ENGINEERING RESEARCH INSTITUTE
THE UNIVERSITY OF MICHIGAN
ANN ARBOR

GENERAL DESIGN PROCEDURE FOR HIGH-EFFICIENCY TRAVELING-WAVE AMPLIFIERS

Technical Report No. 24
Part II

Electron Tube Laboratory
Department of Electrical Engineering

By

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EXPLANATORY NOTES

1. Theoretical Development of Design Procedure. In Part I of this report a general design procedure is developed for the design of high-efficiency traveling-wave amplifiers. The procedure is first developed for helix-type tubes and is then extended to cover traveling-wave amplifiers with other types of r-f structures. The same design curves are used for these dispersive structures with appropriate correction factors.

2. Design Curves. In Part II all of the available design curves useful in the actual design of high-efficiency amplifiers are compiled. Immediately preceding each section of curves there is a list of parameters for which the particular curves have been calculated.

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SECTION A

EFFICIENCY

The efficiency curves are presented for selected values of the parameters C, B, and QC in the indicated ranges.

Parameter	Range
C	0.05 to 0.20
B	0.5 to 1.5
QC	0 to 0.75

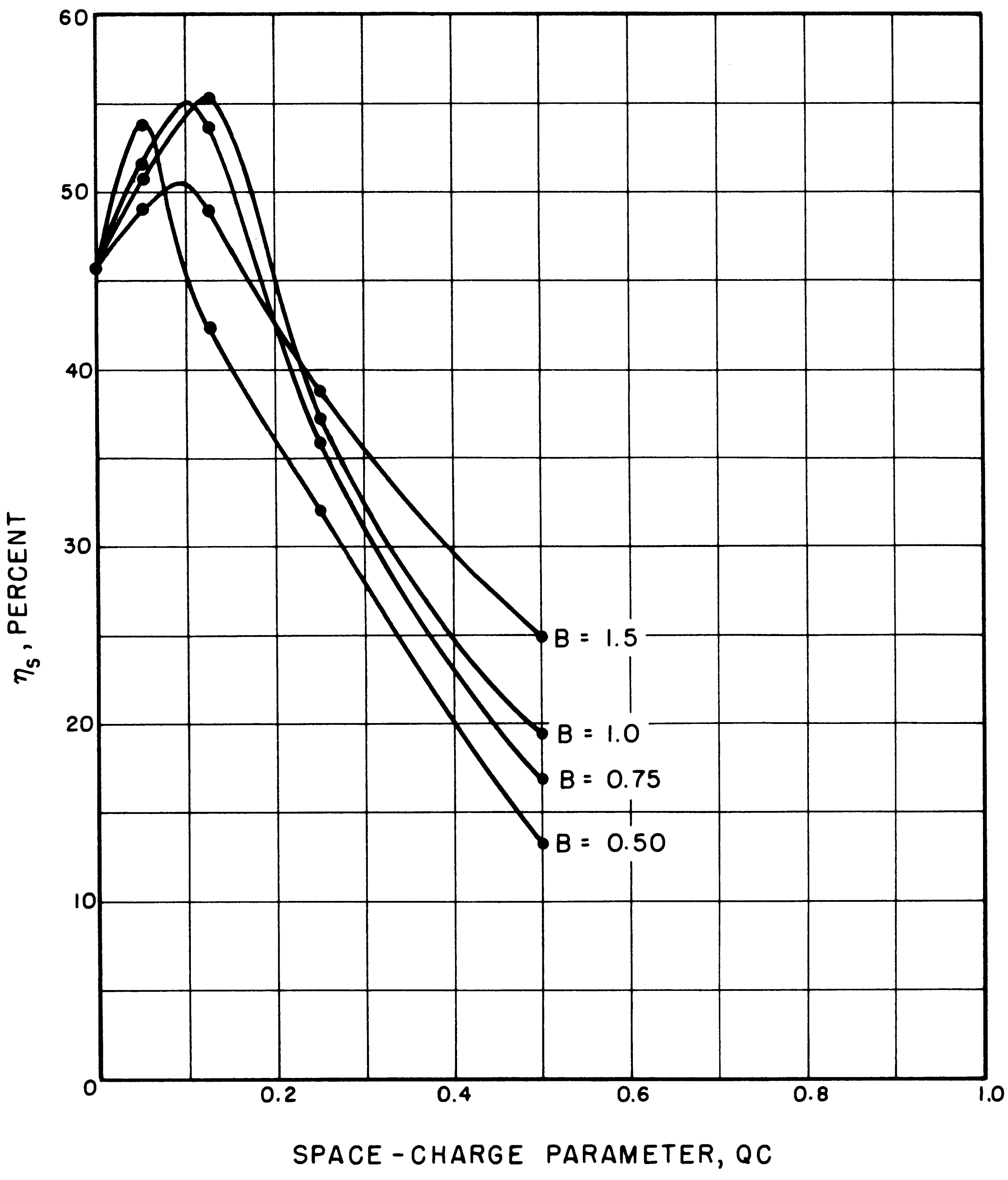


FIG. A.1 SATURATION EFFICIENCY VS. SPACE CHARGE.
b- ADJUSTED FOR MAXIMUM η_s. (C = 0.1, d = 0)

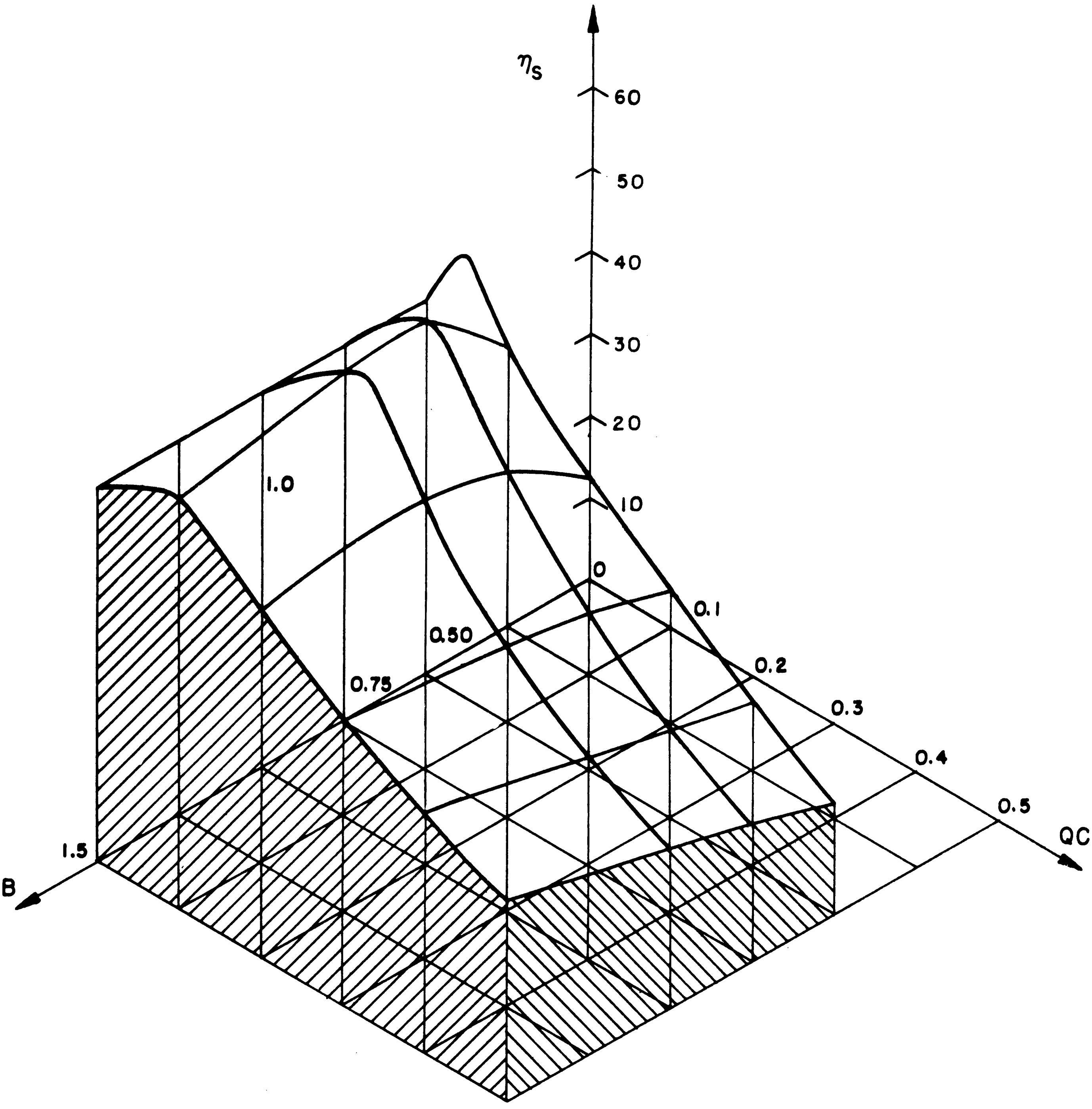


FIG. A.2 SATURATION EFFICIENCY VS. SPACE CHARGE AND BEAM DIAMETER. b - ADJUSTED FOR MAXIMUM η_s.
(C = 0.1, d = 0)

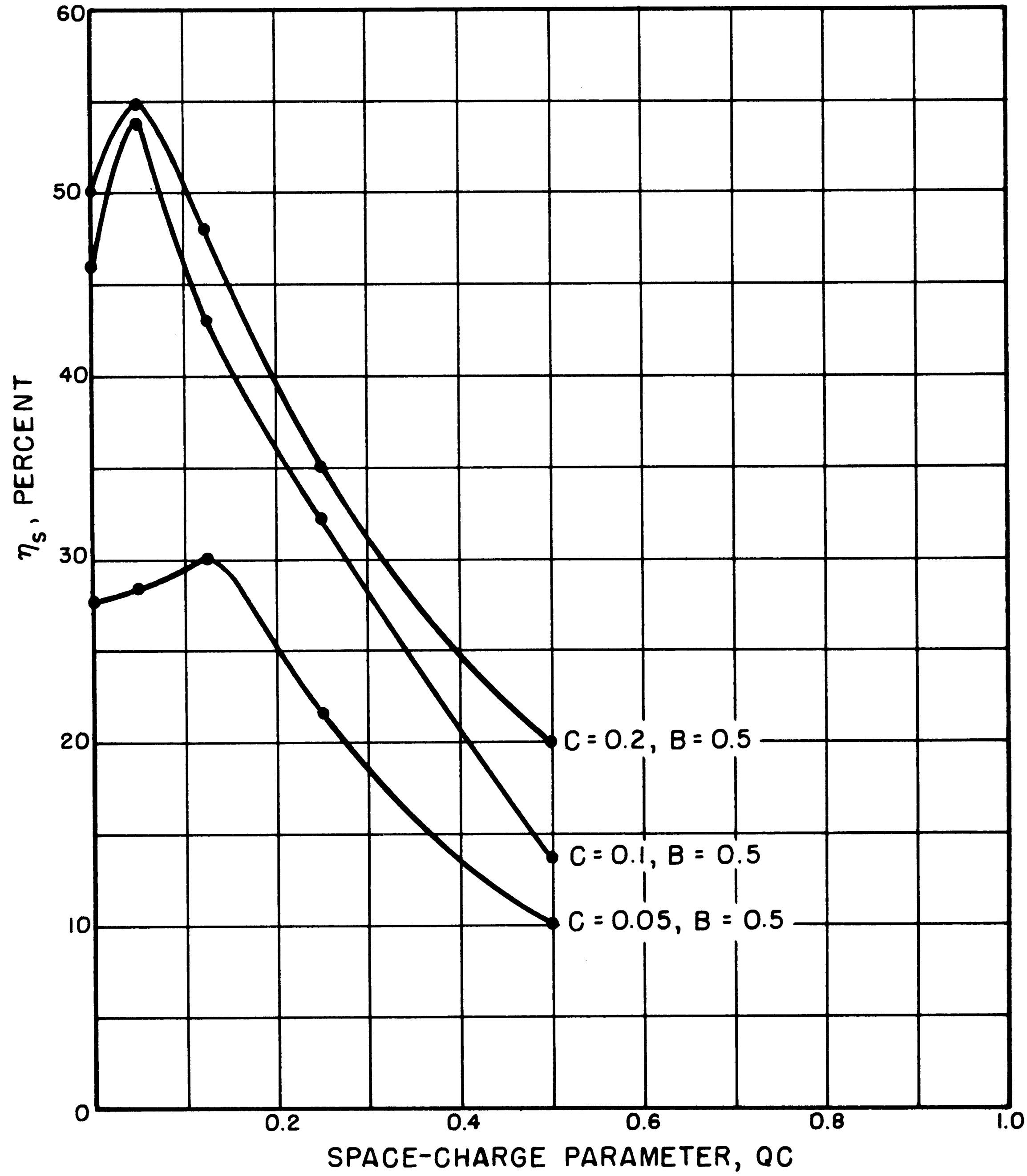


FIG. A.3 SATURATION EFFICIENCY VS. SPACE-CHARGE PARAMETER. b - ADJUSTED FOR MAXIMUM η_s. (B = 0.5, d = 0)

