Bremerton, Design 3D was overpainted with Ms. 21.

BELLEAU WOOD had her pattern painted out with Ms 21 at the same time, at Hunter's Point. As far as we know, both CVLs carried the standard flight deck colors.

SAN JACINTO takes a near miss in the foreground. This is the only picture we have of BELLEAU WOOD which proves she carried Design 3D. She is the burning CVL in the background. The design drawing for BELLEAU WOOD and MONTEREY is on the following page.





MURDERERS' ROW, Ulithi, during December '44. The major combat ships are (from left to right): WASHINGTON (Ms22), an INDEPENDENCE class CVL in design 7A, LEXINGTON (Ms21), IOWA (design 1B) is nearly invisible (just above the CVL in Ms21) as are SOUTH

DAKOTA (Ms21) and NEW JERSEY (Ms21). The ESSEX class CVs in the row are (front to back): WASP (design 10A), YORKTOWN (design 10A), HORNET (design 3A), HANCOCK (design 3A, using black) and TICONDEROGA (design 10A).

Besides the INDEPENDENCE class, Design 3D can be seen on: ten destroyer and escort classes, the OMAHA and CLEVELAND class light cruisers, CASABLANCA class CVEs and NEW

MEXICO class battleships. It was also drawn up for the battleship PENNSYLVANIA, but we have no proof that it was ever applied.

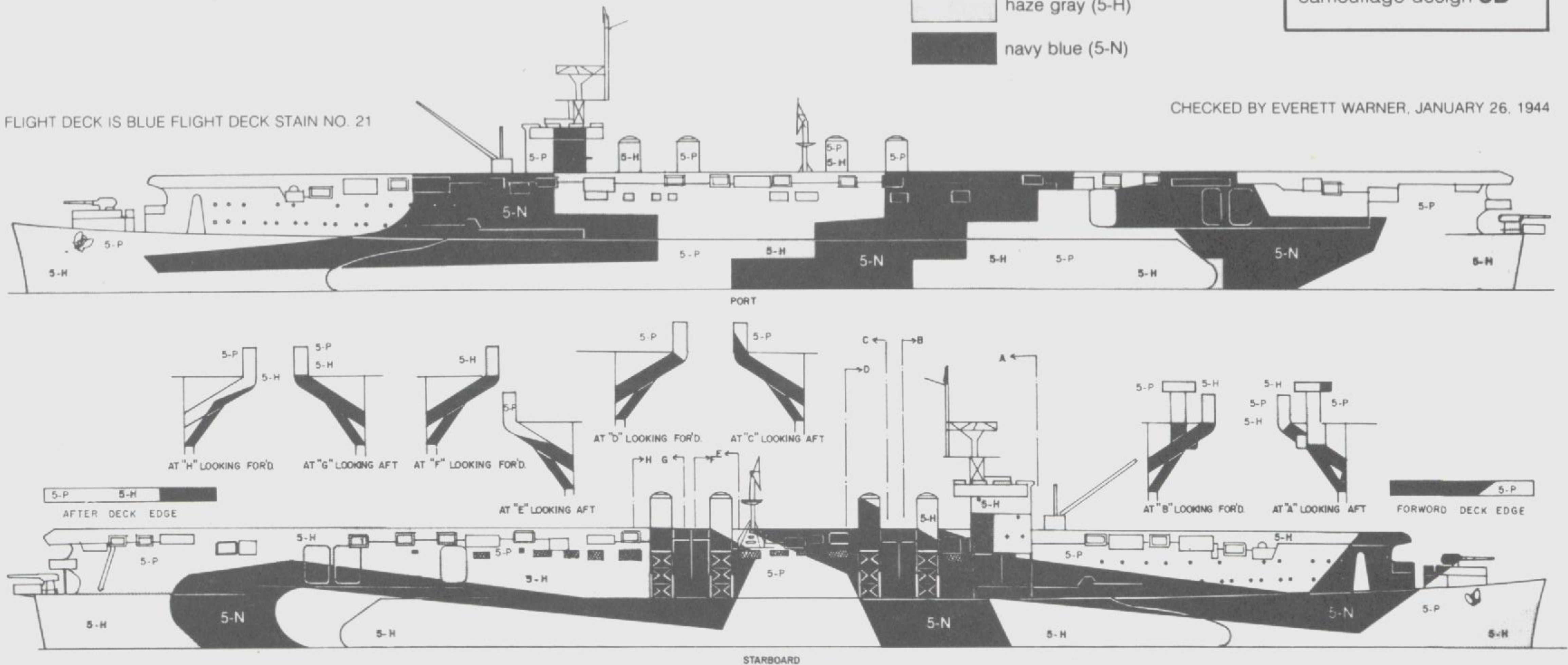
CVL-22 class
measure **33**
camouflage design **3D**

