

FEDERAL COMMUNICATIONS COMMISSION

**GROUND WAVE
PROPAGATION CURVES**

540 kc - 1600 kc

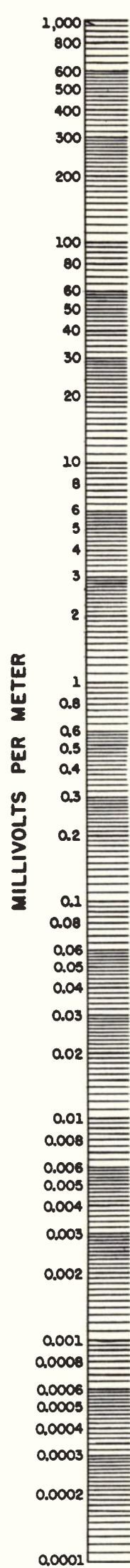
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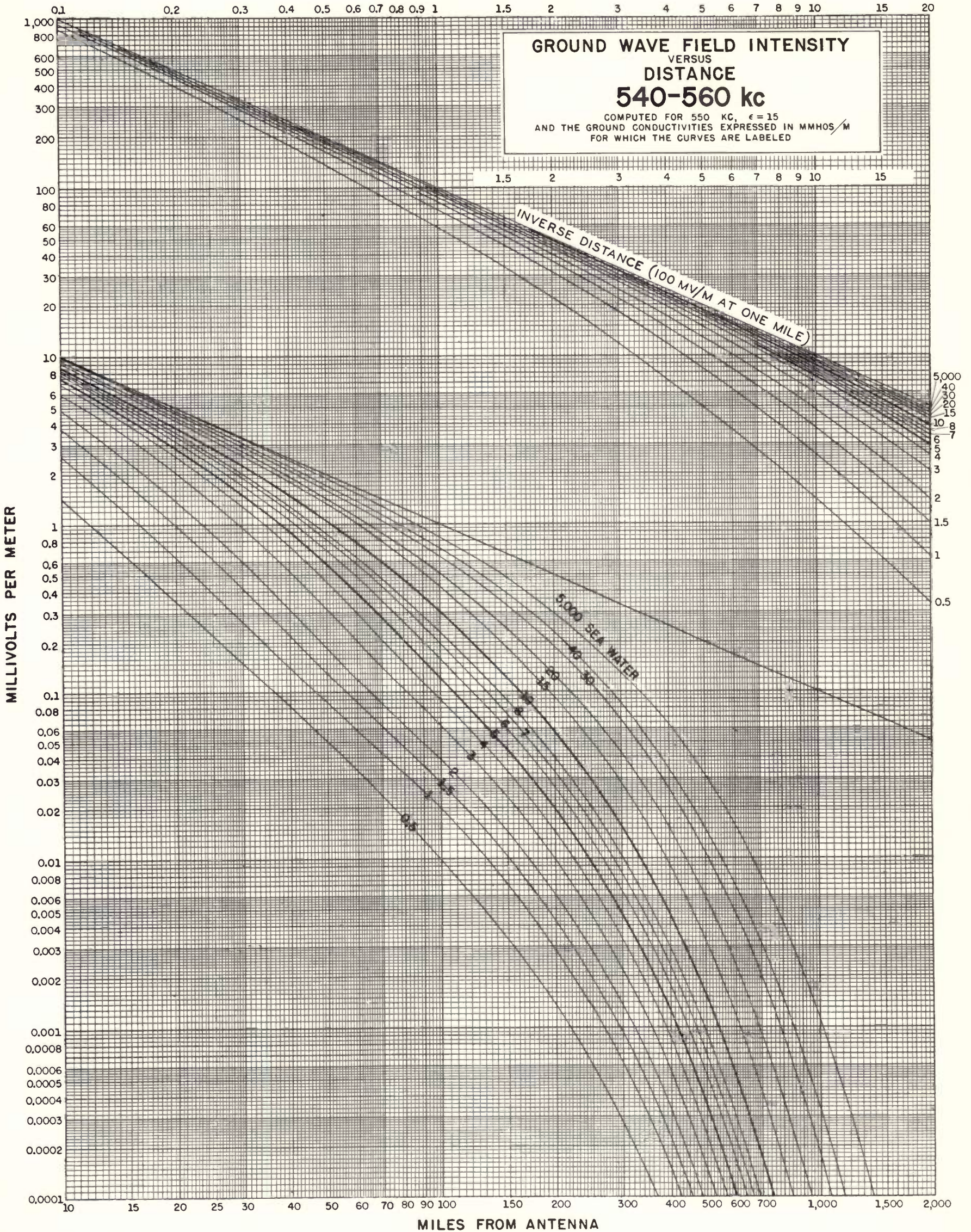
ROCKVILLE, MARYLAND 20851

(301) 762-7440

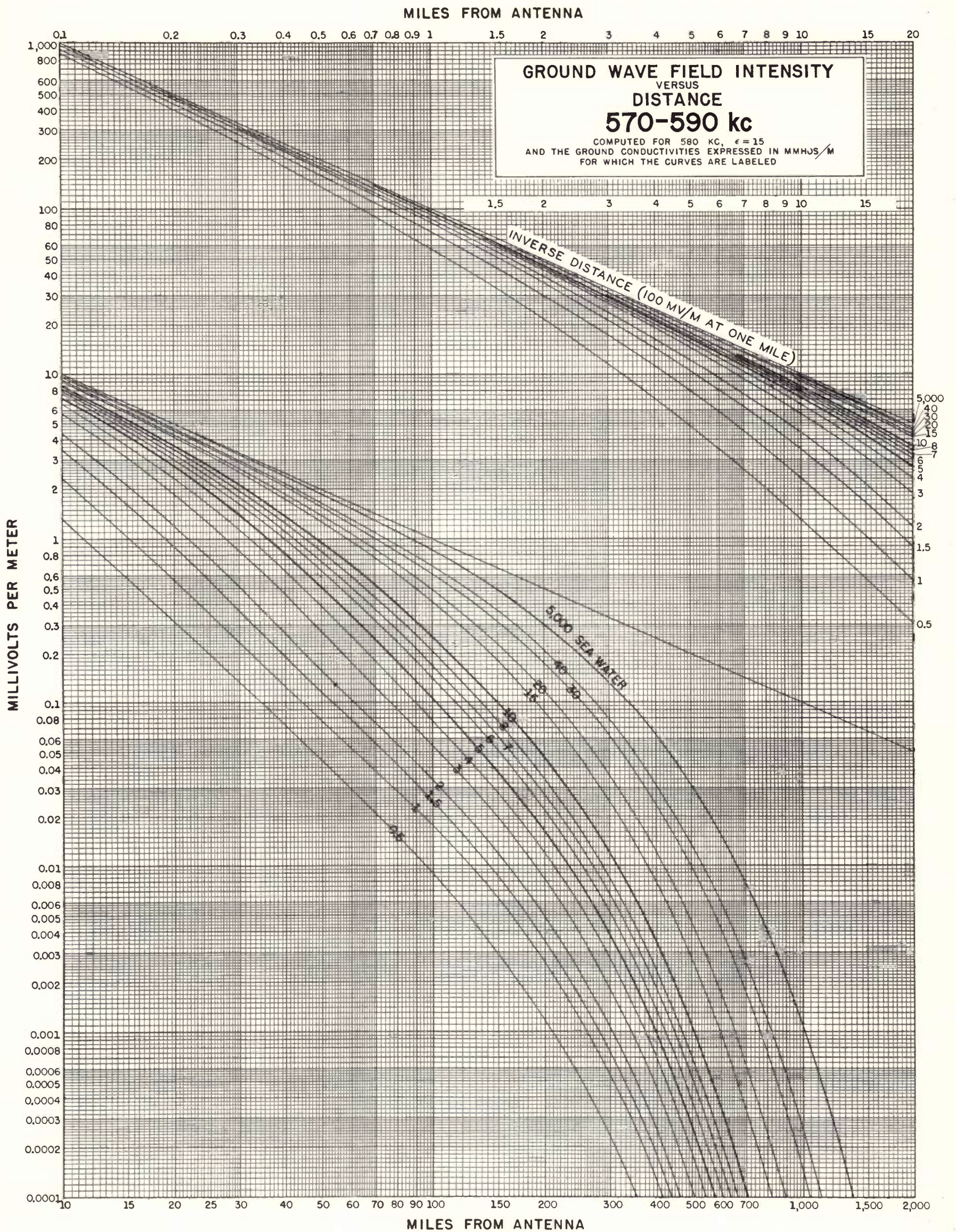


SLIDERS FOR USE WITH GRAPHS 1 - 19A. CUT OFF AND USE RIGHT HAND SLIDER FIRST, LEAVING REMAINDER ATTACHED IN BOOK FOR FUTURE USE.