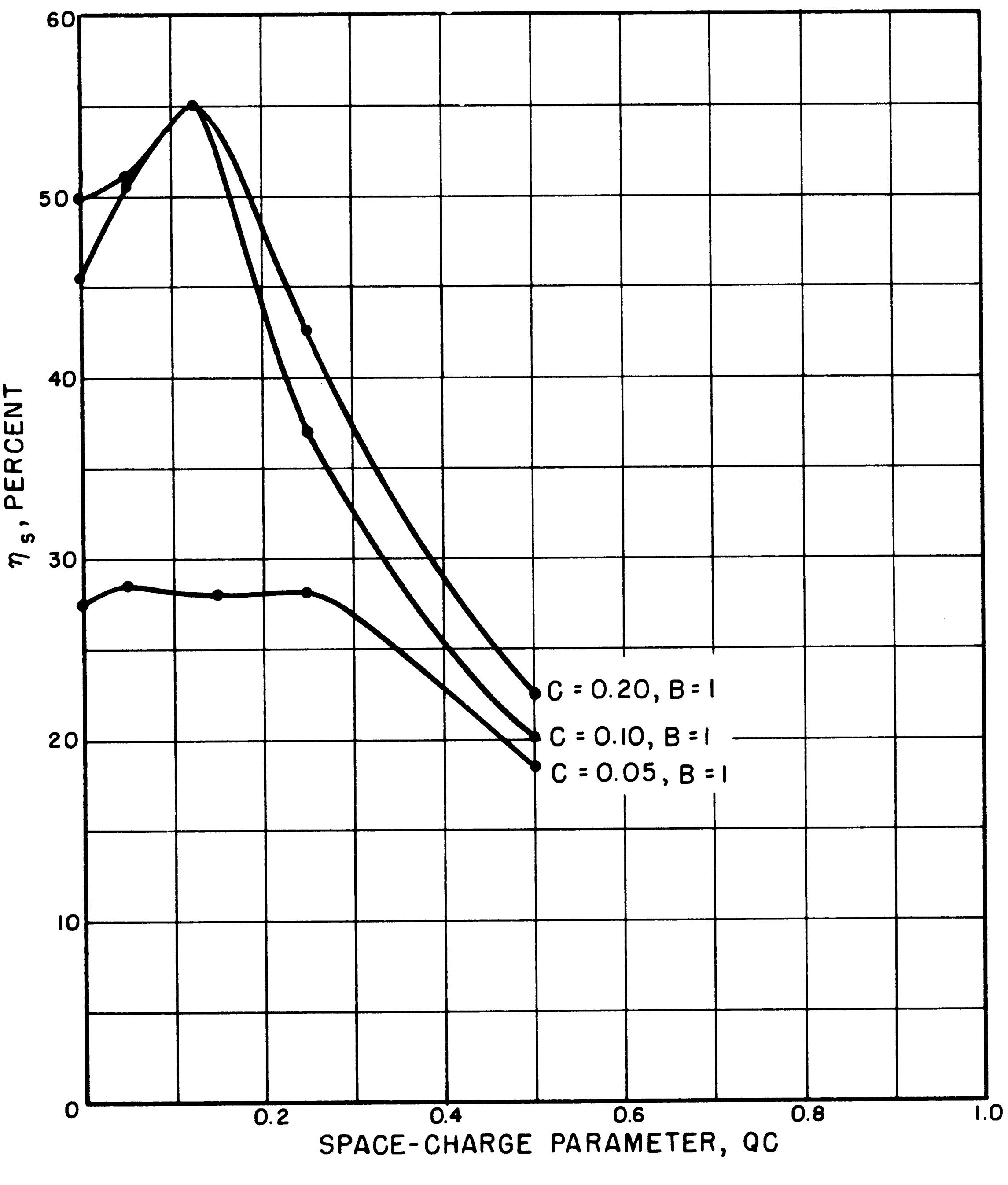


FIG. A.4 SATURATION EFFICIENCY VS. SPACE-CHARGE PARAMETER. b - ADJUSTED FOR MAXIMUM η_s. (B = 1, d = 0)

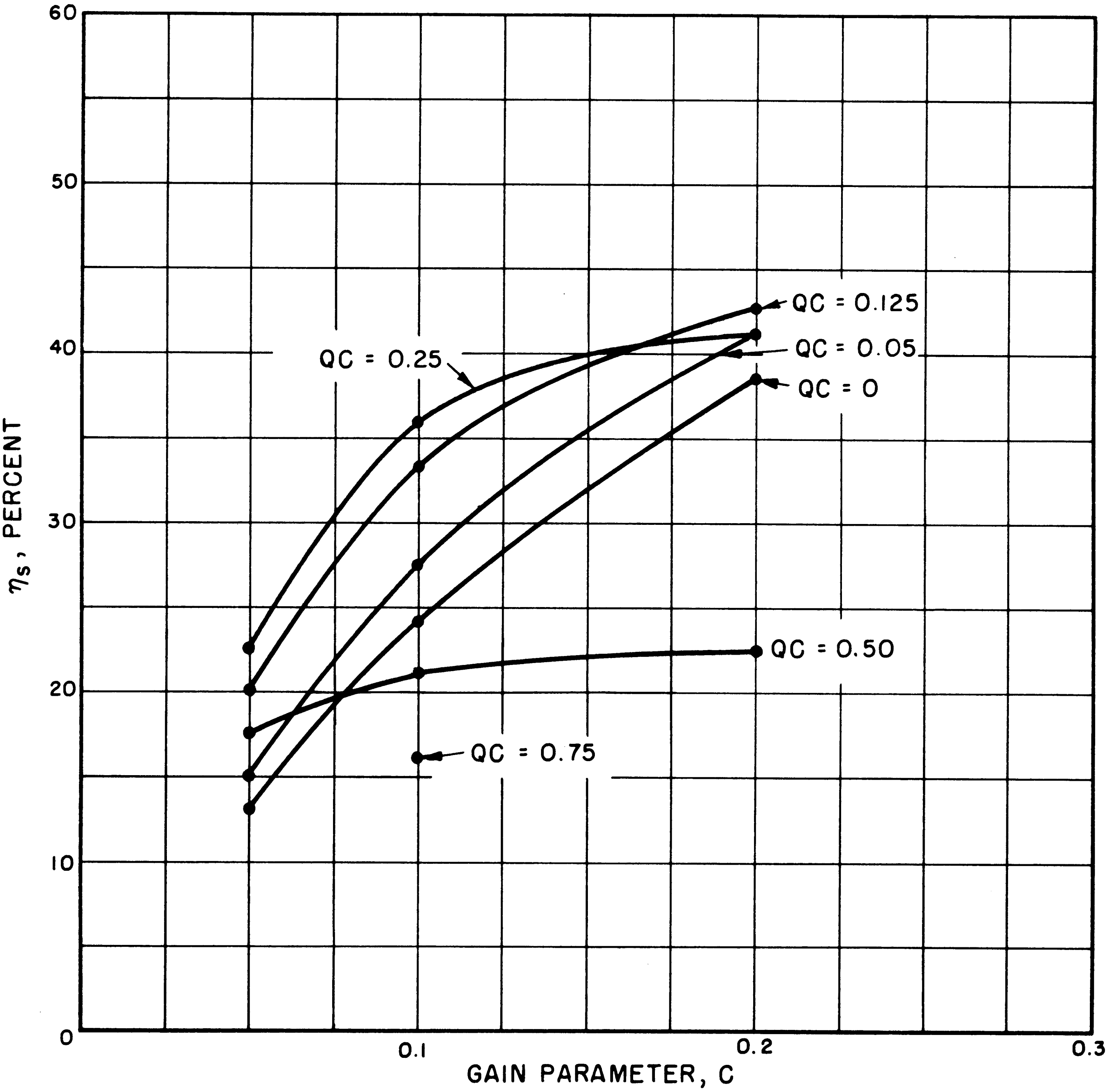


FIG. A.5 SATURATION EFFICIENCY VS. GAIN PARAMETER.
b - ADJUSTED FOR MAXIMUM x_1. (B = 1.0, d = 0)

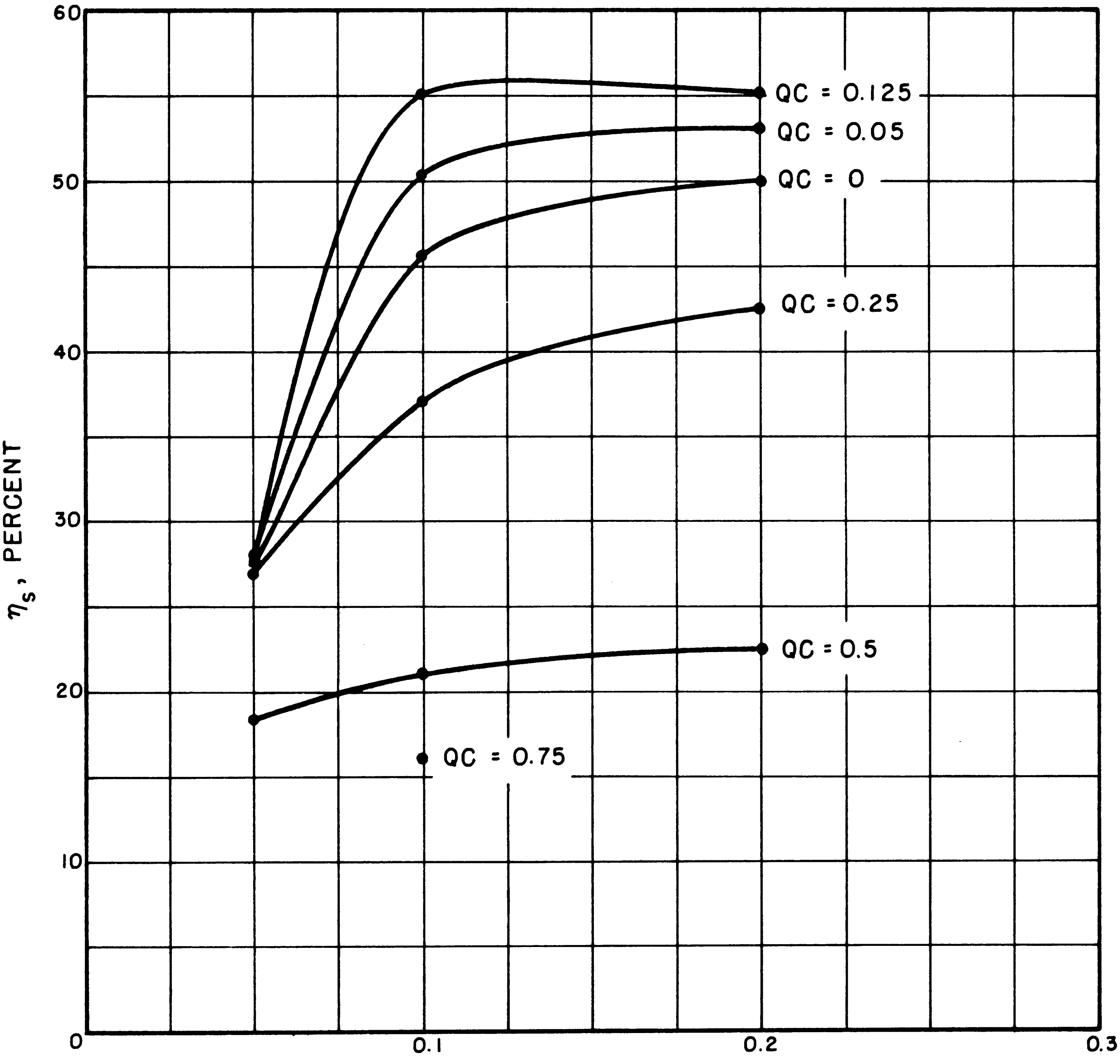


FIG. A.6 MAXIMUM SATURATION EFFICIENCY VS. GAIN PARAMETER.
b - ADJUSTED FOR MAXIMUM η_s. (B = 1.0, d = 0)

SECTION B

IMPEDANCE REDUCTION FACTOR

The impedance reduction factor curves are arranged according to ascending values of the dielectric loading factor.