DECKS AND OTHER HORIZONTAL SURFACES ARE DECK BLUE (20-B)

- pale gray (5-P)
- haze gray (5-H)
- navy blue (5-N)

FLIGHT DECK IS BLUE FLIGHT DECK STAIN NO. 21

CHECKED BY EVERETT WARNER, JANUARY 26, 1944





This poor, but rare, picture shows NORTHAMPTON (CA-26) entering a burning Pearl Harbor, December 8, 1941. While it is hard to see, she is still wearing Measure 1 with Measure 5, a fake painted bow wave (see Camouflage 1, page 5).

SUPPLEMENT, Chapter 14

The purpose of this chapter is to update our first Camouflage publication. We will also note type errors, other mistakes, or omissions (none of which were known at press time). The revisions are listed under the chapter in which they should've been included.

SEPTEMBER 1941, Chapter 3

Although navy blue (5-N) was listed as first introduced in June, 1942 it was actually in use considerably before that date. We find it mentioned in Atlantic Fleet communiques as early as

Another terrible, but invaluable, picture- for it shows AUGUSTA'S other side (in Casablanca, Nov. '42) Compare this to the photo on page 16 of Camouflage 1. This Measure 17 design matches port and starboard. Haze gray may have been used instead of light gray. A BENSON class destroyer is directly behind AUGUSTIA. A CVE's island structure is directly behind the DD's bridge.

