

CHAPTER 4

REPRODUCTION

4.1. GENERAL

Reproduction of charts in these series shall be by lithography. The final copy shall conform to the best lithographic standards with respect to clearness of copy, conformance to colors specified and accuracy of registration.

Copy furnished shall be final opaque negatives suitable for plate making. A composite proof will be supplied as a guide for checking registration.

Copy shall be appropriately identified by chart name/number, edition number, plate identity and screening requirements.

Color blocks, when used, shall be outside the trim line.

Half-tone negatives shall be prepared with the uniform screen angles in order to reduce moire effect to minimum.

A chart back-up is not required on the military version.

Individual chart features required on each color separation plate are indicated in [Chapter 3](#), paragraph 4 Color separation.

4.2. PAPER REQUIREMENTS Charts shall be printed on JCP E-40 map paper (44 lbs. – White – Chemical Wood Map – Lithograph Finish).

4.3. PRINTING COLORS AND SCREENS The producing agency shall match the Department of Defense, Geospatial - Intelligence Agency (NGA), or the Department of Commerce, National Ocean Service (NOS) colors and screens specified.

4.3.1. Screens

4.3.1.1. All NOS screen angles are measured in degrees, starting with zero at 3 o'clock and progressing counterclockwise.

4.3.1.2. All NGA screen angles are measured in degrees, starting with zero at 12 o'clock and progressing clockwise.

4.3.2. Plates, Screens, and Colors

<u>PLATE</u>	<u>tone</u>	<u>NGA SPC NO.</u>	<u>COLOR</u>	<u>NOS</u>
(1) Culture	Solid	58600	Black	0001
(2) Drainage	Solid	48253	Blue	0350

	<u>PLATE</u>	<u>TONE</u>	<u>NGA SPC NO.</u>	<u>COLOR</u>	<u>NOS</u>
(3)	Drainage Type & Land Subject to Inundation	45%-Biangle-200L		Blue	0350
(4)	Light Blue Water Tint	120/10%/60°	----	Blue	0350
(5)	Water Vignette	120 Line Vignette 90°	----	Blue	0350
<p>Water vignette (civil format only) is required along the shorelines around isolated islands of 0.01" or smaller located in open water. Water vignette is prepared at full scale. No reductions or enlargements are required.</p>					
(6)	Open Water	21%-120D-60°	48253	Blue	----
(7)	Inland Open Water	15%-30°-120L	----	Blue	0350*
		54%-120D-45°	48253	Blue	----
(8)	Contours	17%/Triangle/120L	----	Black	0001
		54%-240D-30°/60°	58600	Black	----
(9)	Topographic Names and Contour Values	45%/Biangle/200L	----	Black	0001
		54%-240D-30°/60°	58600	Black	----
(10)	Distorted Surface Area	45%/Biangle/200L	----	Black	0001
		54%-240D-30°/60°	58600	Black	----
(11)	Roads	60%-Biangle/200L	----	Black	0001
		Solid	61121	Red- Brown	----
(12)	Sand	Solid	----	Black	0001
		Solid	61121	Red- Brown	----
(13)	Boundary Overprint	45%/75°/120L	----	Magenta	0430
		54%-120D-15°	61121	Red- Brown	----

<u>PLATE</u>	<u>TONE</u>	NGA SPC NO.	<u>COLOR</u>	<u>NOS</u>
(14) City Tint	Solid 54%-120D-45°	----- 95151	Yellow Violet	0100 ----
(15) Polar-Shelf Ice Ice Pack	5%/90°/120L 21%-120D-30°	----- 57103	BlackGray	0001 ----

* The Inland Open Water screen is printed over top the lighter blue water tint. (Civil Format)

(16) Ice Pack	Pattern 5%/90°/ 120LAP-40 & AP-40 & 21%-120D-30°	----- 57103	BlackGray	0001 ----
(17) Shaded Relief (beginning at the 500' contour level)	120 line 120D-Halftone 90°	----- 57103	Black Gray	0001 ----

Specially prepared halftone terrain portrayals which meet the following criteria:
Shaded slopes contain plastic gradation so that the top 1/3 of a slope prints no more than 90%, the intermediate 1/3 of the slope prints an average of 50%, and the lower 1/3 of the slope tapers to 0-3% in level valley floors. A minimal area of solids at peaks and ridge tops and cliff or canyon sides can be tolerated. The halftone dots in valley floors and other level or nearly level areas with grades of less than 3% are "dropped out" and do not print.