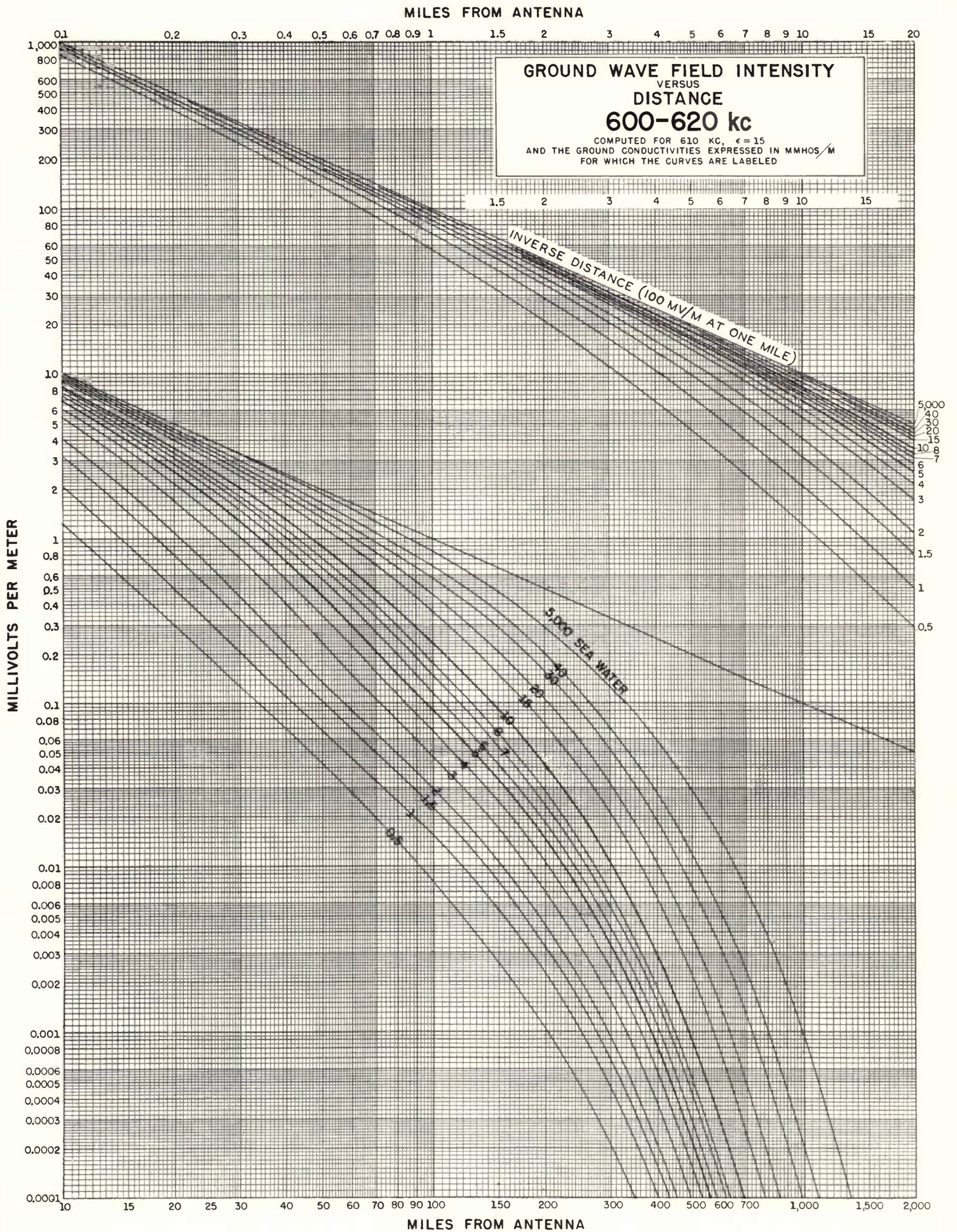
MILES FROM ANTENNA

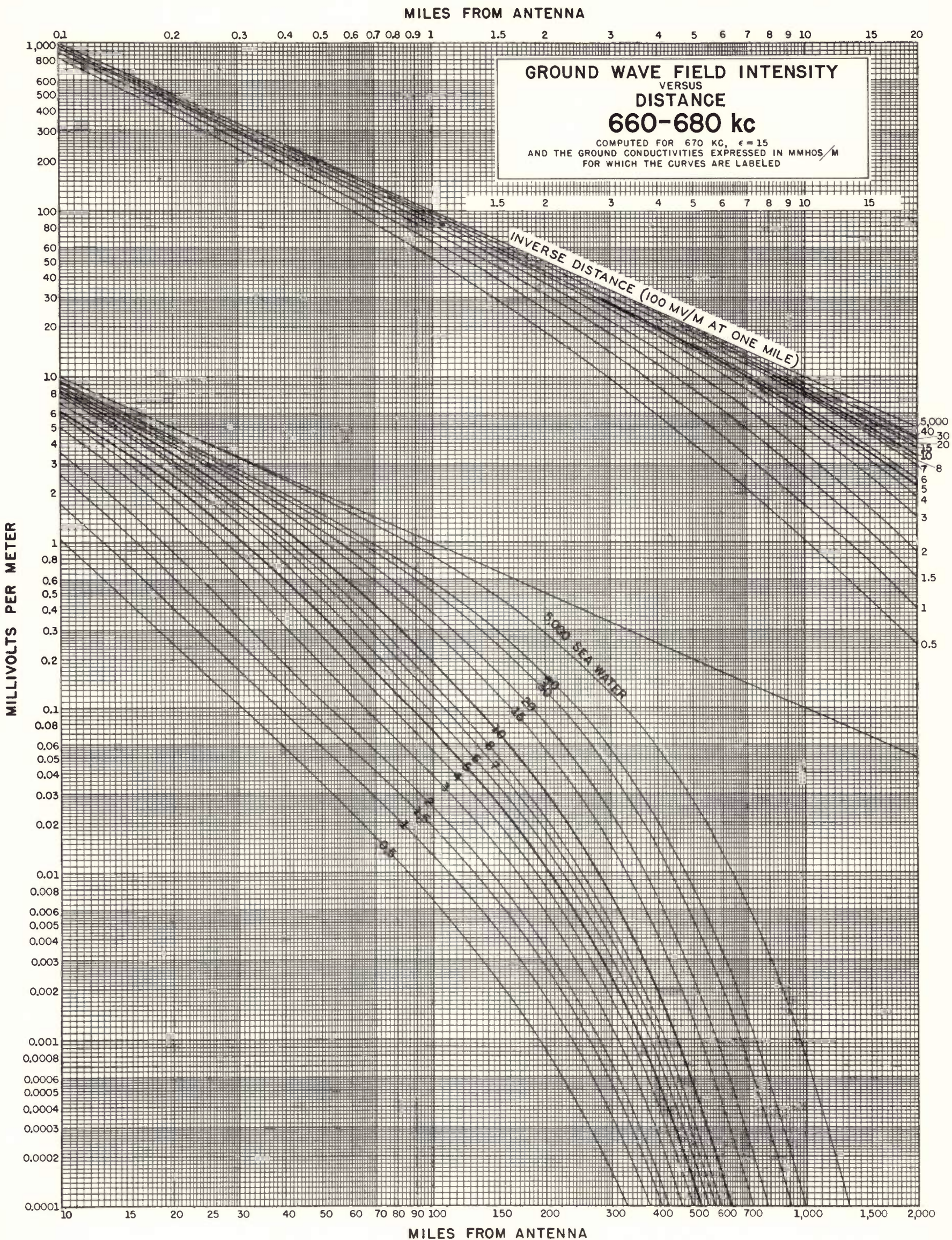


GRAPH 1

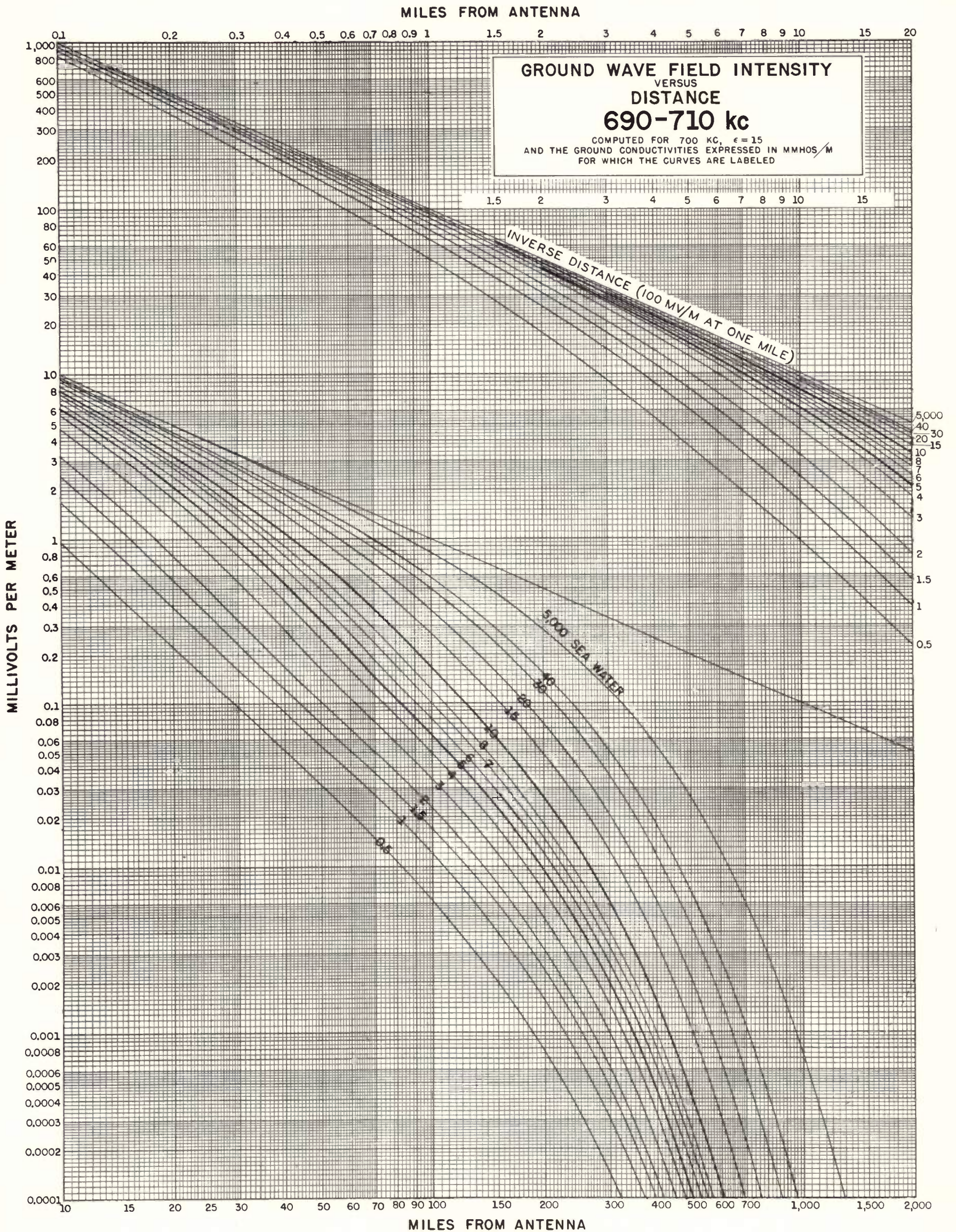


GRAPH 2