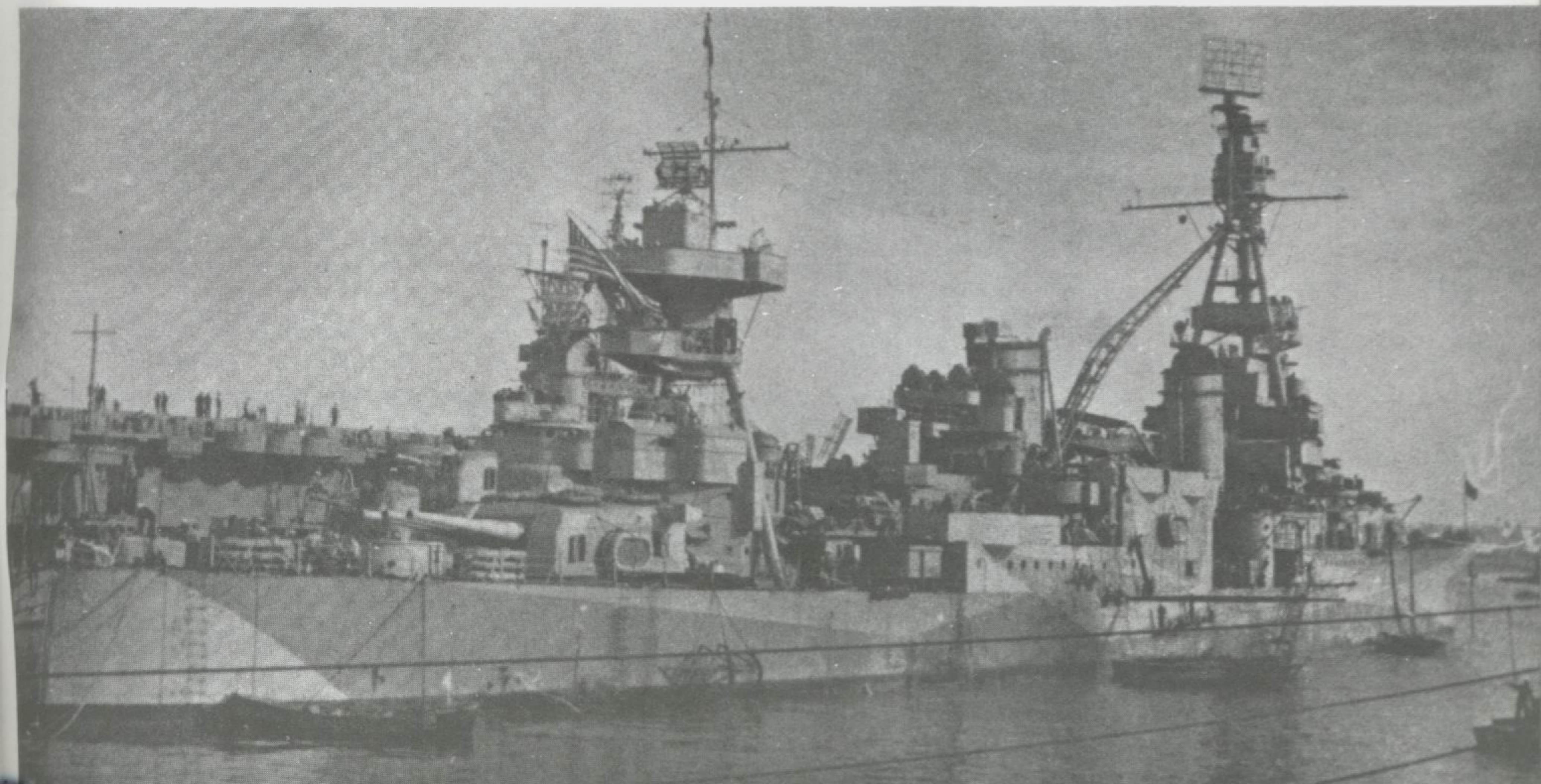
December 1941.