Parameter	Range
DLF	70 to 100

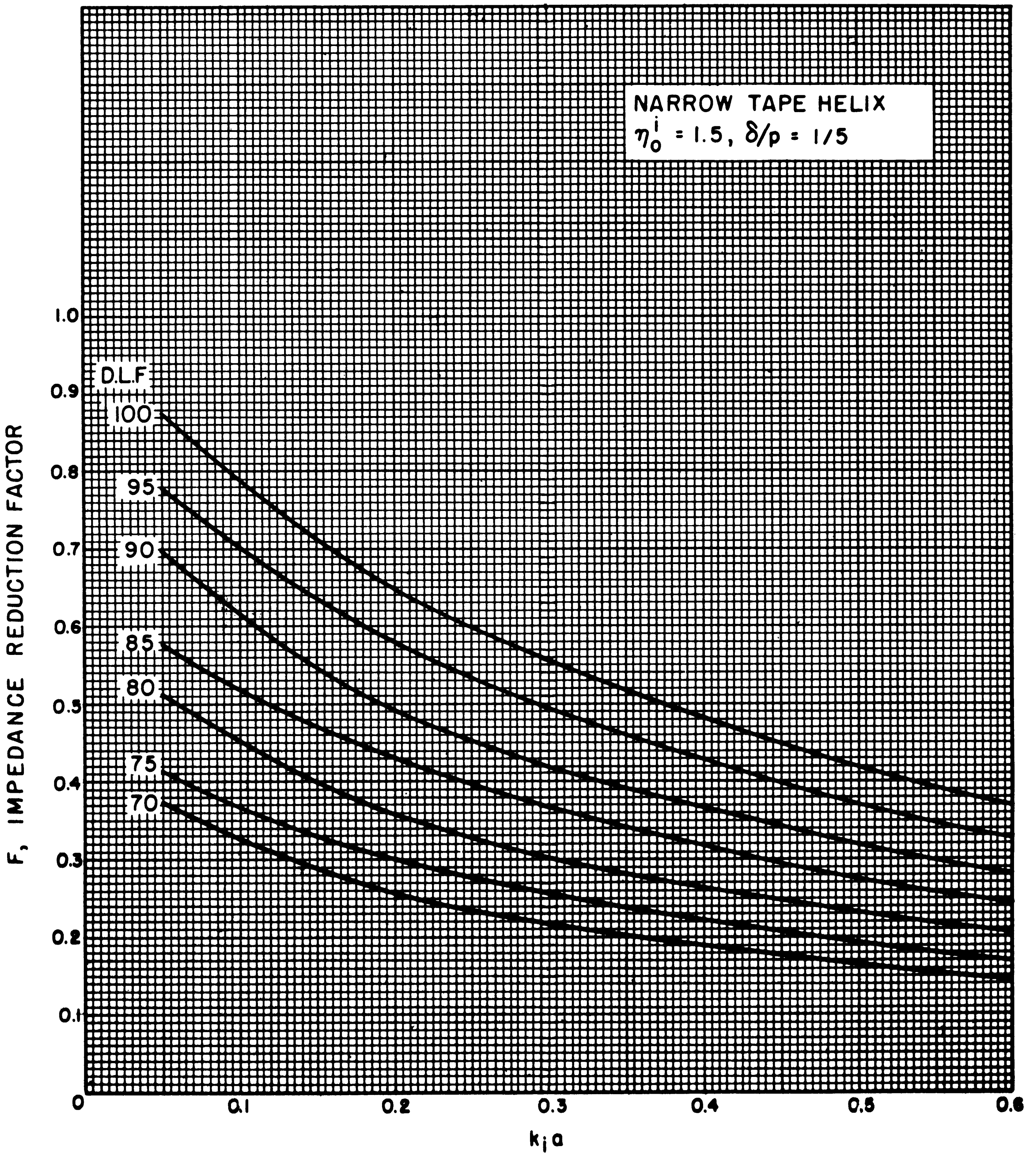


FIG. B.1 IMPEDANCE REDUCTION FACTOR $F = F_1 F_2$ FOR A TAPE HELIX. (EXTENSION OF TIEN'S CALCULATIONS.)

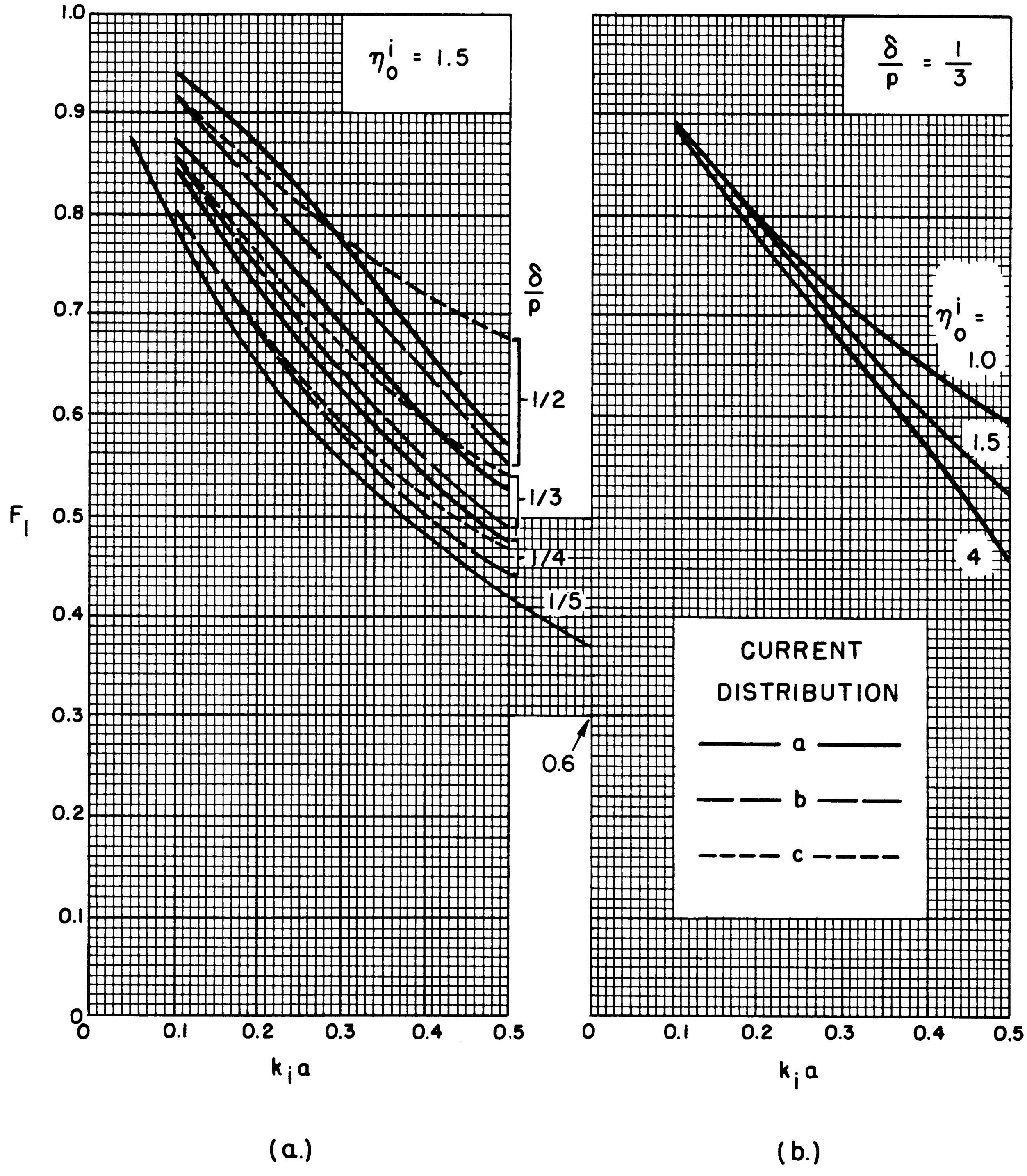


FIG. B.2 (a.) IMPEDANCE REDUCTION FACTOR F_1 FOR DIFFERENT CURRENT DISTRIBUTIONS.

(b.) FACTOR F_1 COMPUTED USING CURRENT DISTRIBUTION —a— FOR η_0^i = 1, 1.5, 4.

(COURTESY OF P.K. TIEN)

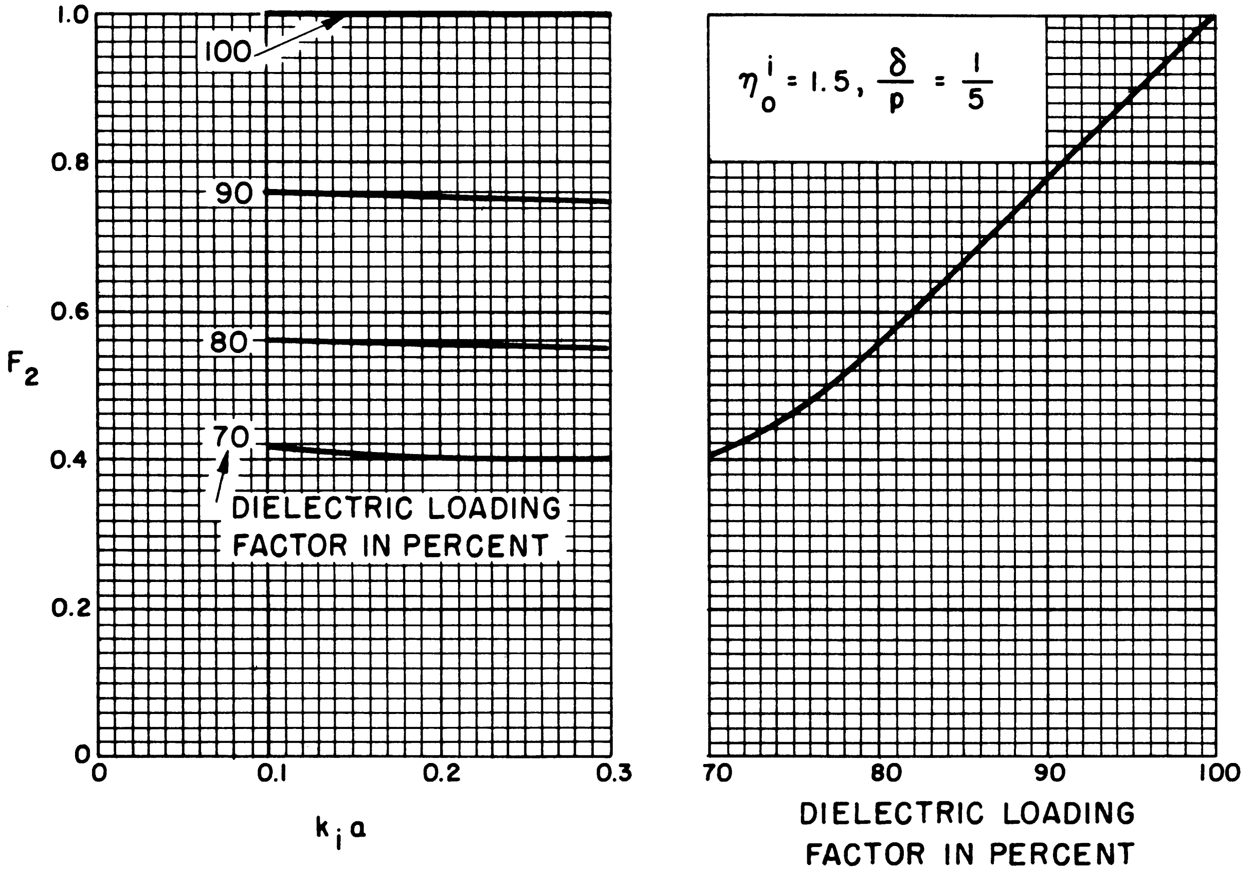


FIG. B.3 IMPEDANCE REDUCTION FACTOR F_2 FOR A TAPE HELIX.