(18) Vegetation (Woods) (Woods pattern AP-42 prints in level areas only)	Solid	56235	Green	----
(19) Grids	Solid	48253	Blue	----
(20) <u>Aeronautical Data</u>				
(a) <u>Military Format</u>	Solid	46531	Blue	----
Special Use Airspace	31%-120D-15°	46351	Blue	----

<u>PLATE</u>	<u>TONE</u>	<u>NGA SPC NO.</u>	<u>COLOR</u>	<u>NOS</u>
(b) <u>Civil Format</u> – VHF/ UHF	Solid	----	Blue	0350
1 Airways	120L/22%/30°	----	Blue	0350
2 Airspace	120L/ Halftone/30°	----	Blue	0350
(c) <u>Civil Format</u> – LF/MF	Solid	----	Magenta	0430
1 Airways	120L/22%/30°	----	Magenta	0430
2 Airspace	120L/Halftone/30°	----	Magenta	0430
(21) <u>Gradient Layer Tints</u>				
<u>(a) Military Format</u>				
Level Area Relief	Solid	55607	Green	----
Low Relief	42%-120-60°	55607	Green	----
Moderate Relief	54% 120D-45°	57437	Buff	----
High Relief	Solid	57437	Buff	----
<u>(b) Civil Format</u>				
Below Sea Level	15%/60°/12OL	----	Blue	0350
	20%/15°/12OL	----	Yellow	0100
Green 1	10%/60°/12OL	----	Blue	0350
(0' to 1000')	20%/15°/12OL	----	Yellow	0100

<u>PLATE</u>	<u>TONE</u>	<u>NGA SPC</u> <u>NO.</u>	<u>COLOR</u>	<u>NOS</u>
Green 2 (1000' to 2000')	15%/60°/12OL 25%/15°/12OL	----	Blue Yellow	0350 0100
Buff 1 (2000' to 3000')	10%/15°/12OL 5%/30°/12OL	----	Yellow Brown	0100 0502
Buff 2 (3000' to 5000')	25%/15°/12OL 15%/30°/12OL	----	Yellow Brown	0100 0502
Brown 3 (5000' to 7000')	25%/15°/12OL 35%/30°/12OL	----	Yellow Brown	0100 0502
Brown 4 (7000' to 9000')	60%/30°/12OL	----	Brown	0502
Brown 5 (9000' & up)	Solid	-----	Brown	0502
Brown 6 (Over 12000')	12%/60°/12OL (over Solid Brown 5)	-----	Blue	0350

Printed copy shall retain the tones of the original drawing to the maximum extent practicable. Half-tone negative is controlled by shooting the tonal guide blocks at 3-5% of tone for the lightest tones, 30-40% of tone for middle tone, and 50-85% of tone for the deepest tones. When shaded relief is omitted from the body of the chart, an overall tone, over the land area (beginning at the 500' contour level), shall be accomplished by using a 120L/5%/90° interposing screen with the open window negative when processing the printing plates. A holdout mask [See [Chapter 3 3.8.4.4.5.](#)] will be used to holdout shaded relief from spot elevations.

4.4. BINDERY INSTRUCTIONS, (Military Format)

4.4.1. Trimming Chart, when trimmed, shall measure 41-5/8" x 57-1/2", with margins as indicated on the Military Style Sheets. An exact trimming of the north and east margins is required in accordance with trim marks.

4.4.2. Folding Upon request, finish copy shall be folded in 3 vertical folds and 3 horizontal accordion folds, with the face (lower left corner of chart) on the outside so that chart number and currency data are visible. Folded size shall be approximately 10-1/2" by 14-7/16"

4.4.3. Wrapping All wrapping shall be in accordance with military policy.

4.5. BINDERY INSTRUCTIONS, (Civil Format)

4.5.1. Trimming Chart, when trimmed, shall measure 20-5/8" x 55" or 20-5/8" x 59" max. An exact bleed trimming of the south and east margins on the face side is required in accordance with trim marks. The south trim of the face chart must register along the trimmed edge with the north margin of the back chart.

4.5.2. Folding Charts shall be folded in 11 vertical panels and one horizontal fold, with the legends on the outside panels. Folded size shall be approximately 5" x 10-5/16".