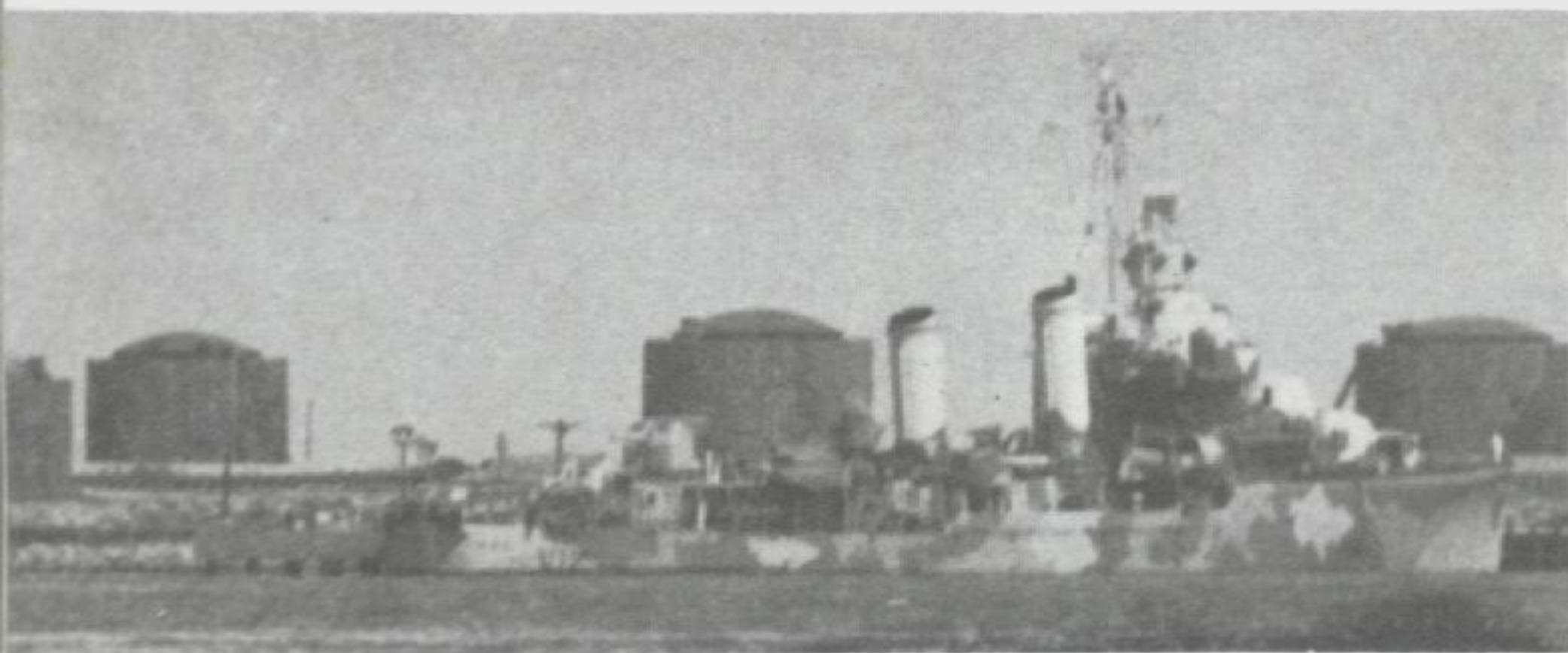
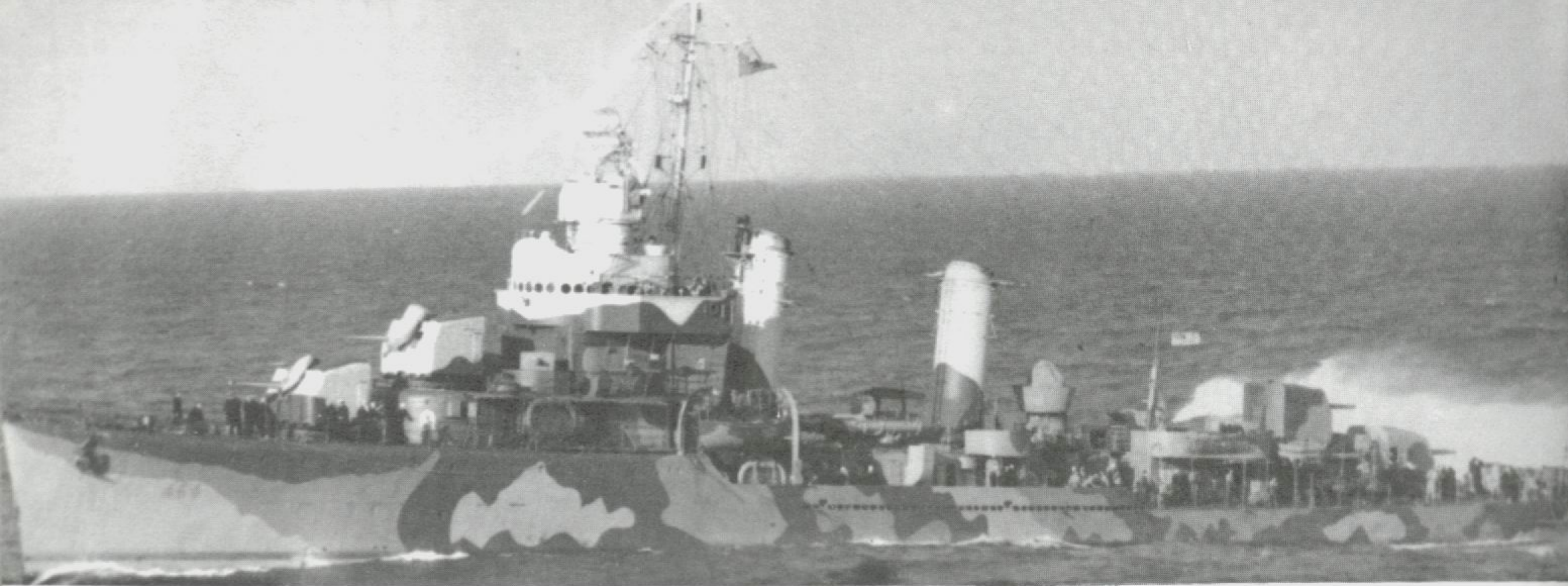
Navy blue ships appear to be very blue when viewed in the original U.S.N. color transparencies.