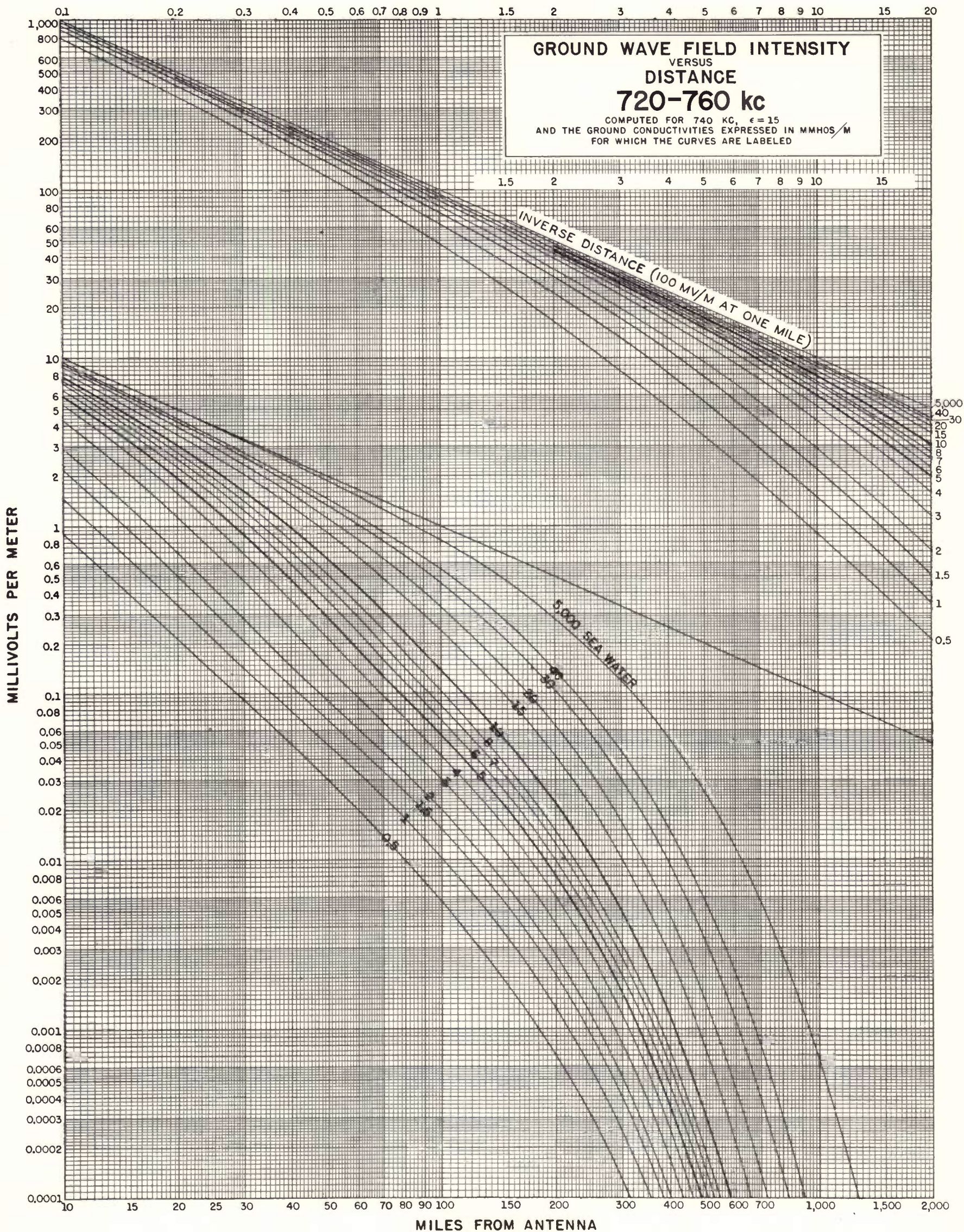


GRAPH 5



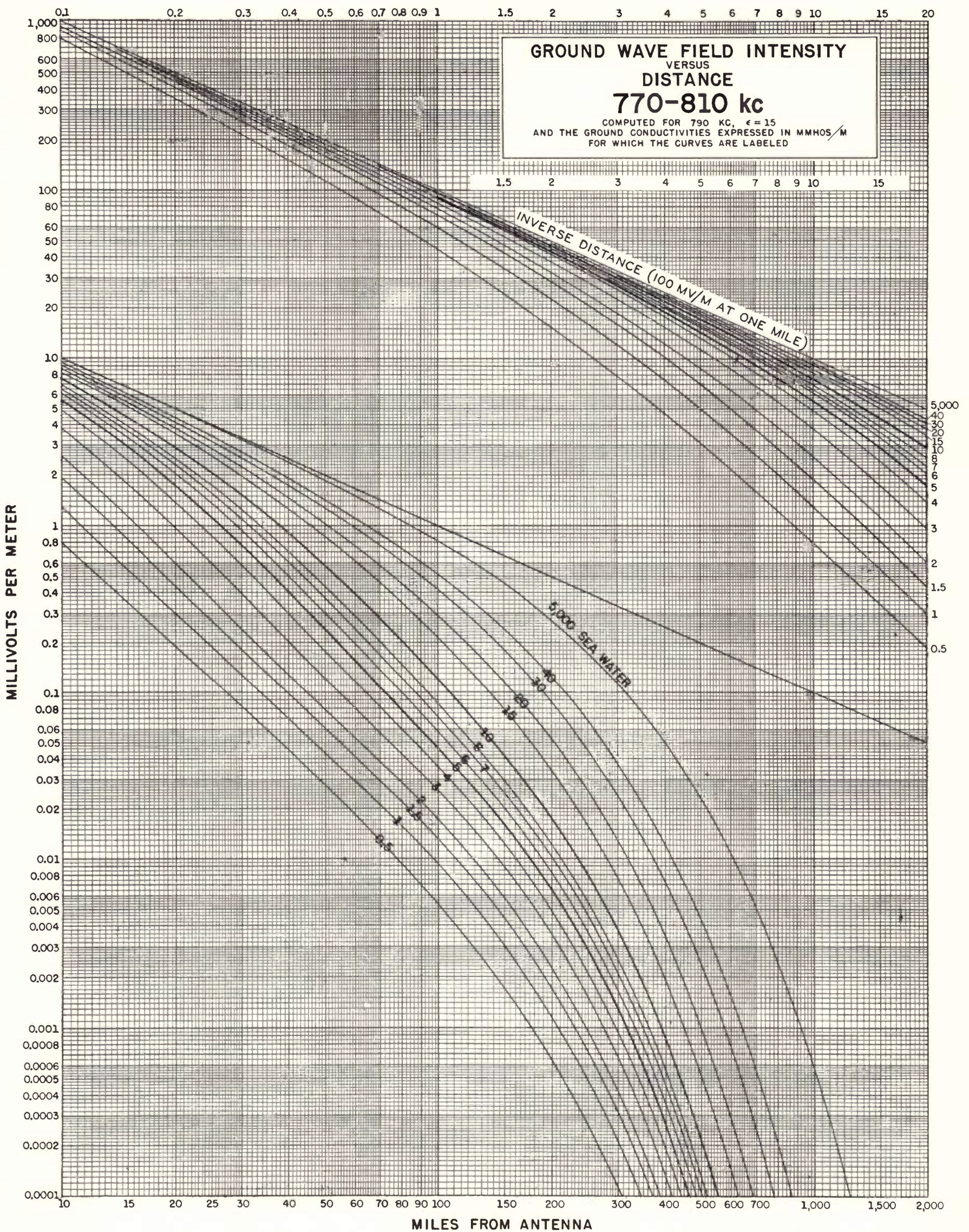
GRAPH 6

MILES FROM ANTENNA



GRAPH 7

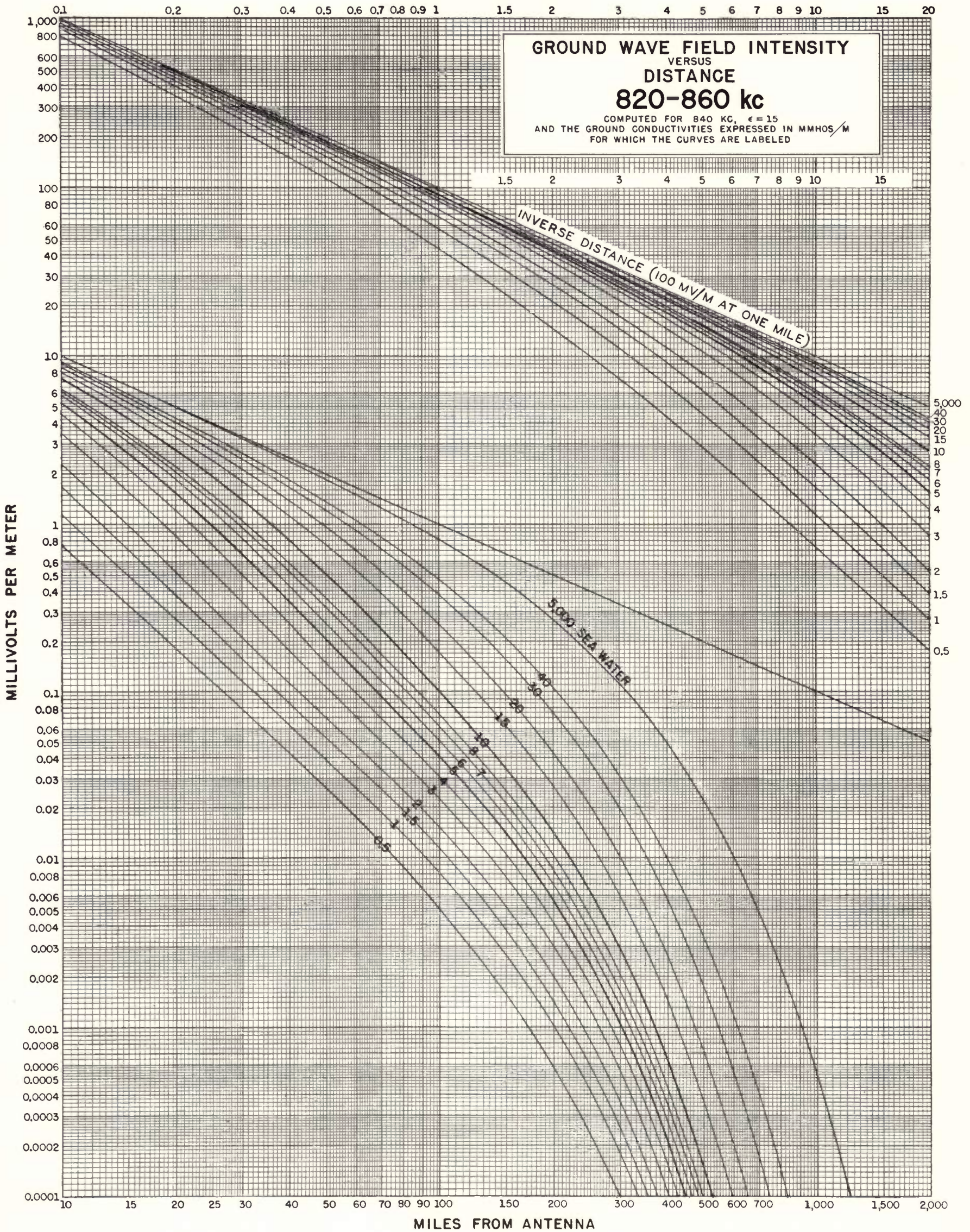