(COURTESY OF P.K. TIEN)

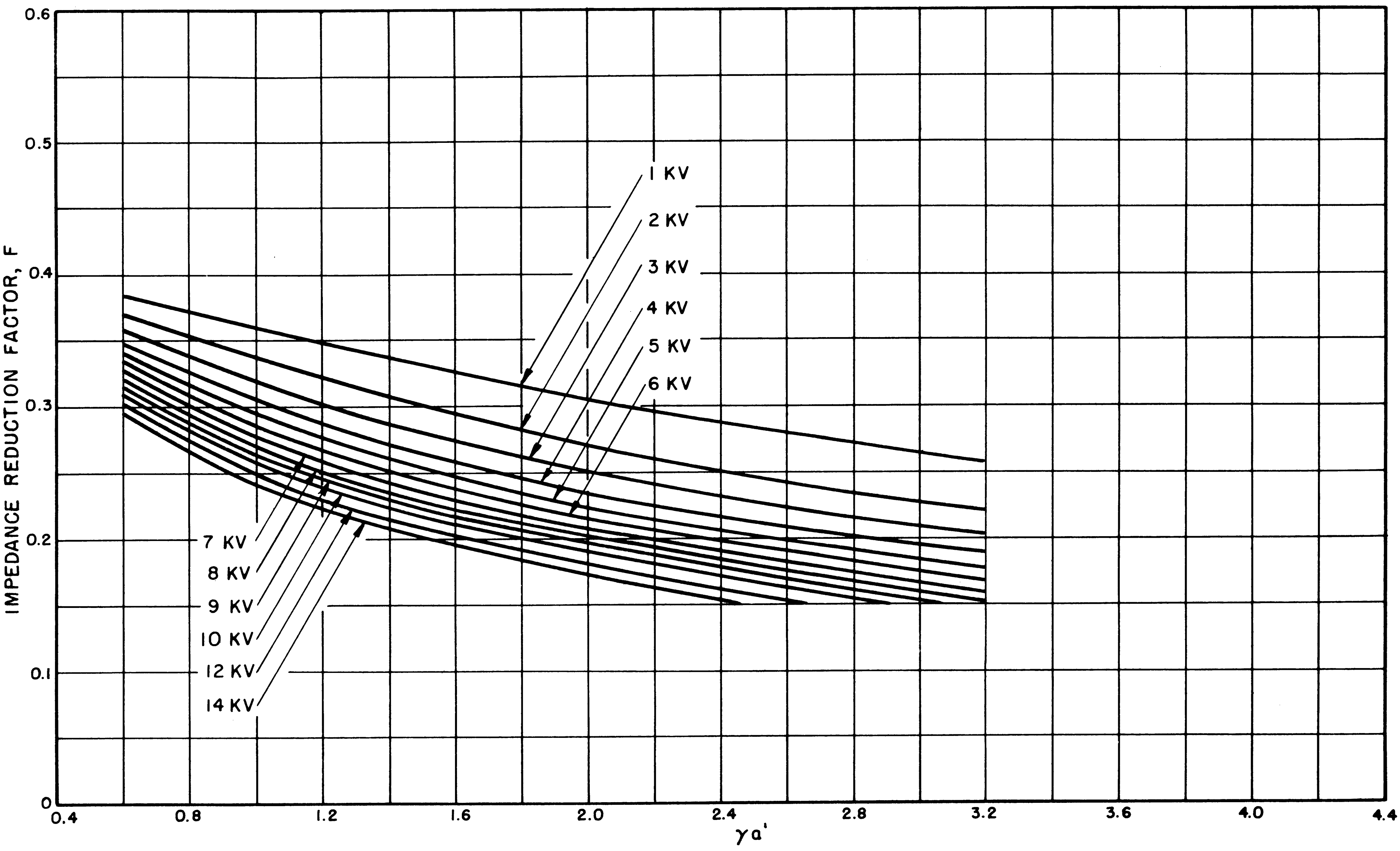


FIG. B.4 HELIX IMPEDANCE REDUCTION FACTOR FOR VARIOUS VALUES OF BEAM VOLTAGE. (DLF = 70 %)

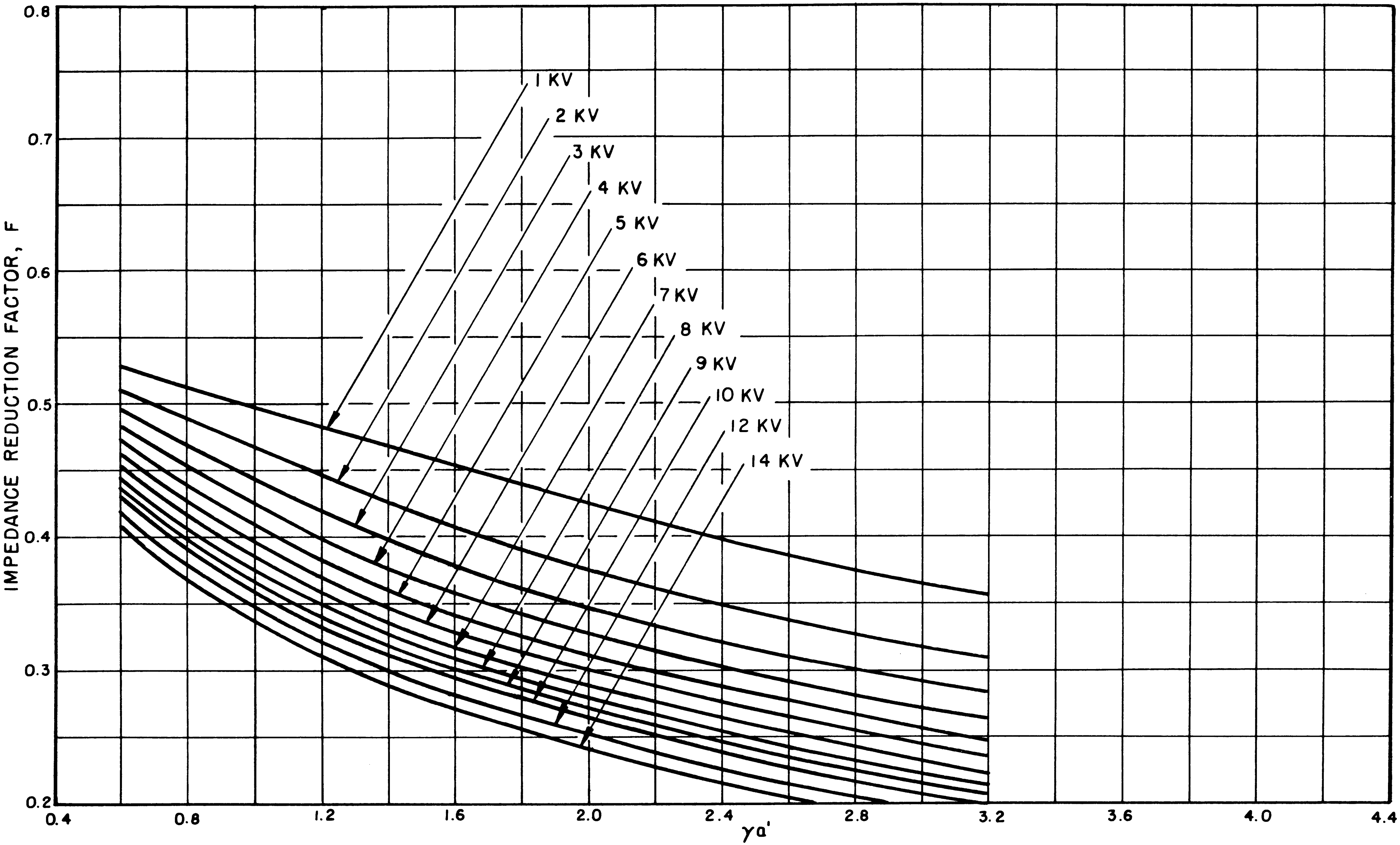


FIG. B.5 HELIX IMPEDANCE REDUCTION FACTOR FOR VARIOUS VALUES OF BEAM VOLTAGE. (DLF = 80 %)

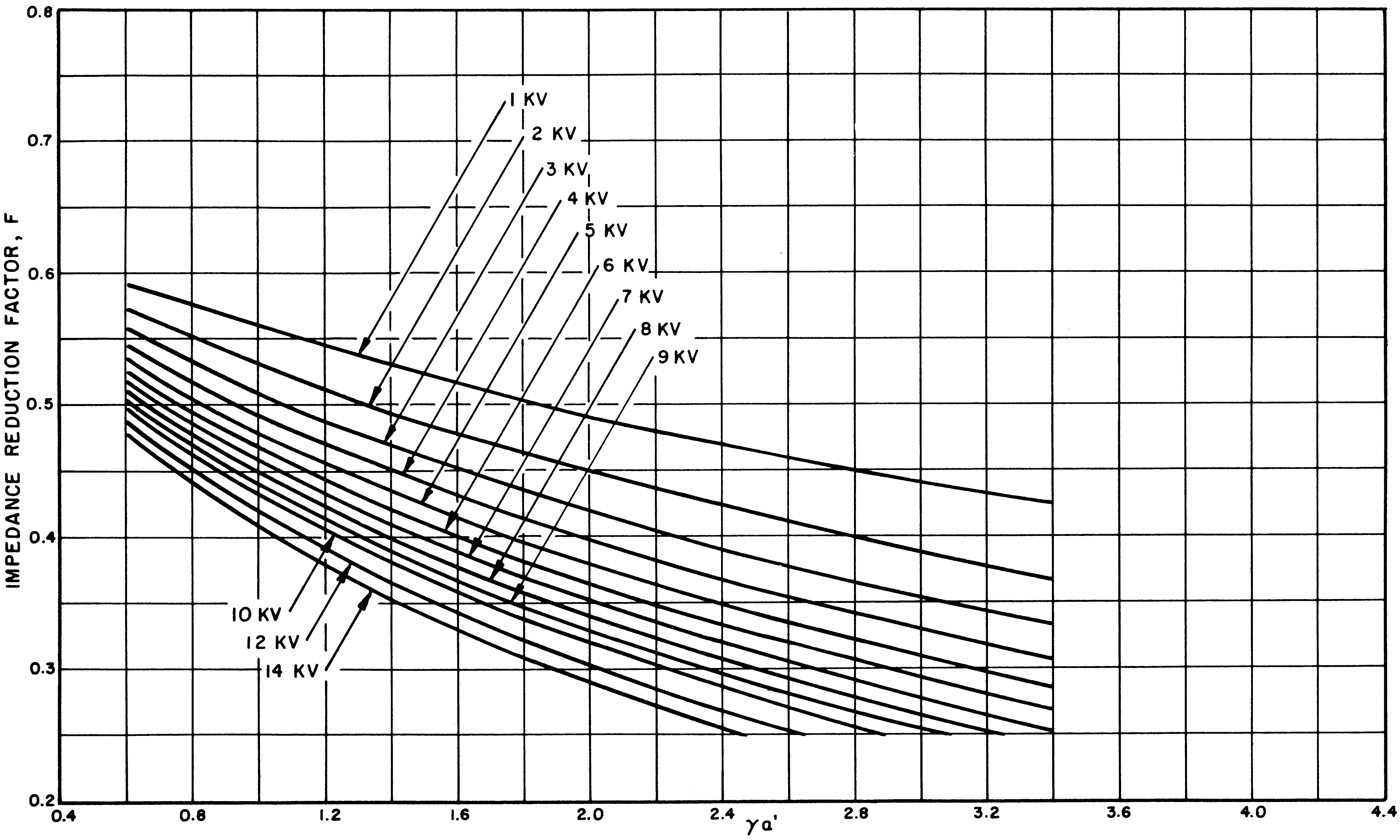


FIG. B.6 HELIX IMPEDANCE REDUCTION FACTOR FOR VARIOUS VALUES OF BEAM VOLTAGE. (DLF = 85%)