The photograph of CIMARRON (AO-22) on page 9, was over-exposed by the printer. It should match the values of the picture on page 8.

JUNE 1942, Chapter 4

We had inadvertently passed over some sketchy, but significant data which should've been included in this chapter. At the time





HOBSON (DD-464) represents an ideal example of Measure 15. The colors are blues and not greens as originally thought. The darkest shapes appear to be too dark to be navy blue. The lightest color certainly could be white. Keep in mind that Ms 16 (white and Thayer blue) was being developed around this time. The black cross and white splashes on the above picture are on the original negative. The picture to the left is a tremendous blowup of the destroyer in the background (of the CHICOPEE "bow on" view). HOBSON had been painted in a standard splotch pattern prior to this Ms 15 pattern. Since she operated in the Caribbean and off North Africa, she cannot be one of those elusive South Pacific "green" destroyers we keep hearing about - but can't seem to find. Note the unusual color of the hull number. We don't have a date on the above picture, the one on the left was taken at Norfolk, August 16, 1942 (same as CHICOPEE, AO-34).

we didn't have enough to "put two and two together."

A number of fleet communiqués recommended that all Atlantic destroyers be camouflaged in Ms 22, while all Pacific destroyers should carry Ms 21. These recommendations were sent to all commands a number of times during 1942/43 and generally included all ships. This, more than anything else, probably caused dapple or splotch patterns to be discontinued.

Prior to the release of SHIPS-2, June 1942, two "little known" pattern measures were approved for fleet use. We know next to nothing about them. However, we can now answer some of the questions which we, ourselves, raised in this chapter. We must now also contradict that which we believed were purely experimental patterns (see FARENHOLT on page 14 and AUGUSTA/INDIANA on page 16.) The two measures in question were Ms15 and Ms17. Our information is so sketchy that even the measure numbers may be transposed.

MEASURE 15, DISRUPTION SYSTEM: As forerunner of the Ms31 irregular shaped designs, Ms15 appears to have been an outgrowth of the splotch patterns. We believe that greens were

used instead of blue/grays. Unfortunately, this is still speculation on our part. However, it is based on quite a bit of casual eye witness recollection. We recommend that modelers stay away from Ms15 ships till we learn a lot more.

No patterns were carried on deck. An attempt was made to match port and starboard patterns, but this was not a simple task because of the irregular nature of the shapes. Three or four colors were used and may have included white (see HOBSON, DD-464).