MILES FROM ANTENNA



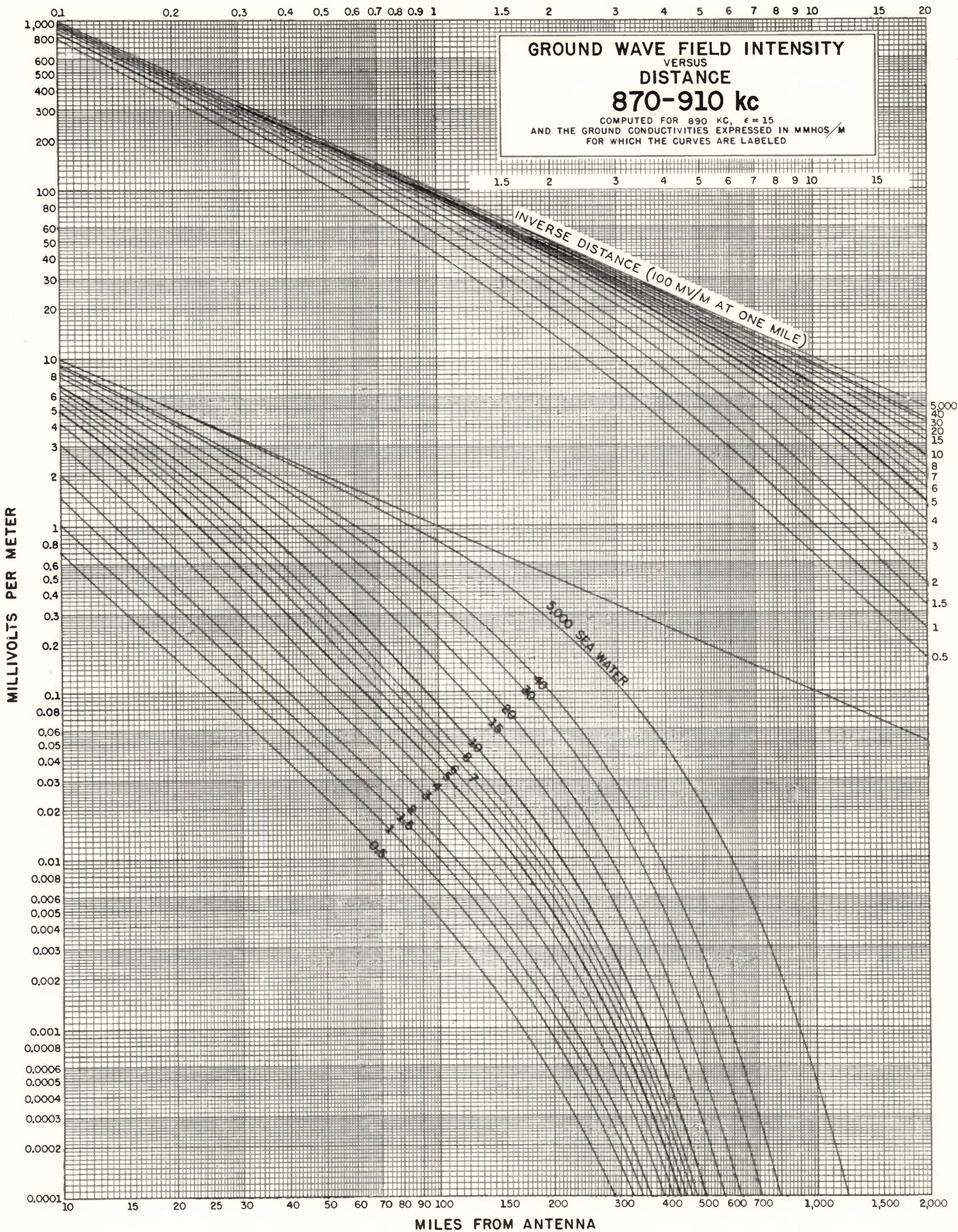
MILES FROM ANTENNA

GRAPH 8

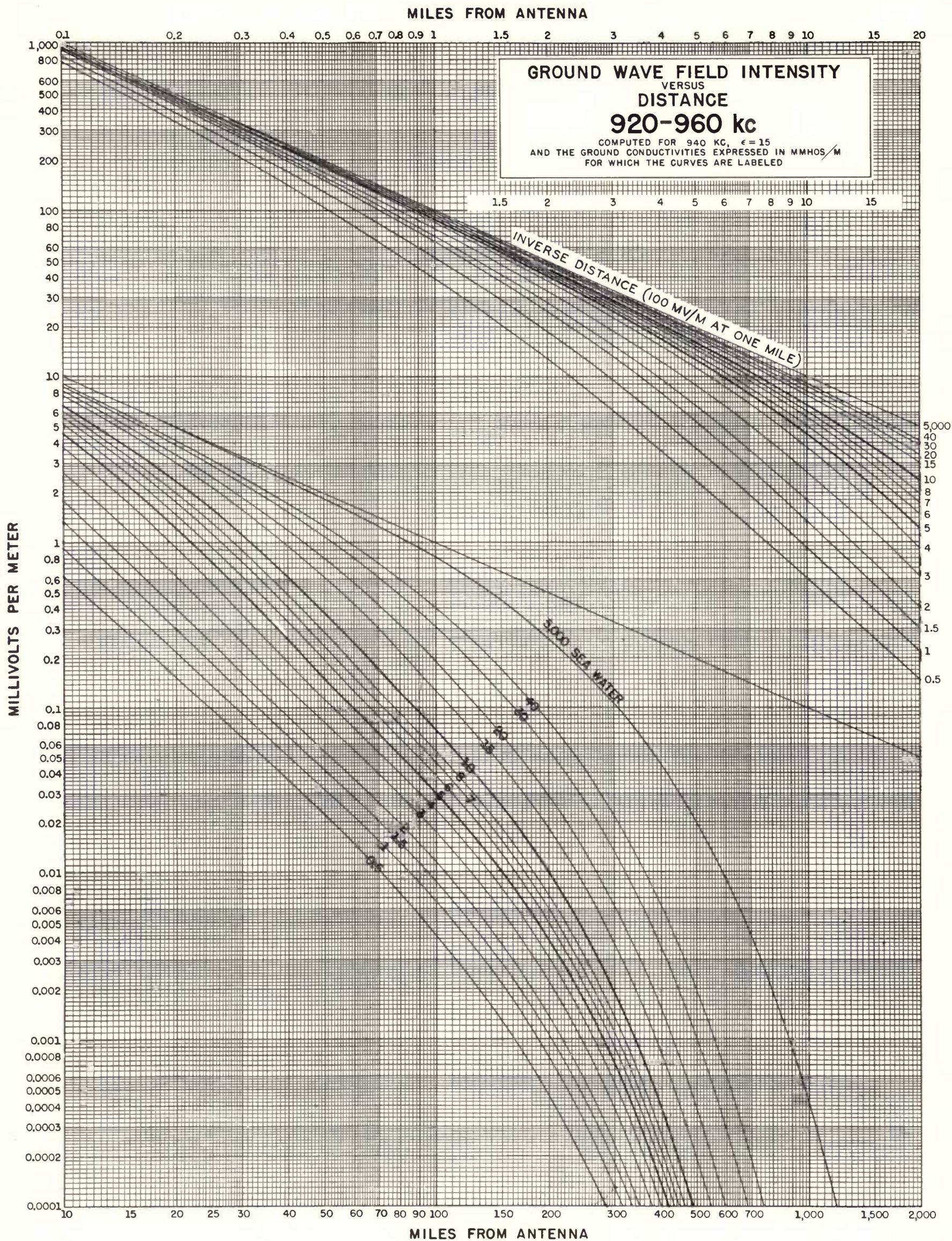
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