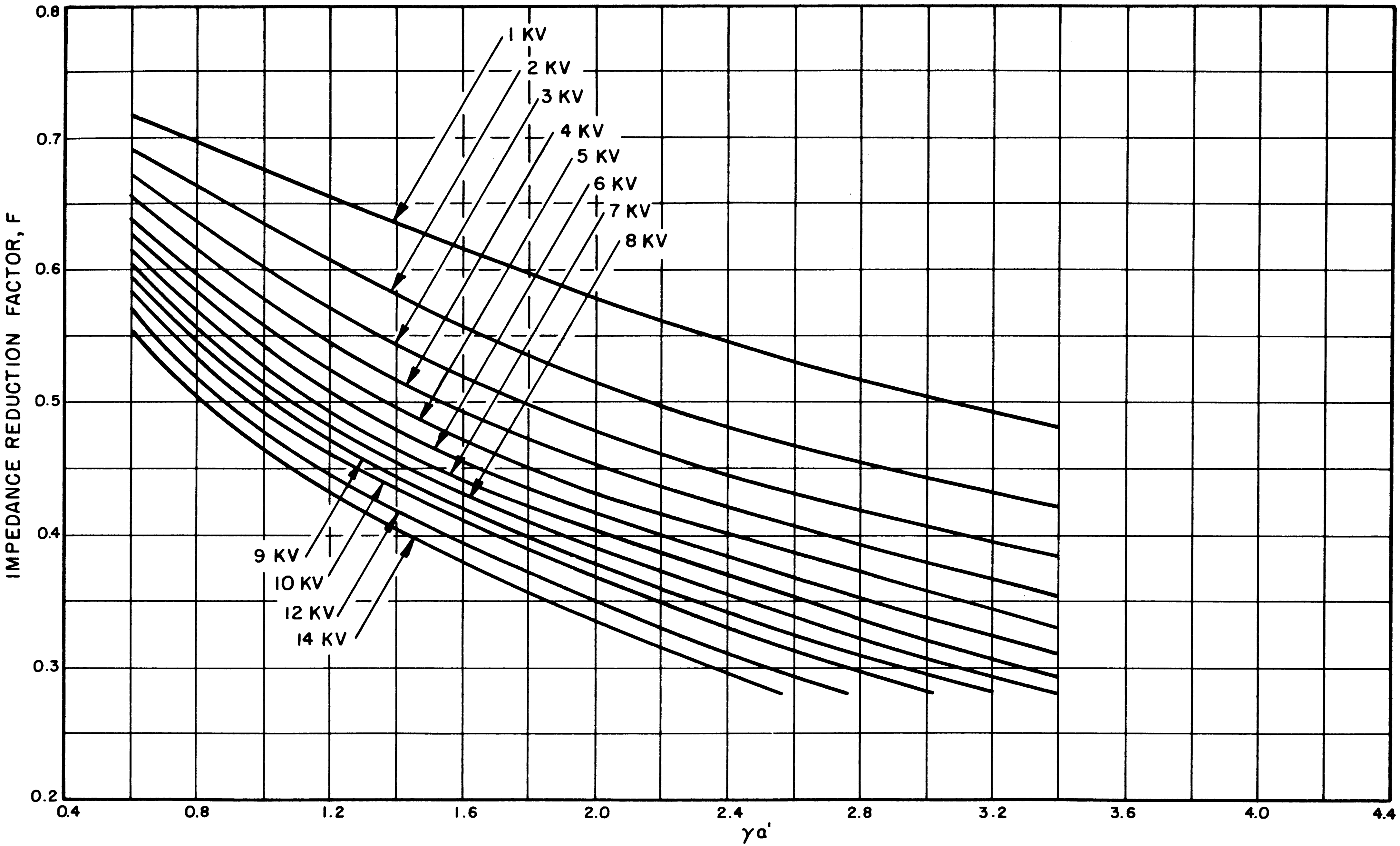


FIG. B.7 HELIX IMPEDANCE REDUCTION FACTOR F FOR VARIOUS VALUES OF BEAM VOLTAGE.
(DLF = 90 %)

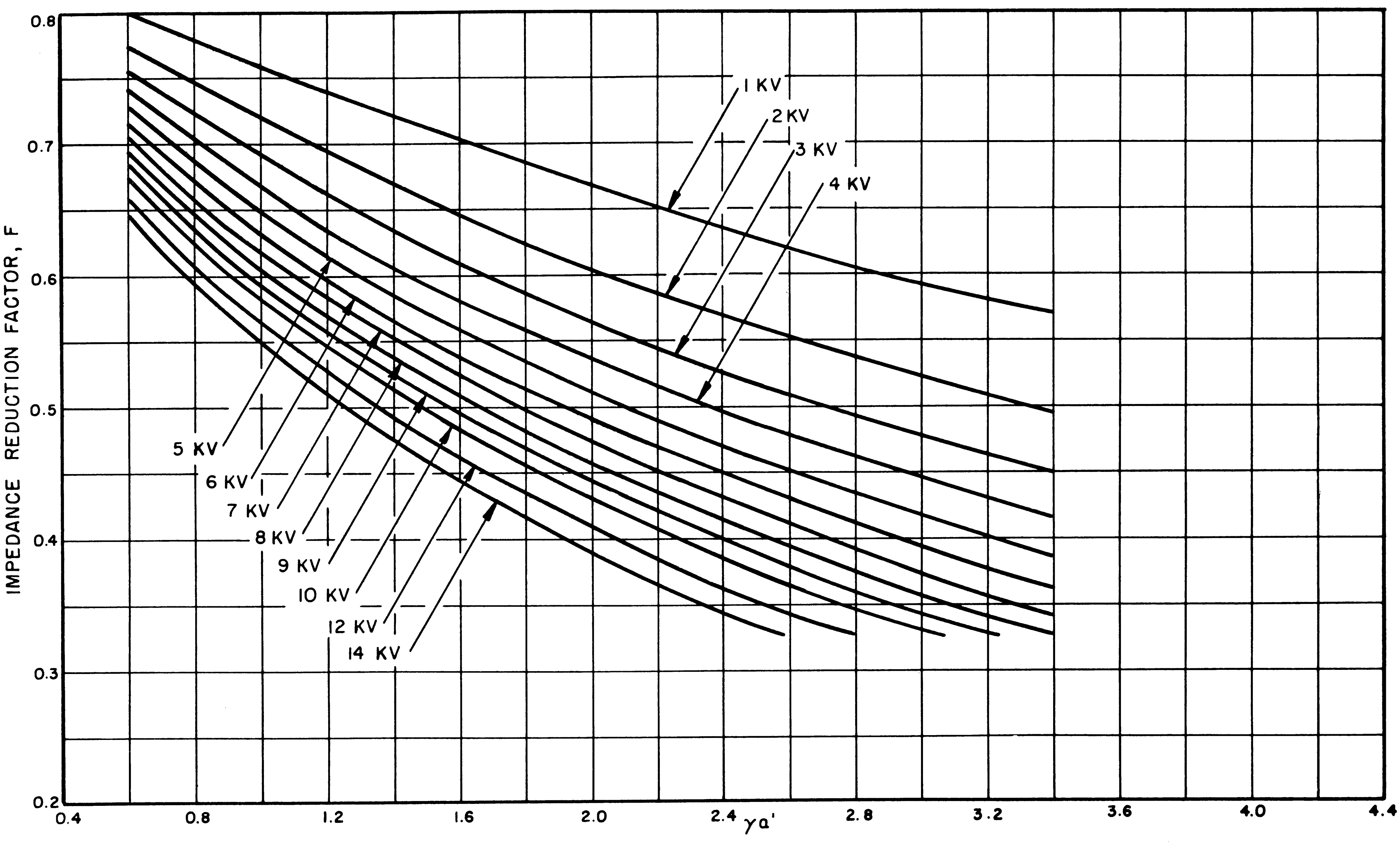


FIG. B.8 HELIX IMPEDANCE REDUCTION FACTOR F FOR VARIOUS VALUES OF BEAM VOLTAGE. (DLF = 95%)

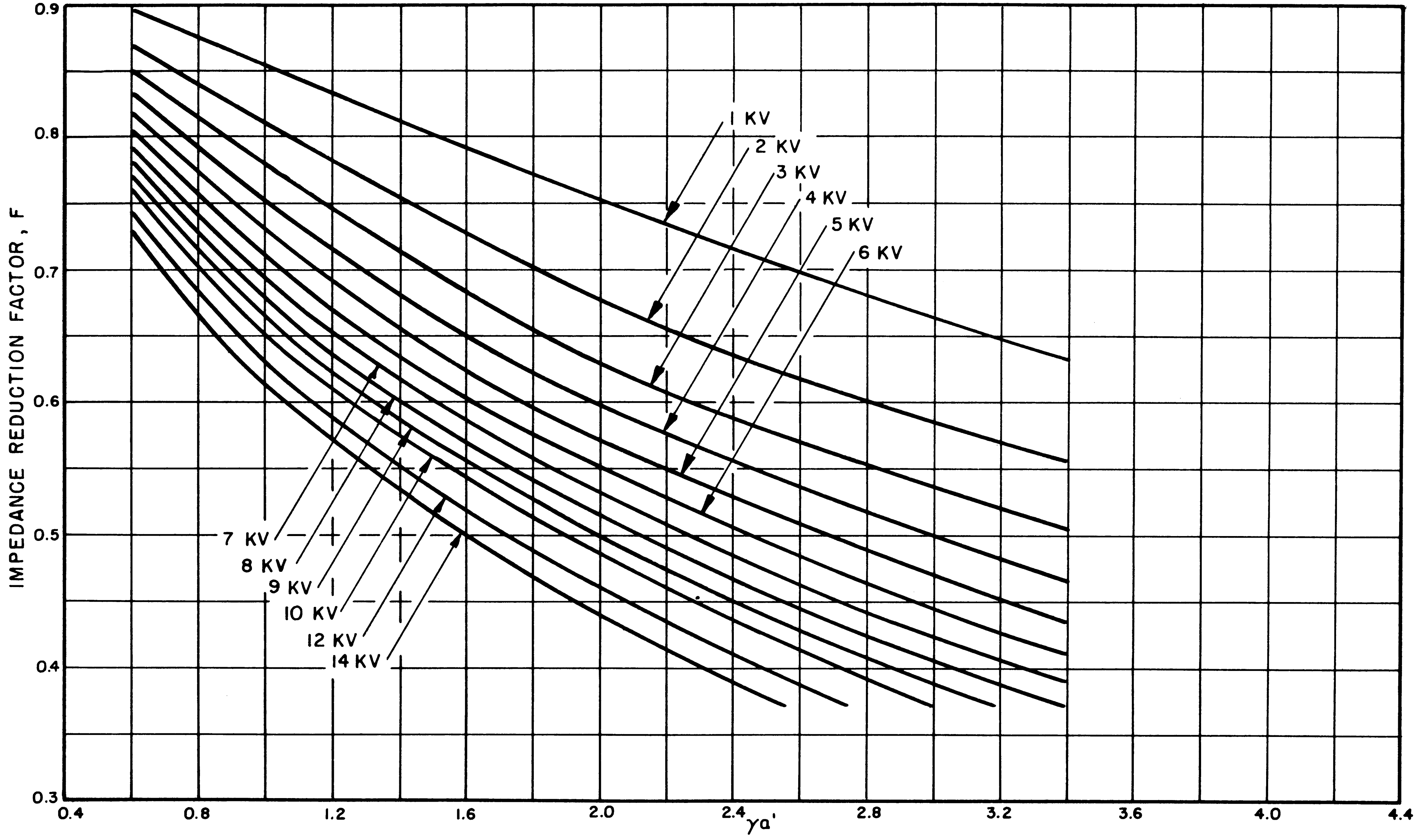


FIG. B.9 HELIX IMPEDANCE REDUCTION FACTOR F FOR VARIOUS VALUES OF BEAM VOLTAGE. (DLF=100%)

SECTION C

SPACE CHARGE vs. STREAM DIAMETER

The curves of the space-charge parameter vs. the stream diameter are arranged according to increasing values of the parameters V_o, a'/b' and DLF successively.