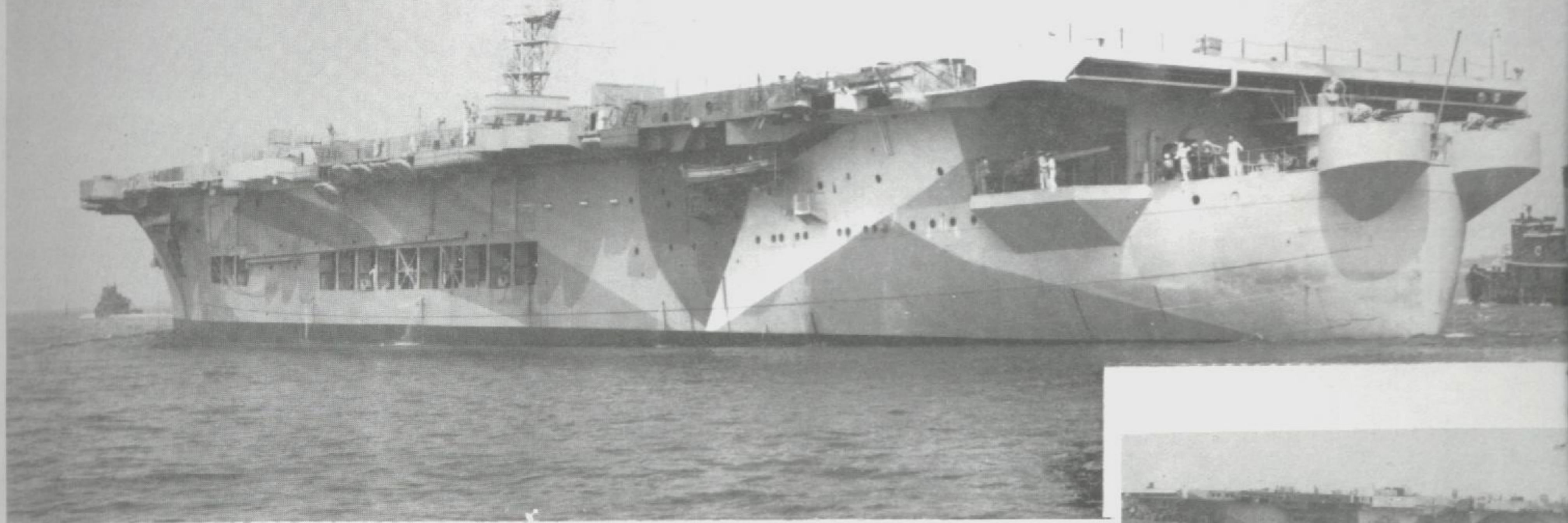
MEASURE 17, DAZZLE SYSTEM: Ms17 differed from the Ms31/32/33 patterns in that its designs were identical, port and starboard. We don't know if the ships were painted using a master drawing as a guide, or were "on the spot" creations.

We don't believe that any patterns were carried on deck. Most likely, the colors were the blue/gray range. So far, we've found only three ships which carried Ms17 (all are pictured in this supplement).

Evidently, only a handful of ships carried Ms15 and 17. As we come across additional samples and data, we'll pass it on to you

The "other" side of INDIANA in Ms15. Compare it to the starboard quarter view on page 16 of Camouflage 1. There's a definite attempt to match the patterns on both sides. We believe INDIANA to be the green patterned battleship we've heard about in the South Pacific. This picture was taken at Norfolk.





An excellent example of Ms 17's dazzle design. These two pictures are of SANTEE (CVE-29) off the Norfolk Navy Yard, September 11, 1942. There are four colors visible. They appear to be either pale or light gray, haze gray, ocean gray and navy blue. The insert at right of the starboard side shows the same pattern was used on both sides. The SANTEE was commissioned in Ms 17. She was converted from an oiler, her original well decks are evident. There are a number of good quality color transparencies of SANTEE which clearly show that blue-grays were used. So far only Ms 15 and 17 ships that we've found, had received their patterns at Norfolk.

in the next volume. We don't know what Ms 18, 19 and 20 were, since they were never released for fleet use.

MARCH 1943, Chapter 5

The caption for U.S.S. BRADFORD (DD-545) on page 34 also refers to a DD-454. It should read DD-545.

NOVEMBER 1944, new insert

SURVEY OF SHIP CAMOUFLAGE IN THE PACIFIC: This report was prepared by Everett Warner after extensive interviews and observations with the Pacific Fleet. Its purpose was to note the effectiveness of present (1944) camouflage patterns under prevailing weather and light conditions, and to recommend changes and improvements.

Pattern designs were judged to be effective for both target angle and type deception. Effectiveness of visibility reduction was less conclusive.