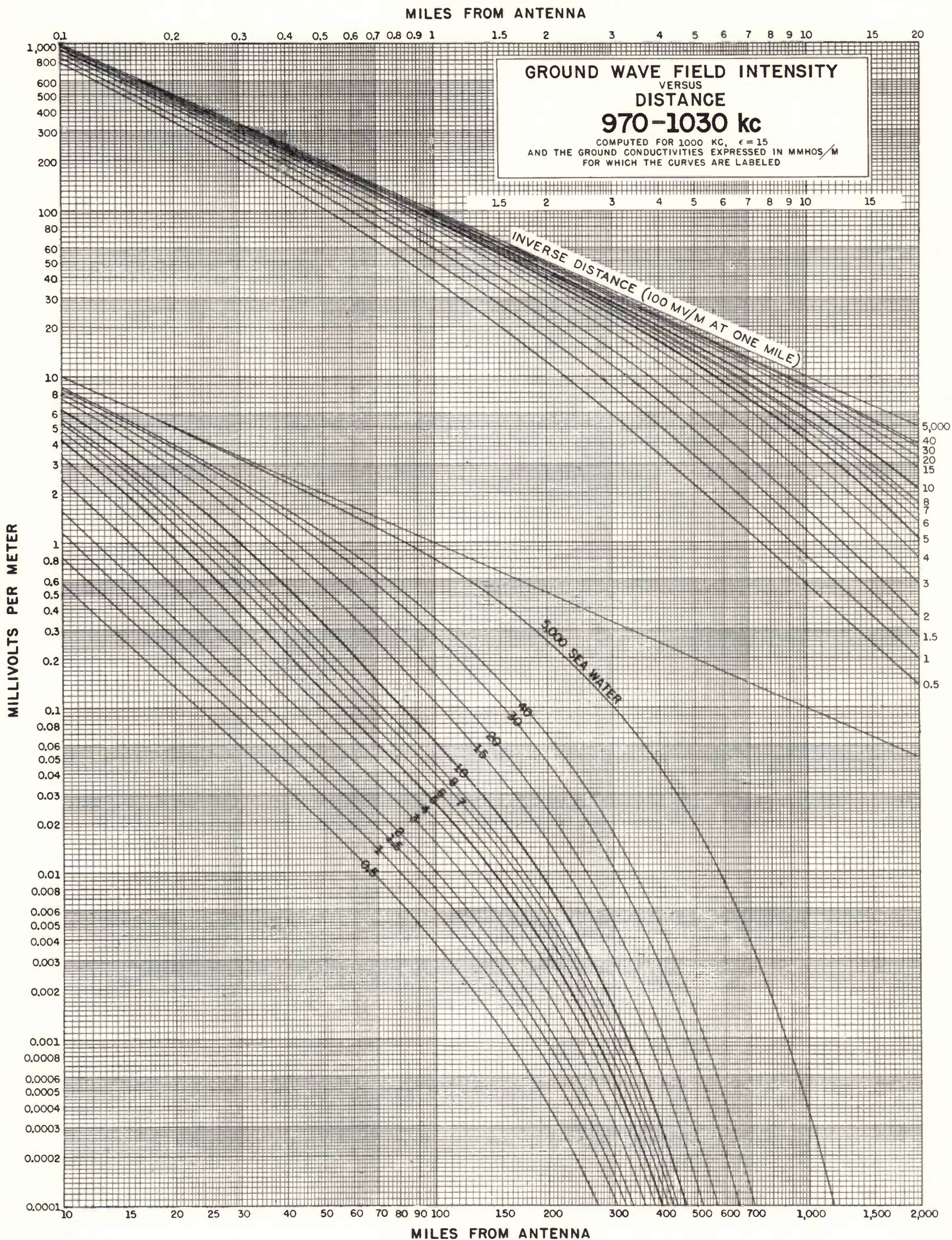
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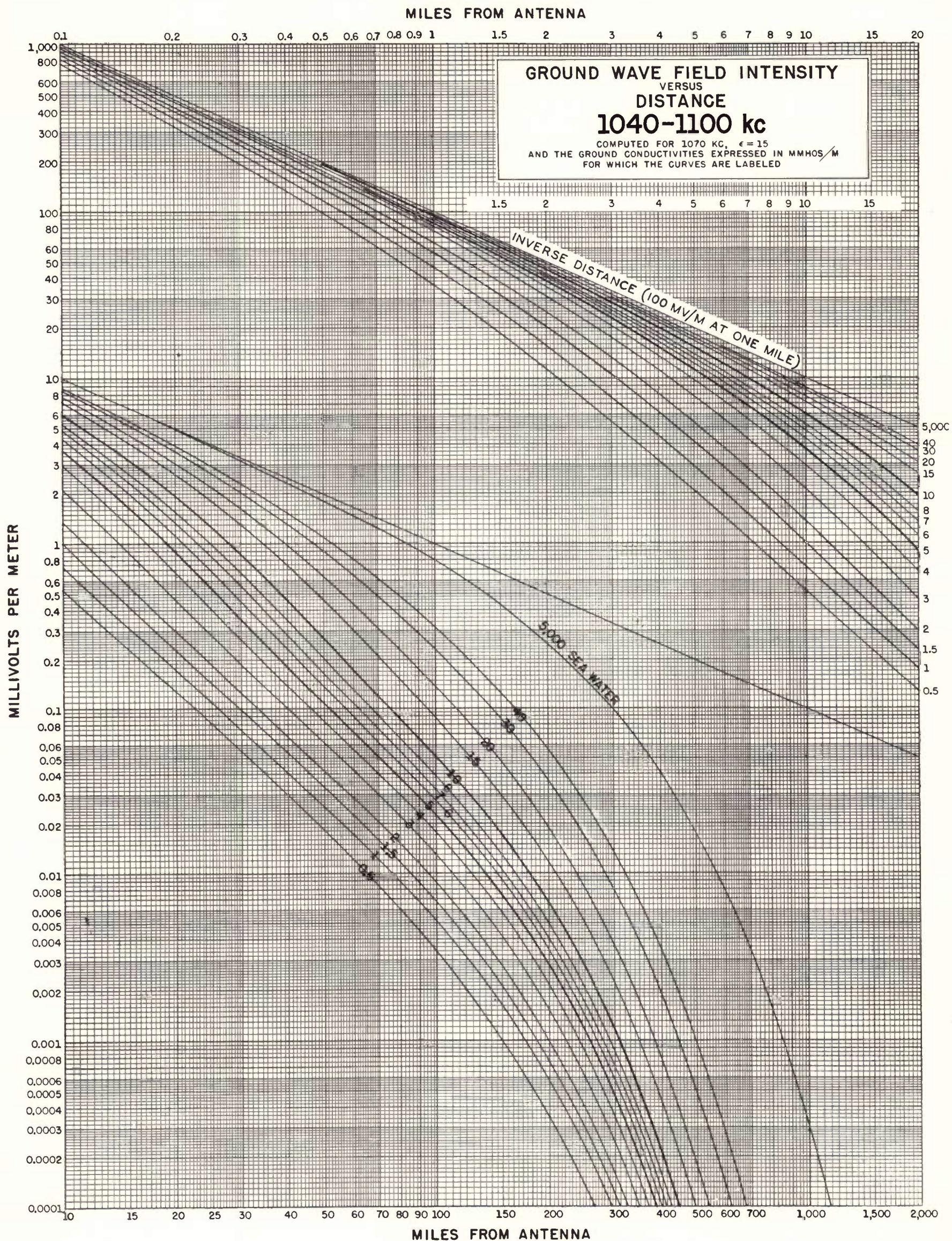
GRAPH 10