Parameter	Range
V_o	1 to 14 kv
a'/b'	1.2 to 2.0
DLF	70 to 100

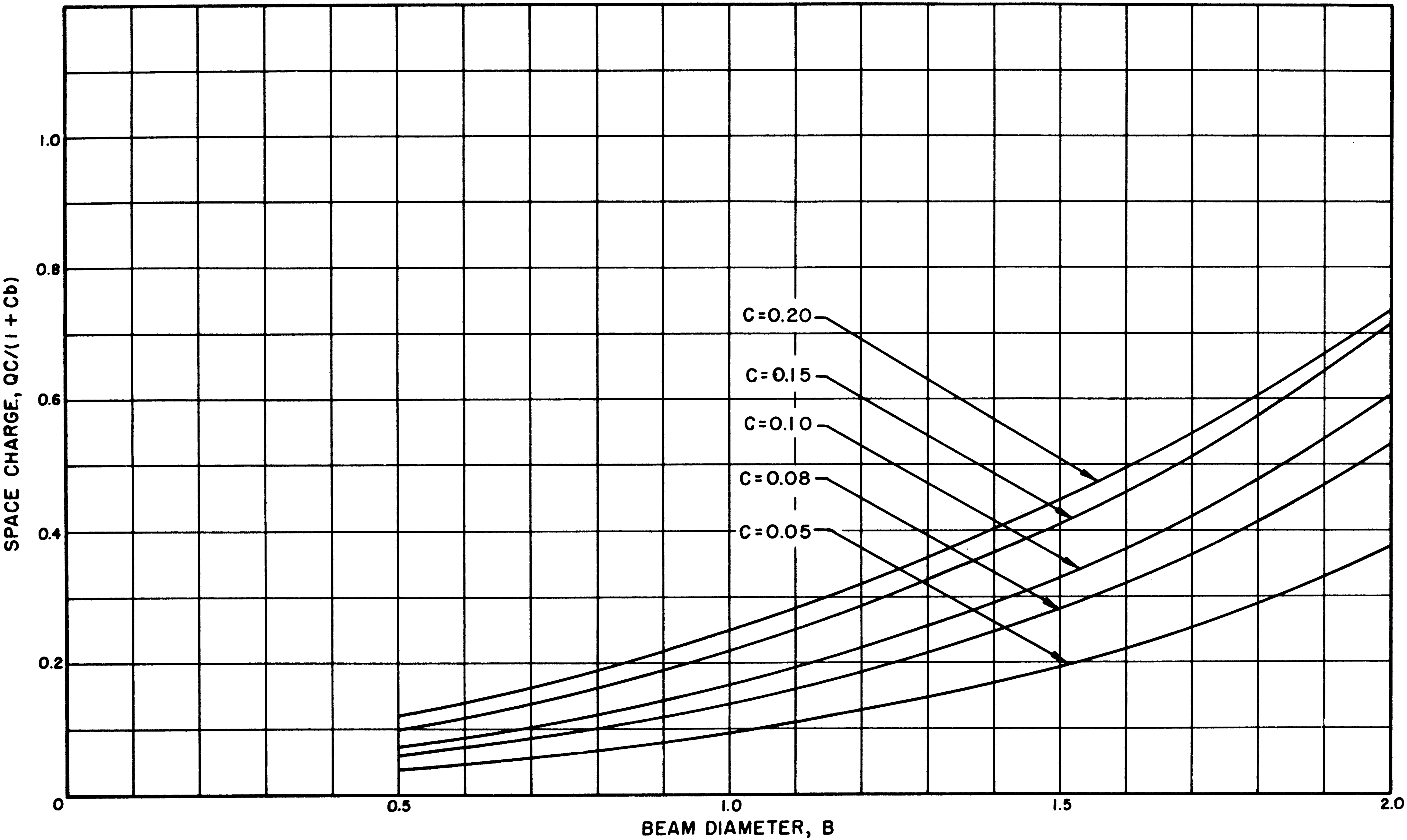


FIG. C.1 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.2$, $V_0 = 1$ KV, DLF = 70%)

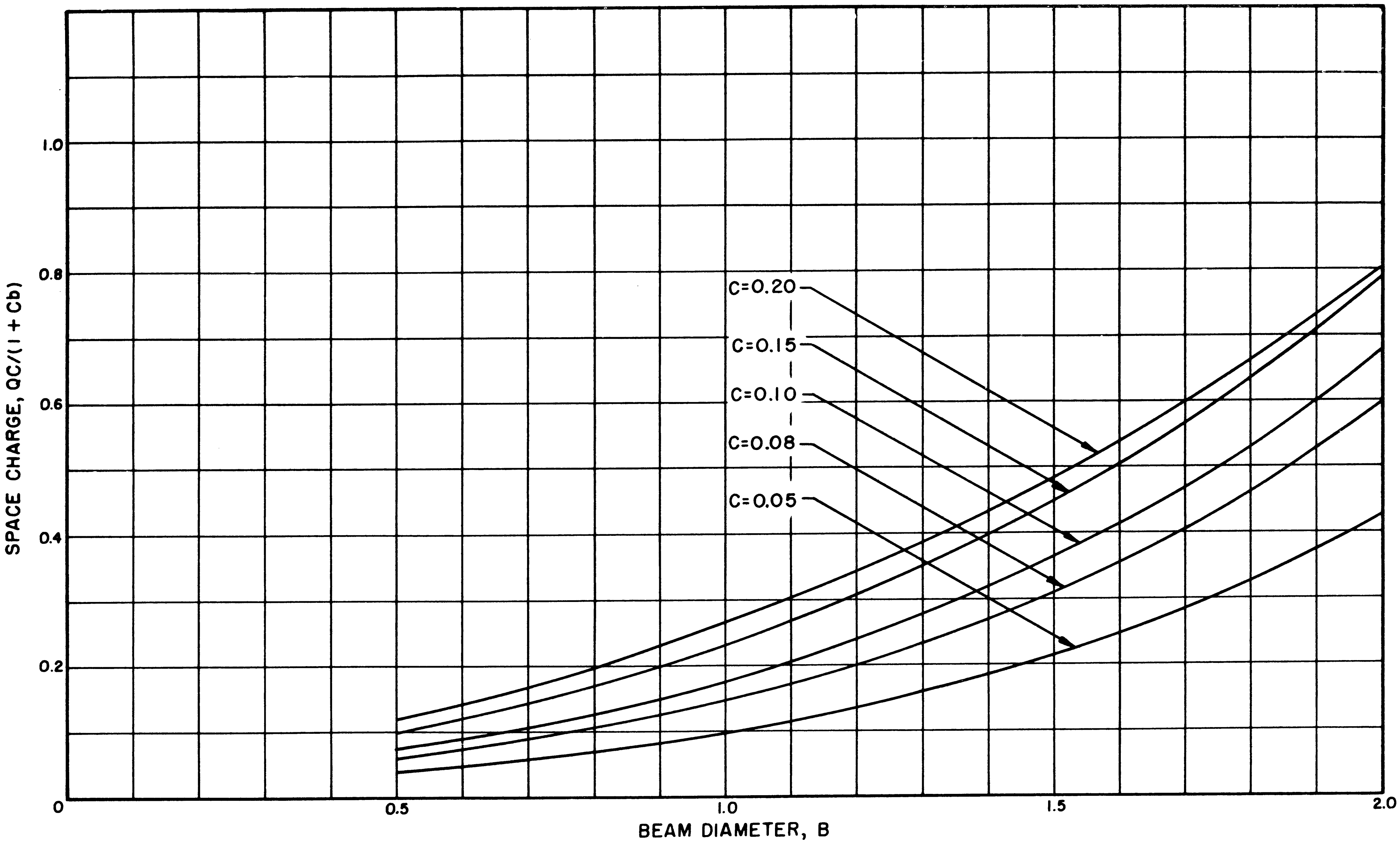


FIG. C.2 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.2$, $V_0 = 2$ KV, DLF = 70%)

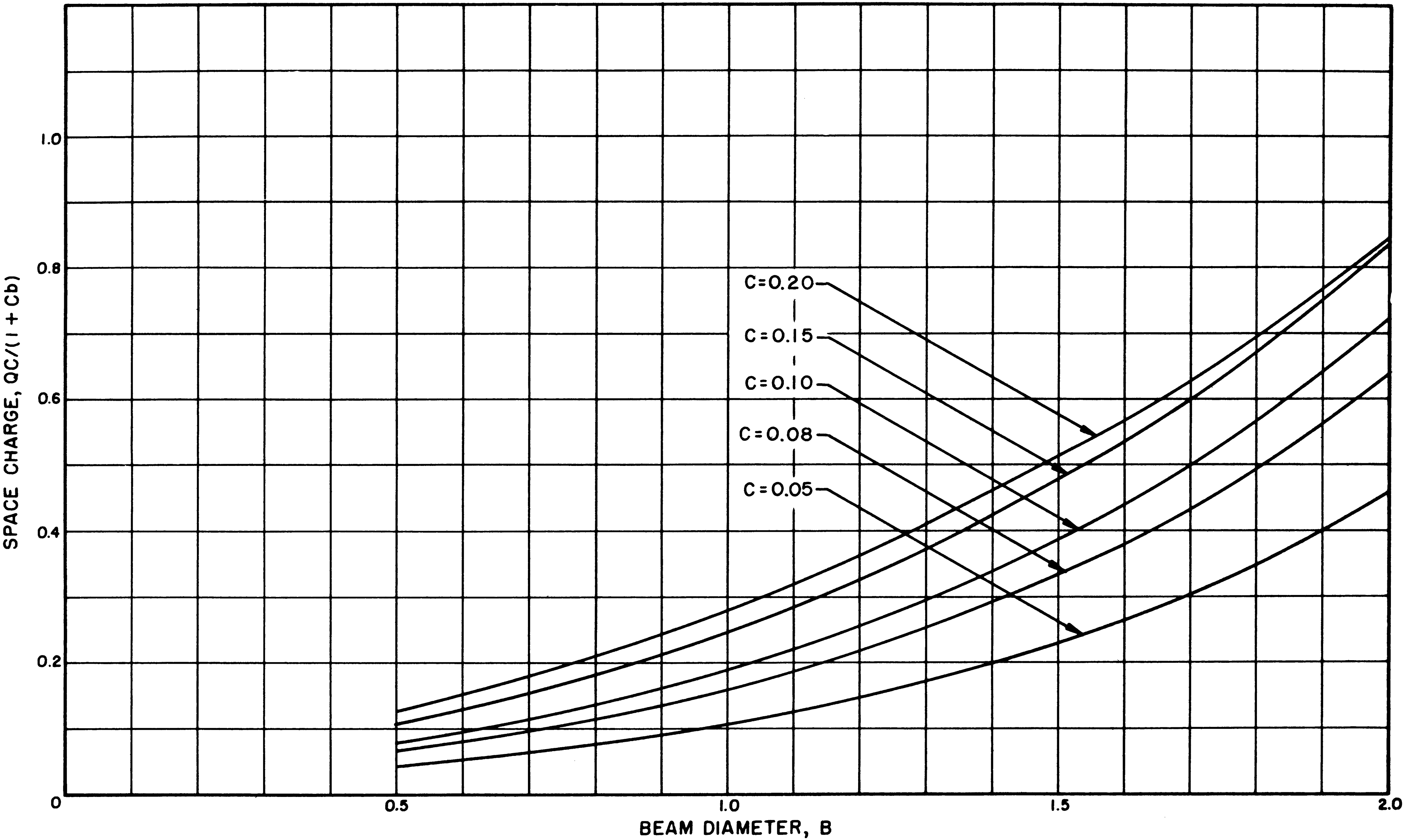


FIG. C.3 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.2$, $V_0 = 3$ KV, DLF = 70%)

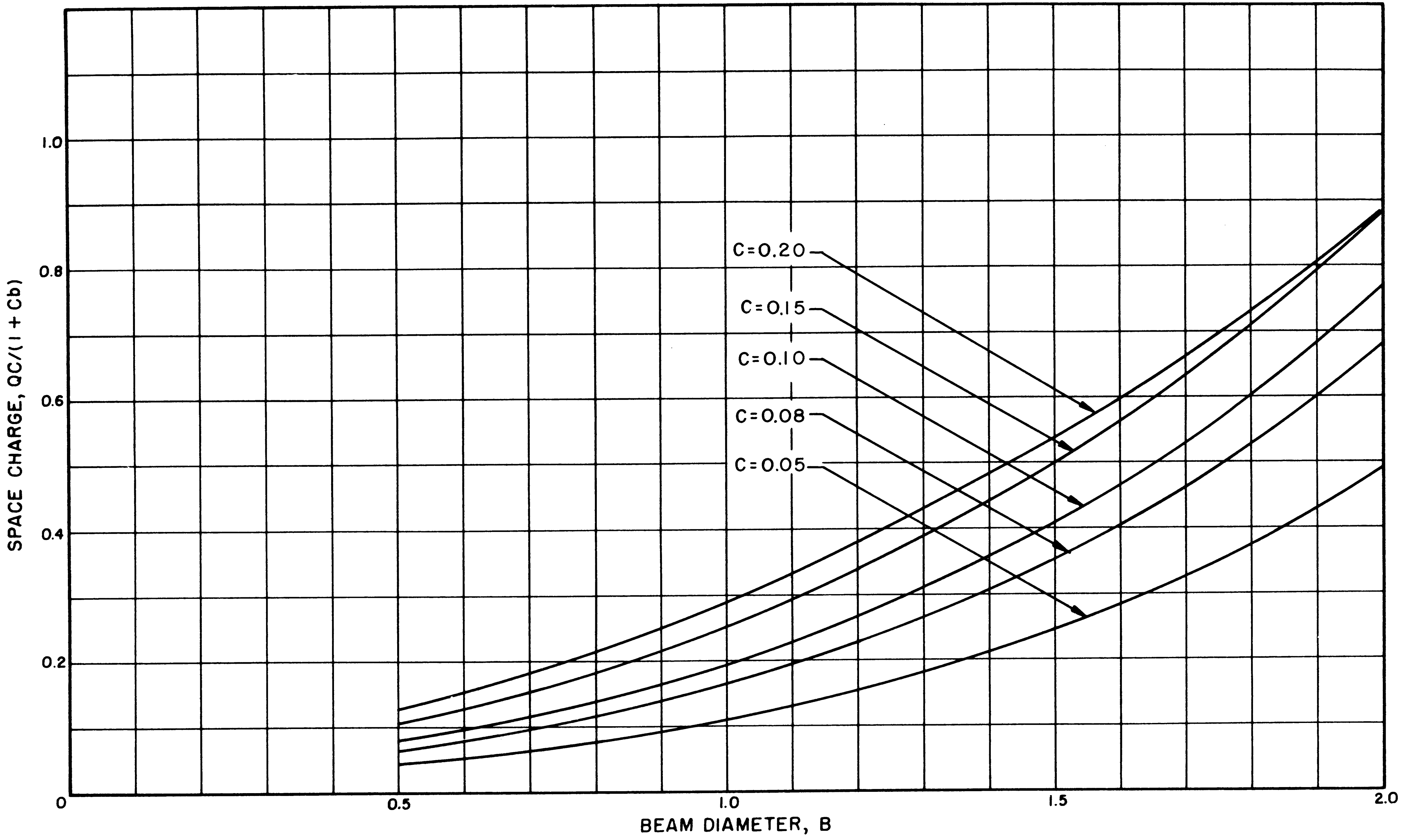


FIG. C.4 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.2$, $V_0 = 4$ KV, DLF = 70%)