CENTRAL PACIFIC VISIBILITY: Because of near constant cloud cover, dark paints were found to be highly visible most of the time even from the air. Additionally high angle observers noted that the conspicuous wakes usually "gave everything away". The conclusion was made that only low angle camouflage should be selected, even though the paint frequently could

prove conspicuous to high flying aircraft (when the sun is behind the observer). The following was recommended:

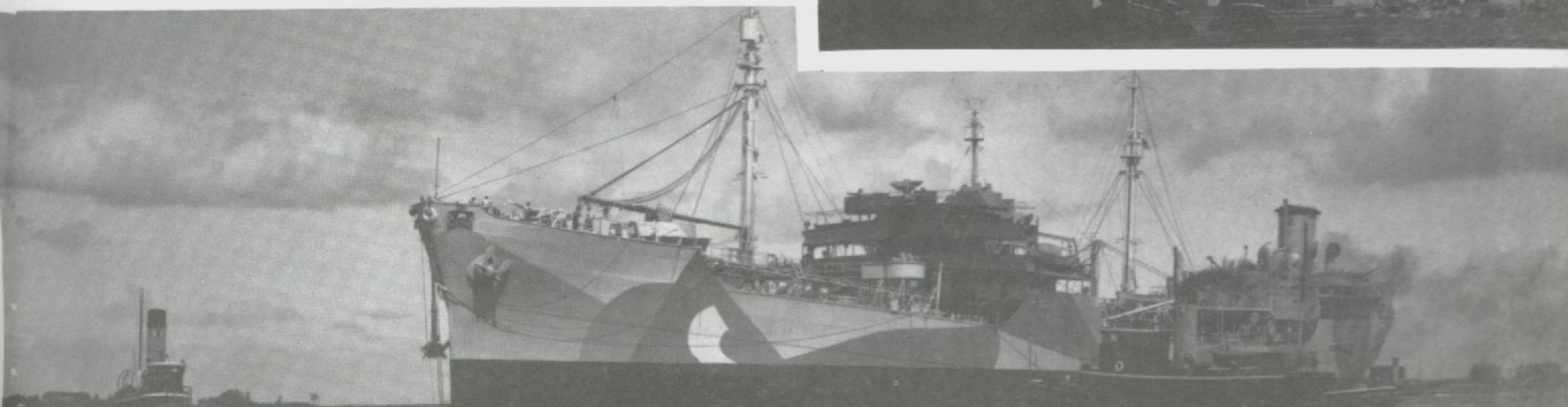
BATTLESHIPS should be painted primarily for type deception at long ranges. Light gray should be carried on the masts and upper works. Ocean gray was the best color for a uniform, overall shade.

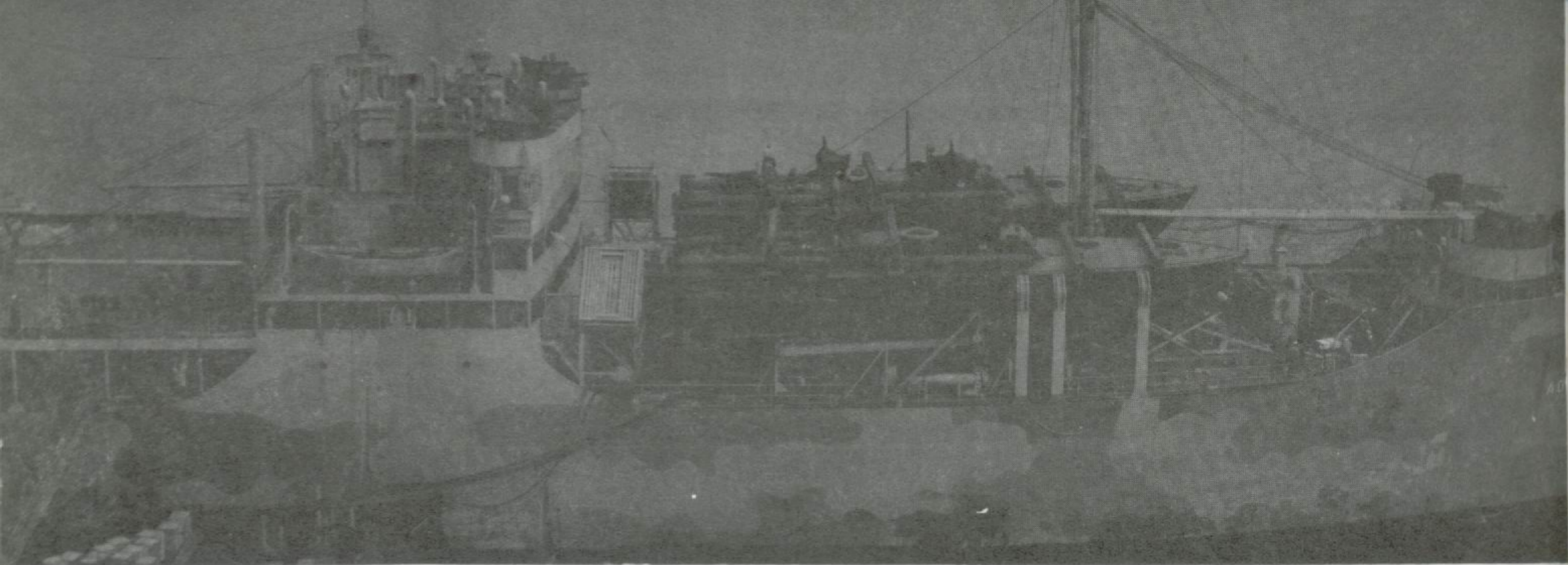
CRUISERS should be dark patterned in Ms 31a for shore bombardment (see Camouflage I, page 26). Measure 33a was most appropriate for general fleet operations.