GRAPH 11

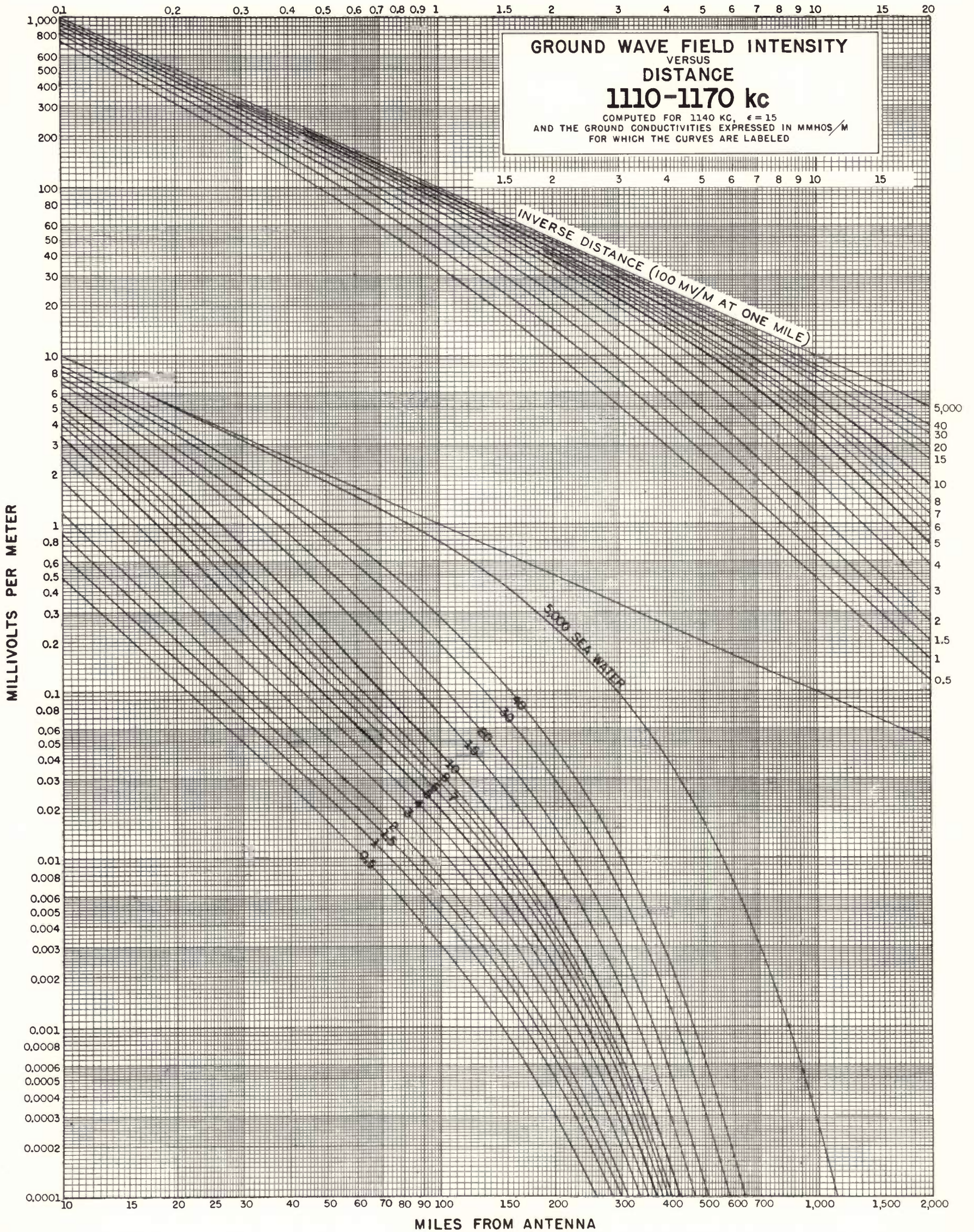


GRAPH 12



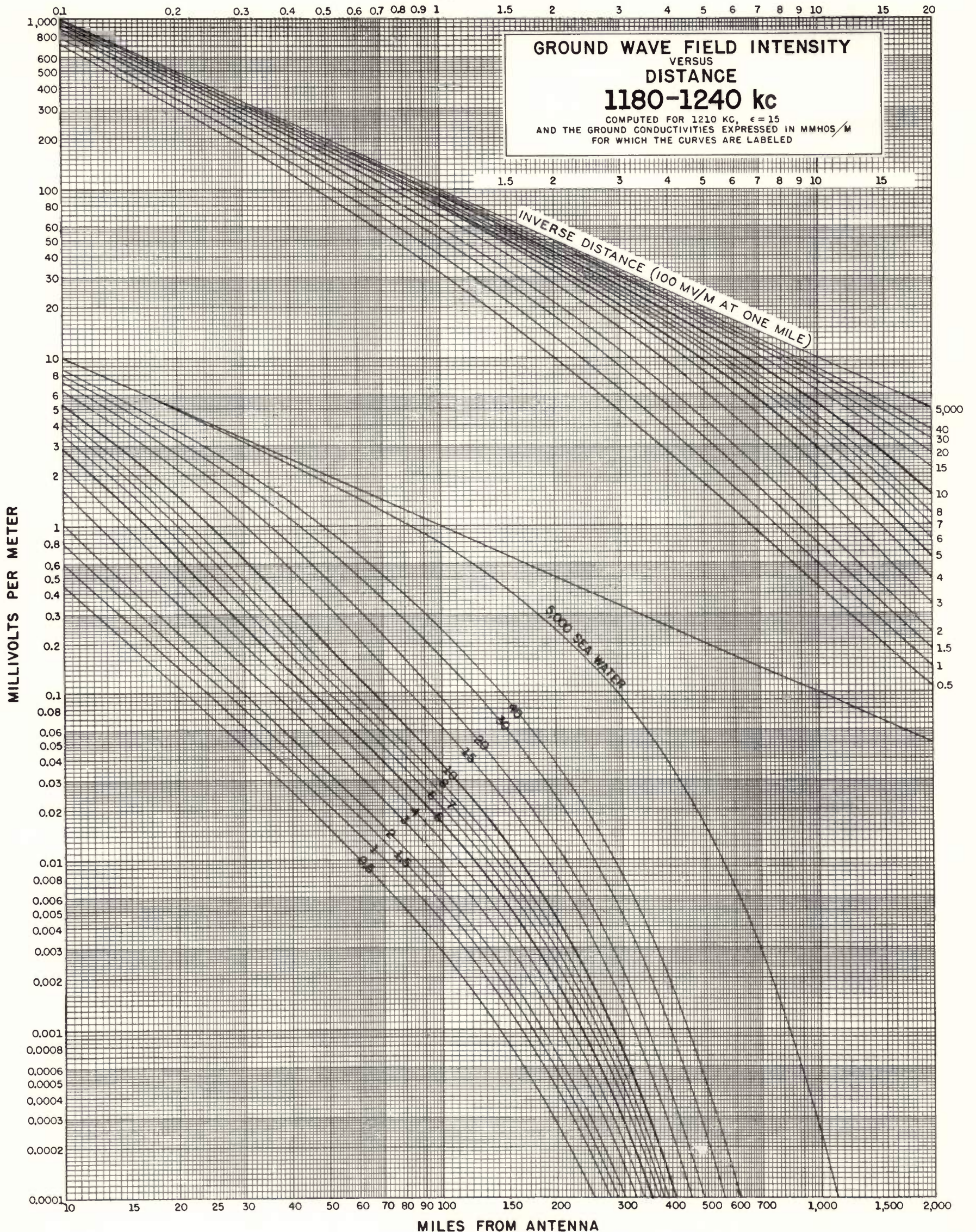
GRAPH 13

MILES FROM ANTENNA



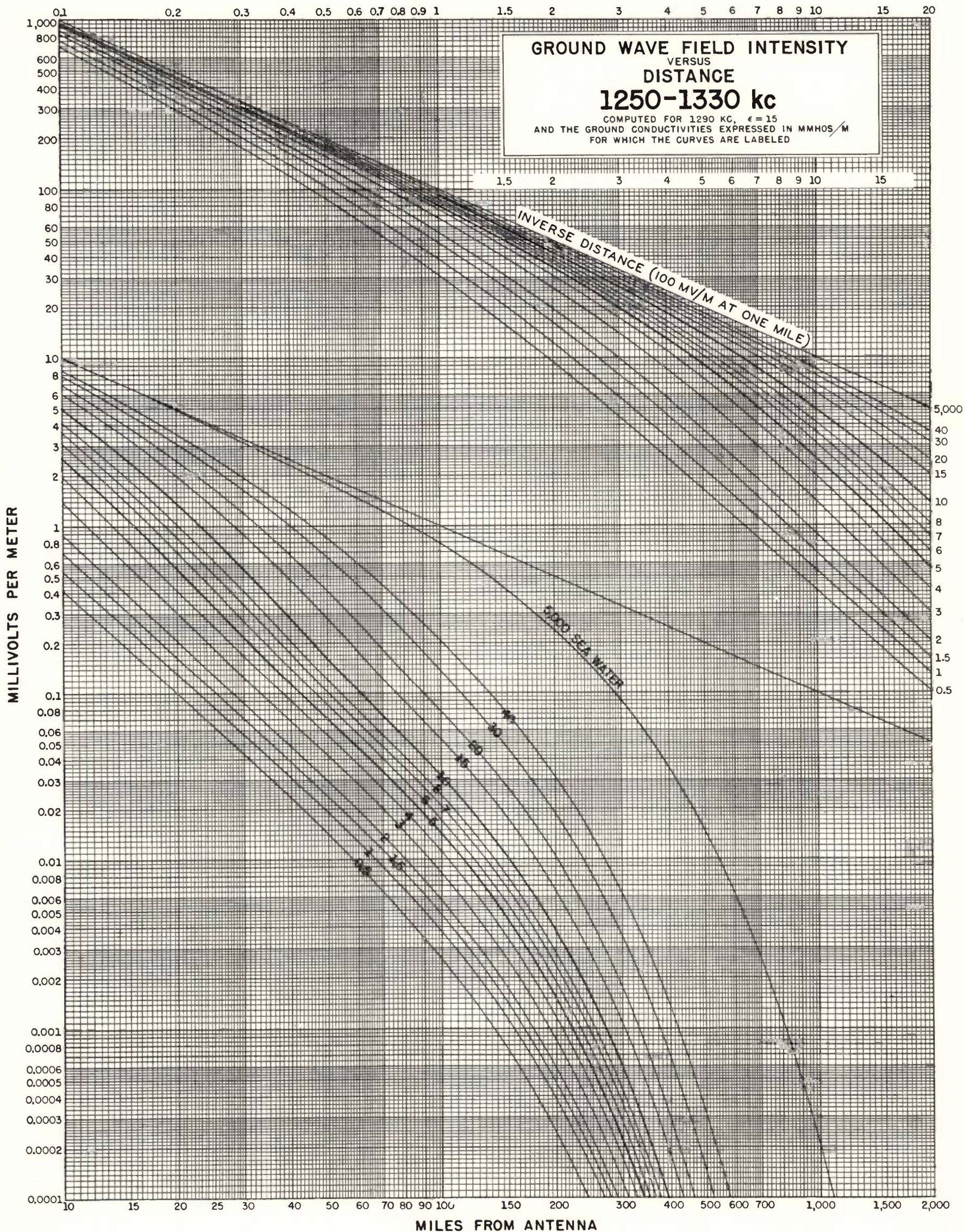
GRAPH 14

MILES FROM ANTENNA



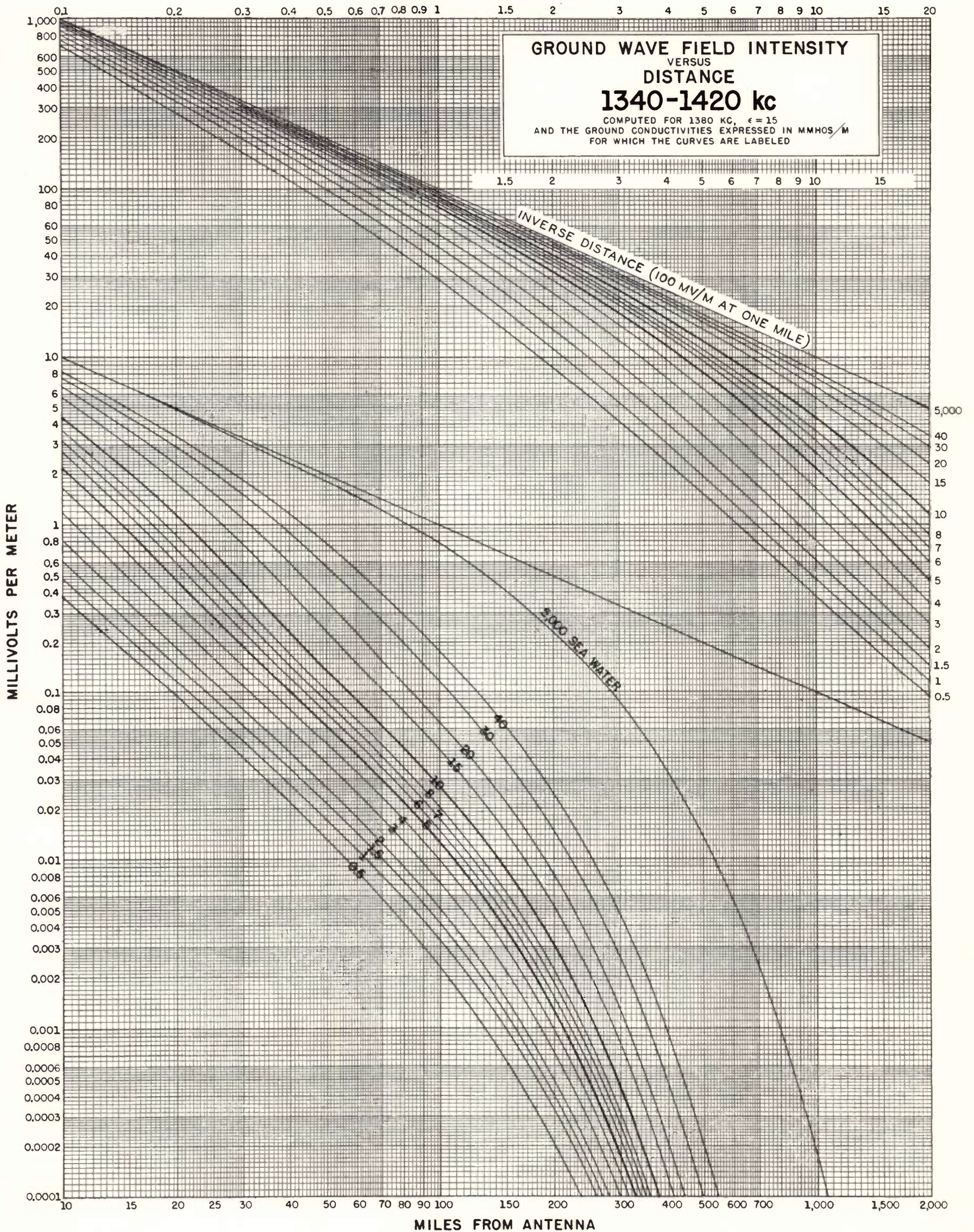
GRAPH 15

MILES FROM ANTENNA



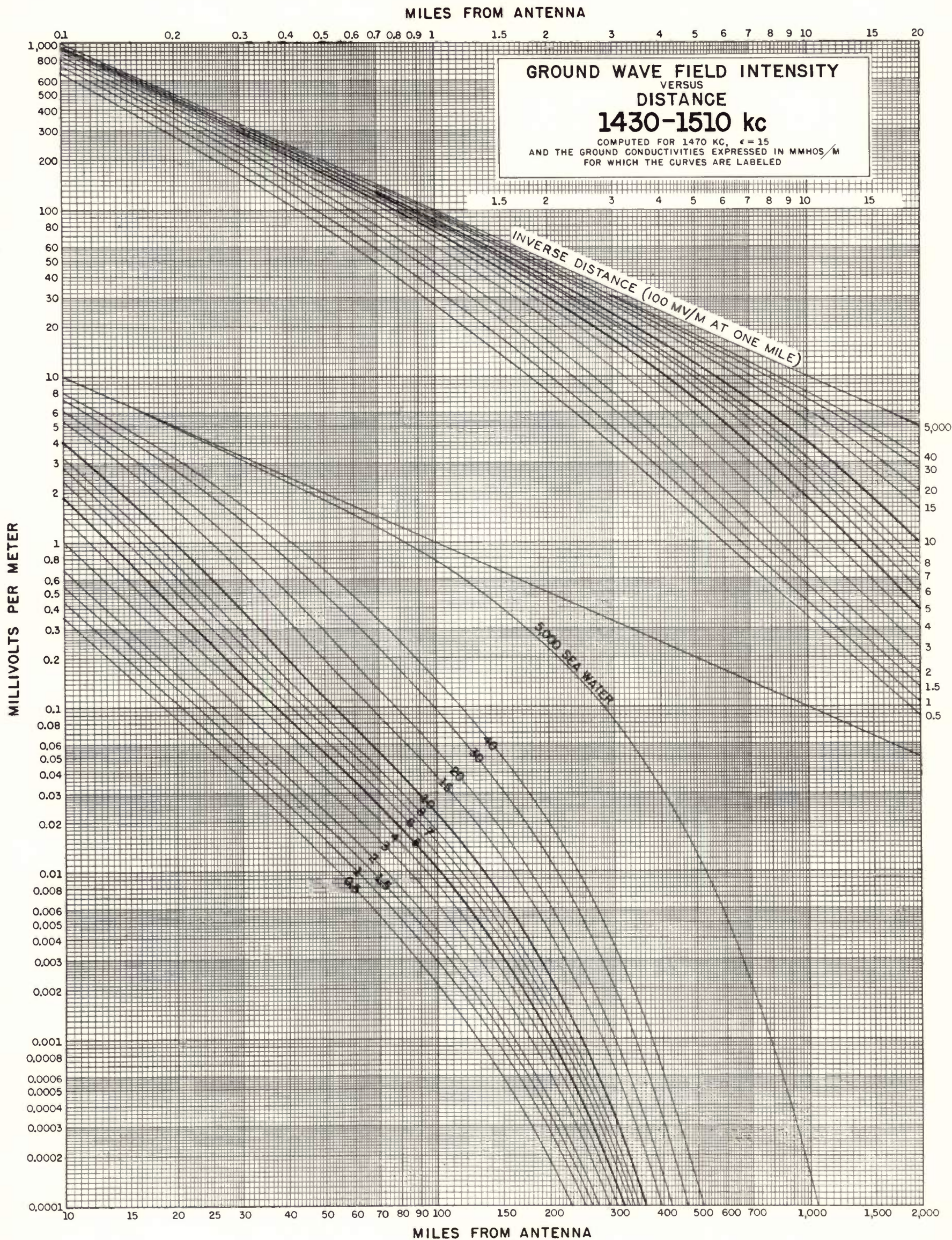
GRAPH 16

MILES FROM ANTENNA

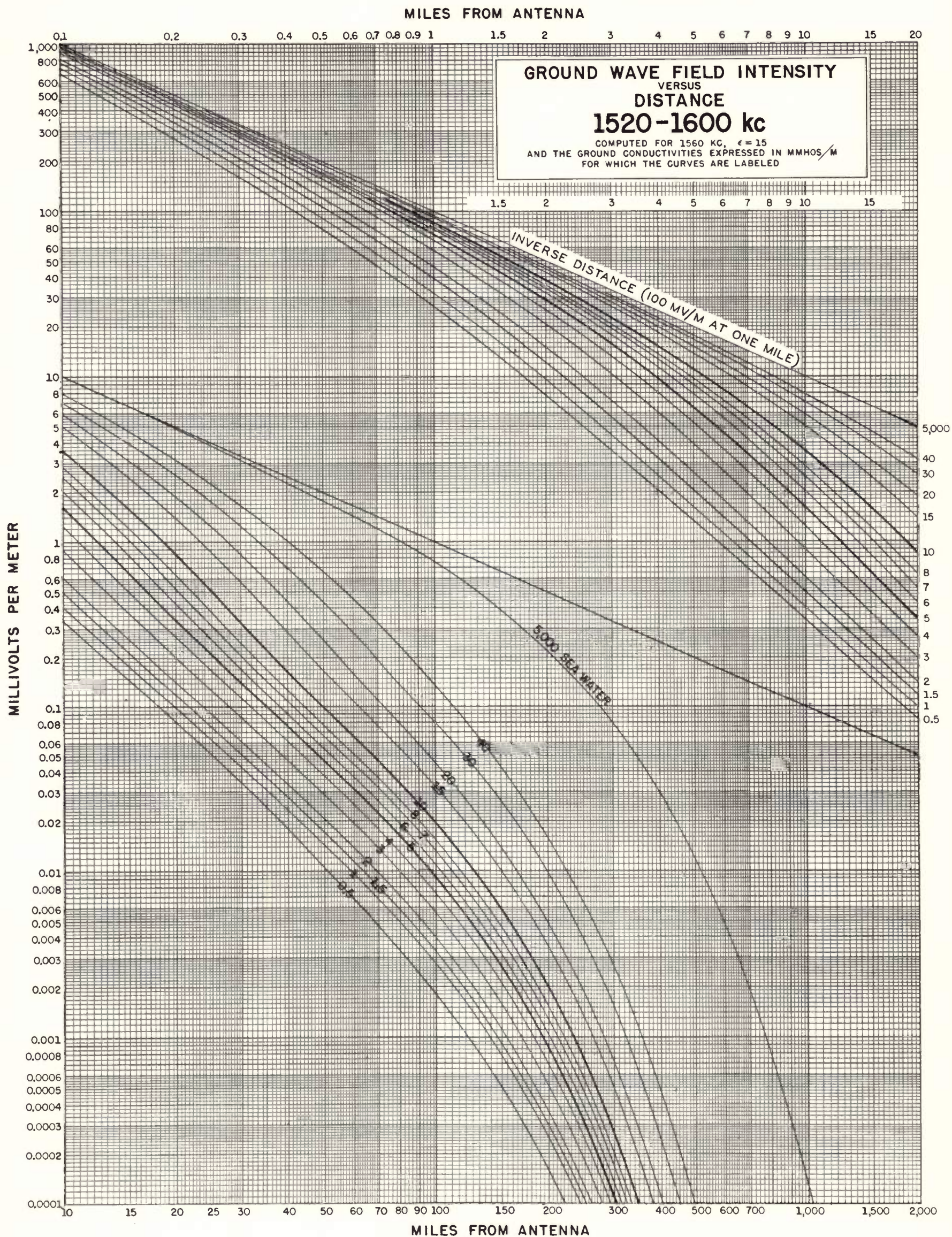


GRAPH 17

FCC-1954

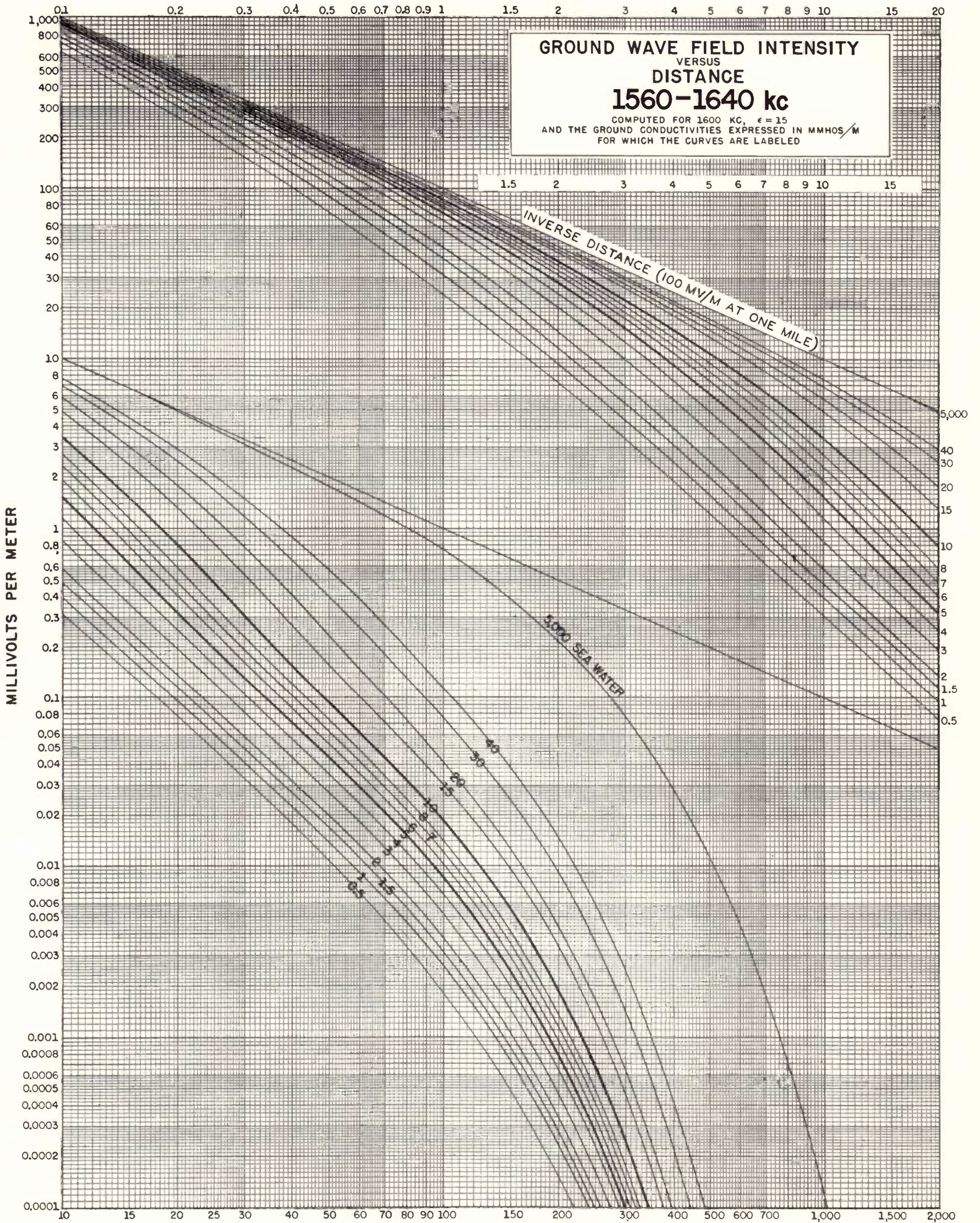


GRAPH 18



GRAPH 19