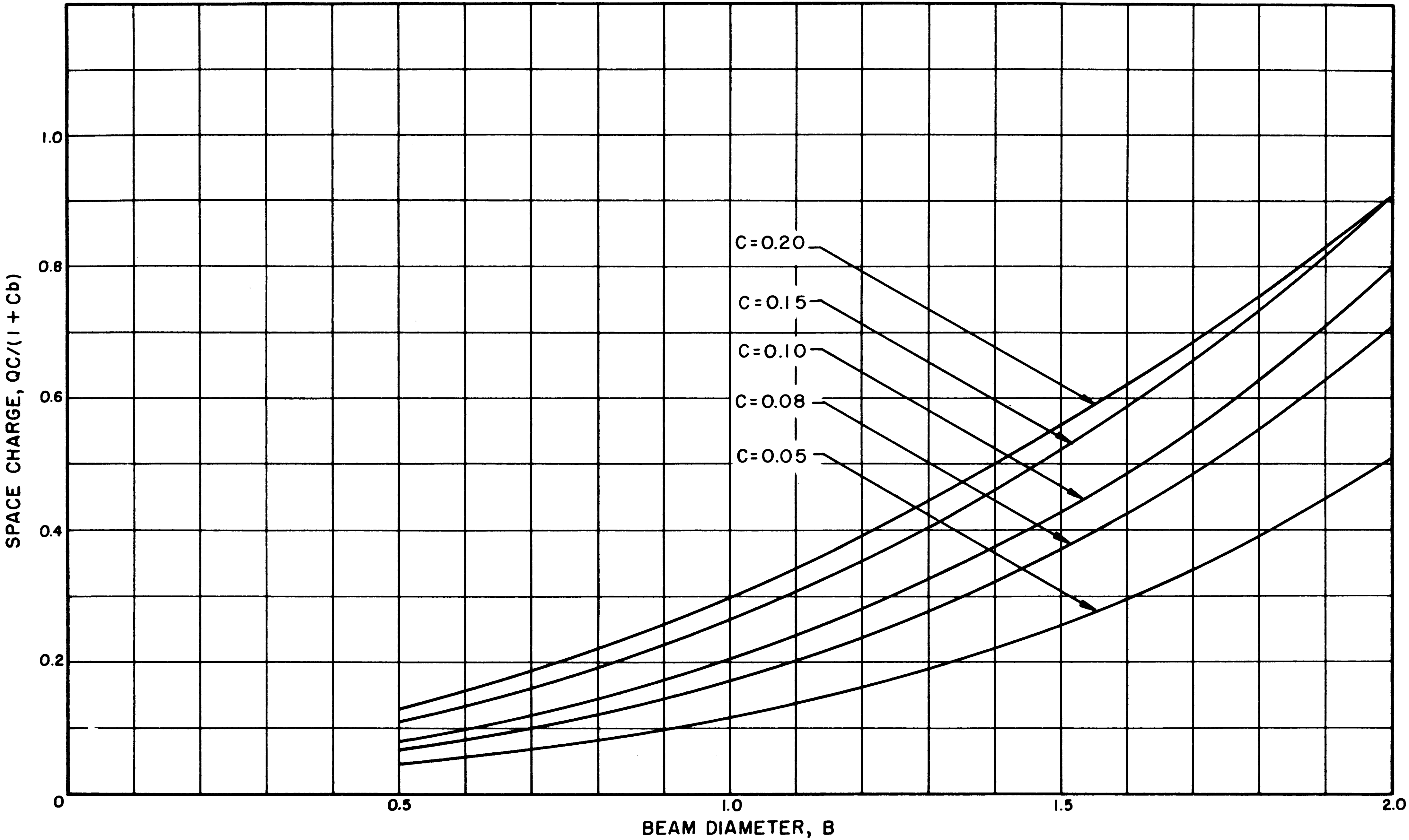


FIG. C.5 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER. ($a'/b' = 1.2$, $V_0 = 5$ KV, DLF = 70 %)

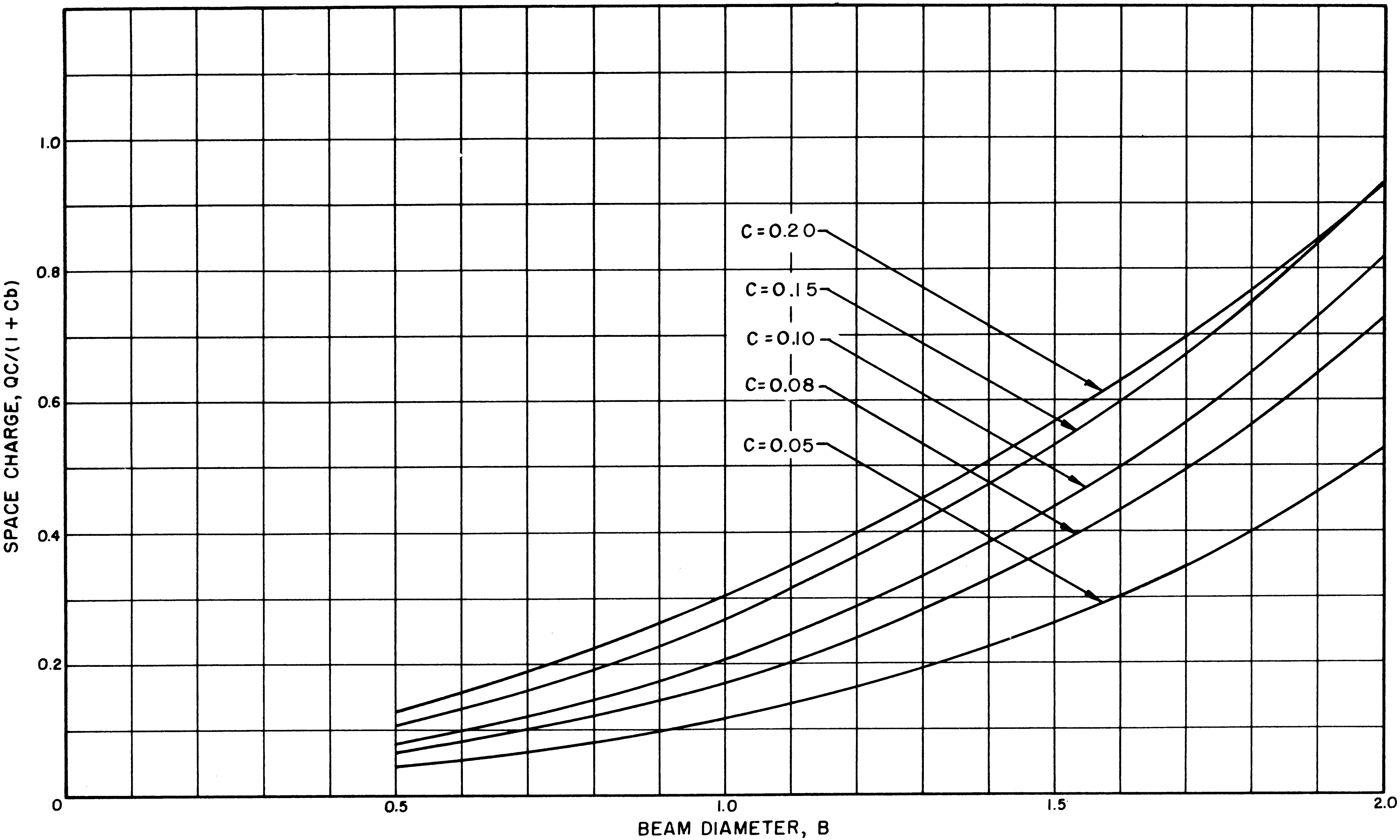


FIG. C.6 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.2$, $V_0 = 6$ KV, DLF = 70%)

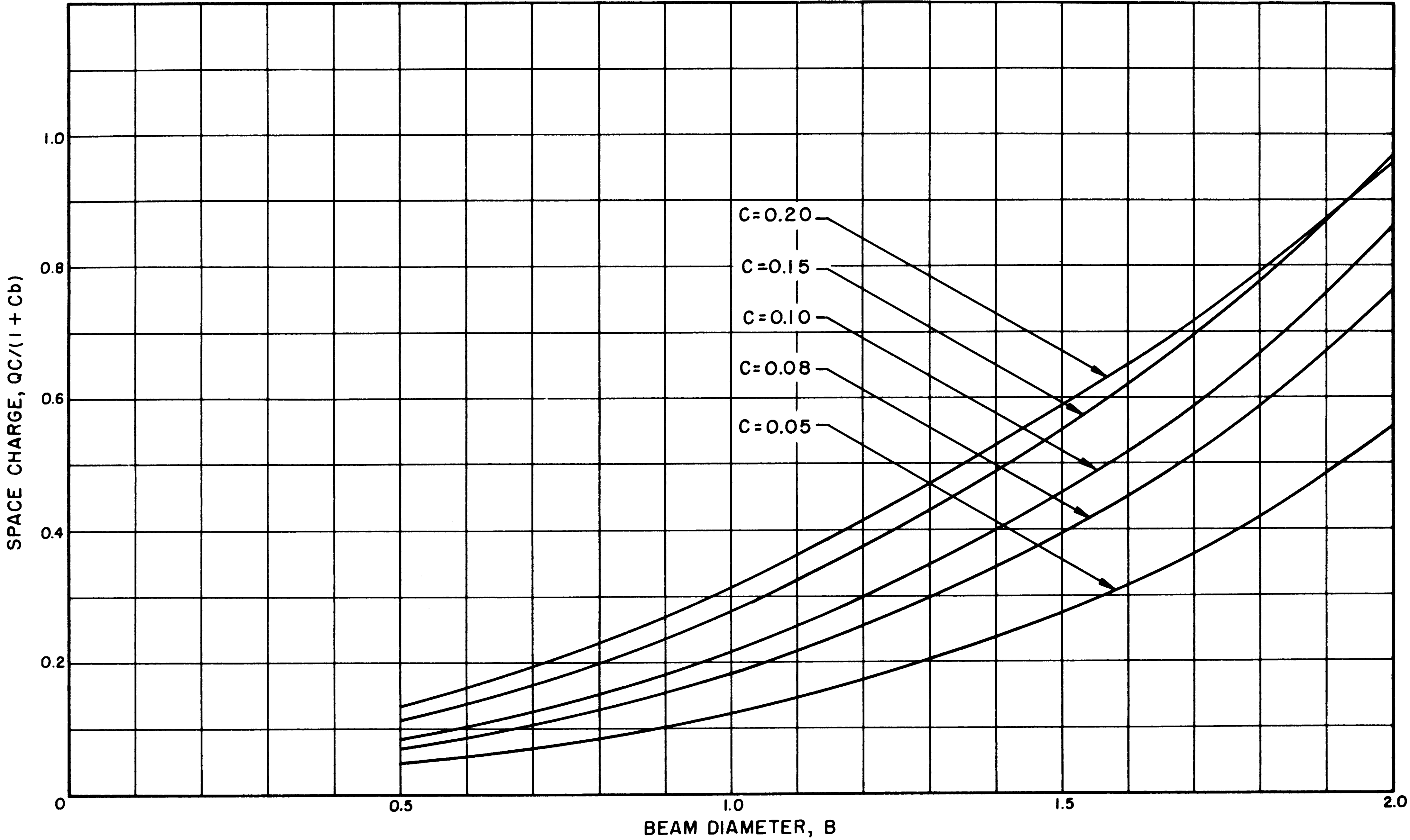


FIG. C.7 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER. ($a'/b' = 1.2$, V_0 = 7 KV, DLF = 70%)