CARRIERS need larger patterns with less contrast than at present. The suggestion was made for an irregular ocean gray band near the waterline, haze gray above that, and a narrow area of light gray under the flight deck to lighten shadows.

DESTROYERS and ESCORTS need deception rather than concealment, with sufficient contrast patterns ranging from

BELOW: Another Measure 17 ship, these two pictures show CHICOPEE (AO-34) off Norfolk, August 16, 1942. Note the four colors on the port bow. The lightest is either pale gray or white. The "bow on" view again shows that the pattern matched both sides. The destroyer, behind and to the port of CHICOPEE, started us off on another search which ended with the large picture of HOBSON on the previous page.





This close-up shows the TALLULAH (AO-50) in Ms15, tied up at Norfolk, October 10, 1942. Note the PTs on the well deck. Evidently, TALLULAH is on her way to the South Pacific. Her patterns show some wear and touching up. Everything points to greens.

navy blue to light gray (Ms 32a). Measure 33a was recommended for night use.

DECK PATTERNS should be discontinued. Solid deck blue or deck green was recommended.

MARCH 1945, Chapter 7

With the above survey in hand, why did a good portion of the Pacific Fleet proceed to paint over dazzle patterns with the solid Measure 21? It must be remembered that this survey was released on Nov. 30, 1944, a couple of days after the introduction of a new form of naval warfare—the kamikaze. No ship wanted to be conspicuous (from the air) compared to the rest of the fleet. Blue pigment was in very short supply. Therefore, it was reserved primarily for the kamikazes main target—the carrier.

Thus, many other ships ended up in navy gray (5-N) towards the end of the war. Navy gray had the same reflectance and designation, 5-N, as blue. This presents a new headache for modelers. Is the ship in the black and white photograph in navy blue or navy gray?

On page 44 of Camouflage I we had identified CV-31 as wearing a modified Ms 22. The U.S. Navy had designated this to be Measure 12, using only ocean gray and navy blue or navy gray. Quite a few ships carried this scheme by the end of the war. It's fairly easy to mistake it for Ms 22 and vice-versa. Lightly printed photographs can fool anyone. Compare the contrast on the hull, at the line between the two colors. If the contrast appears less than it should be (for Ms22), chances are that it is Measure 12.

Two examples of the "new" Measure 12, under different light and film conditions. The top view is of the LEXINGTON and the bottom also of the LEXINGTON.



Close-up of the YORKTOWN's (CV-10) port island showing great detail of the vast antenna arrangement. Note the painted "kill" flags on the splinter shield.

A surface bow view of the newly commissioned TICONDEROGA taken off Norfolk in May 1944.