MILES FROM ANTENNA



MILES FROM ANTENNA

GRAPH 19-A

$$\frac{f(p)}{p}$$

GROUND WAVE FIELD INTENSITY VERSUS NUMERICAL DISTANCE OVER A PLANE EARTH

$$\left. \begin{aligned} p &= \frac{\pi R \cos^2 b'}{\lambda \cos b'} \approx \frac{\pi R}{\lambda} \cos b \\ b &= 2b' - b' \approx \tan^{-1} \frac{\epsilon + 1}{x} \end{aligned} \right\} \text{Vertical Polarization.}$$

$$\left. \begin{aligned} p &= \pi \frac{R}{\lambda} \frac{x}{\cos b'} \\ b &= 180^\circ - b' \end{aligned} \right\} \text{Horizontal Polarization.}$$

$$x = \frac{1.79731 \cdot 10^{15} \sigma_{\text{e.m.u.}}}{f \text{ mc}}$$

$\frac{R}{\lambda}$ = distance expressed in wavelengths.

σ = ground conductivity expressed in mmhos/m.

f = frequency expressed in megacycles.

ϵ = dielectric constant of the ground referred to air as unity.

$$\tan b'' = \frac{\epsilon}{x}$$

$$\tan b' = \frac{\epsilon - 1}{x}$$

INVERSE DISTANCE ($1/p$)

$b = 0^\circ$

15°

30°

45°

60°

75°

180°

90°