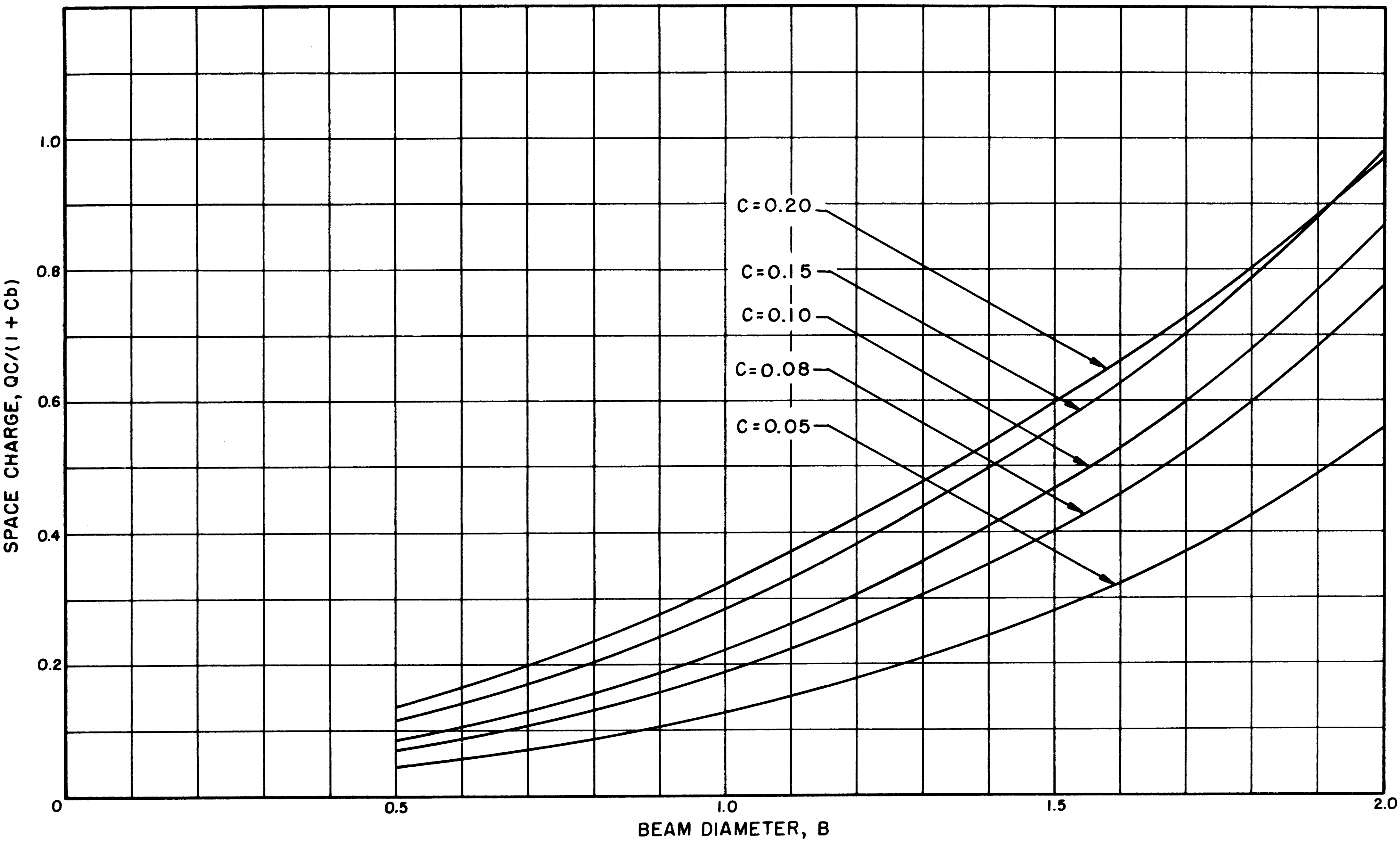


FIG. C.8 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.2$, $V_0 = 8$ KV, DLF = 70%)

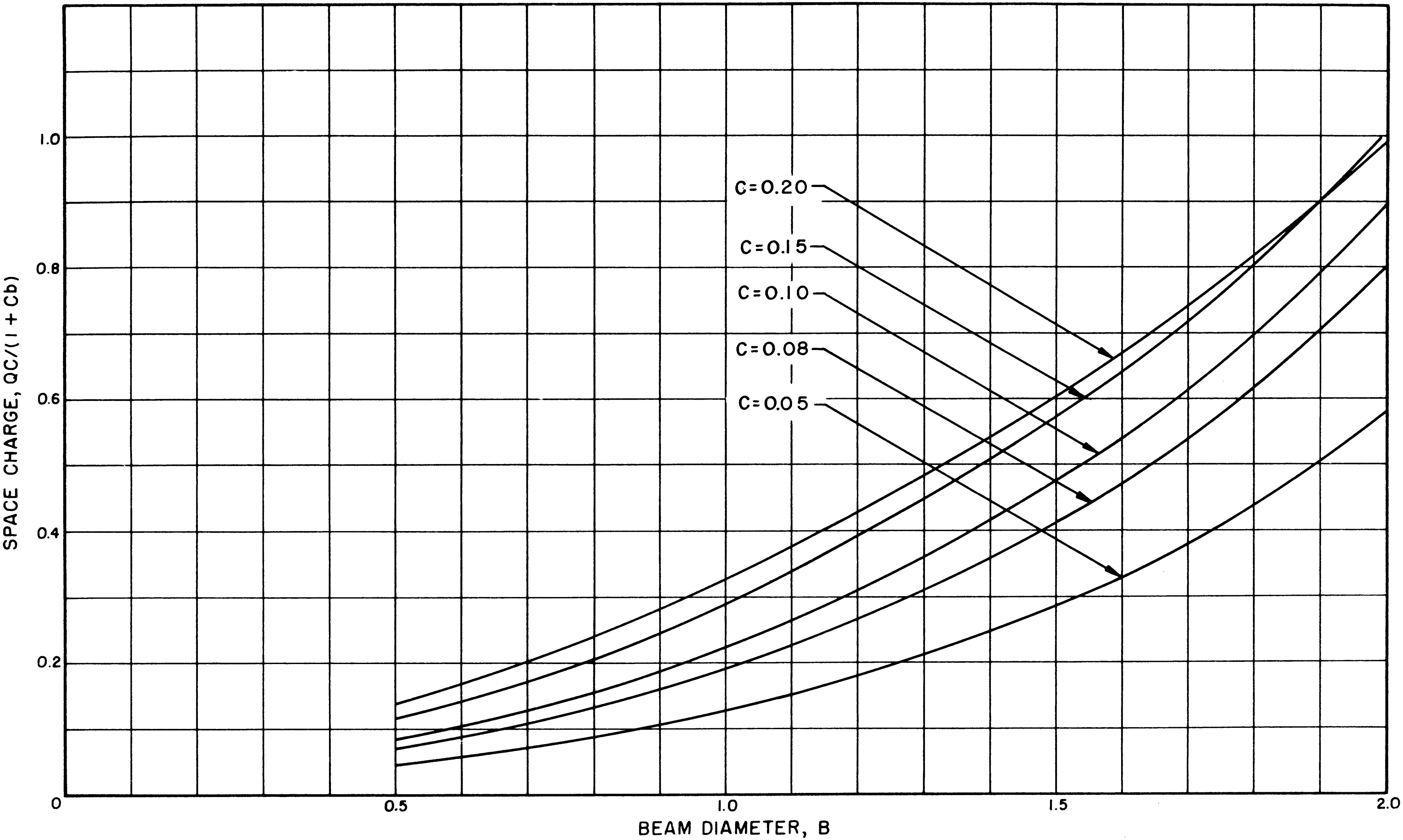


FIG. C.9 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER. ($a'/b' = 1.2$, $V_0 = 9$ KV, DLF = 70%)

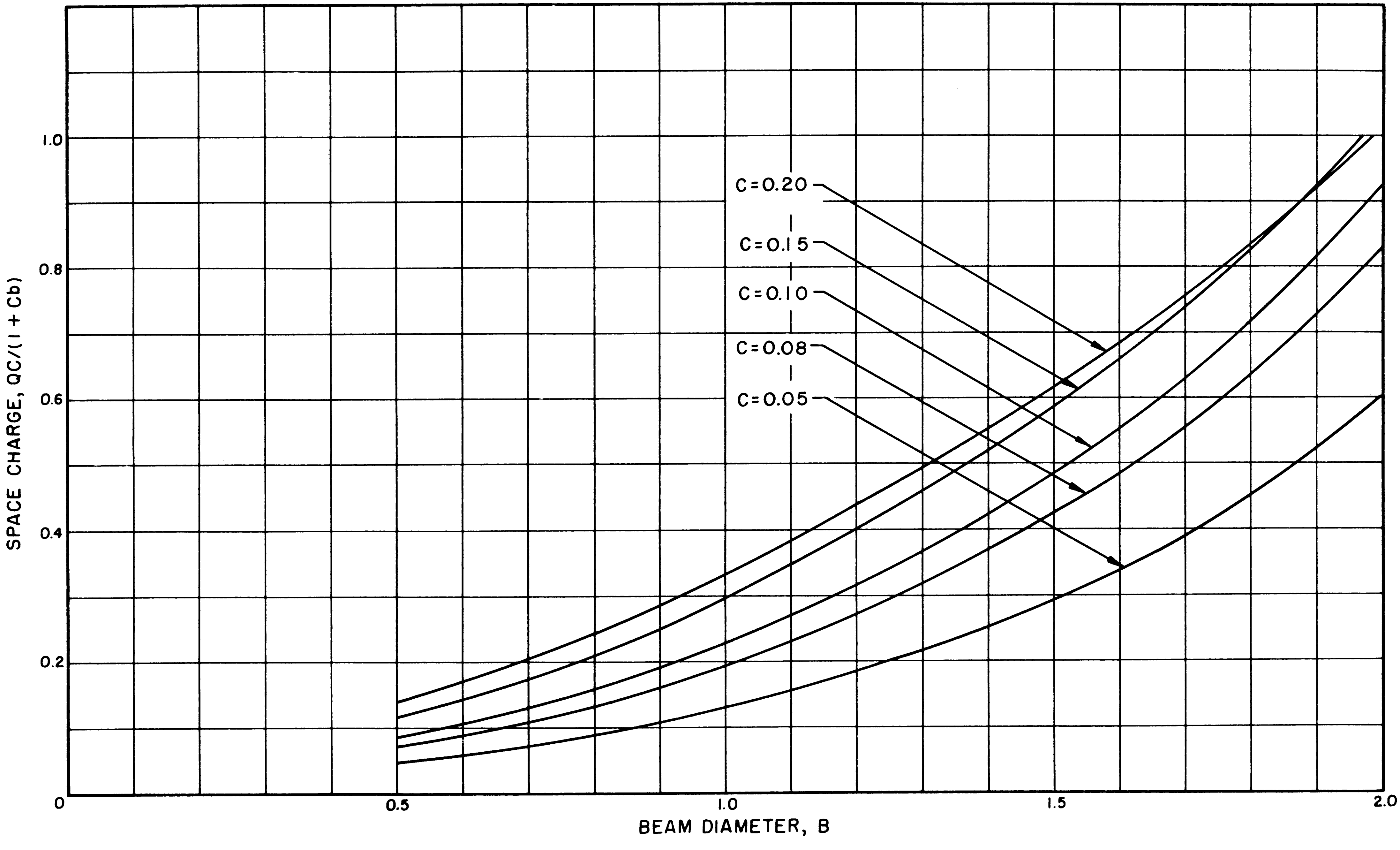


FIG. C.10 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.2$, $V_0 = 10$KV, DLF = 70%)

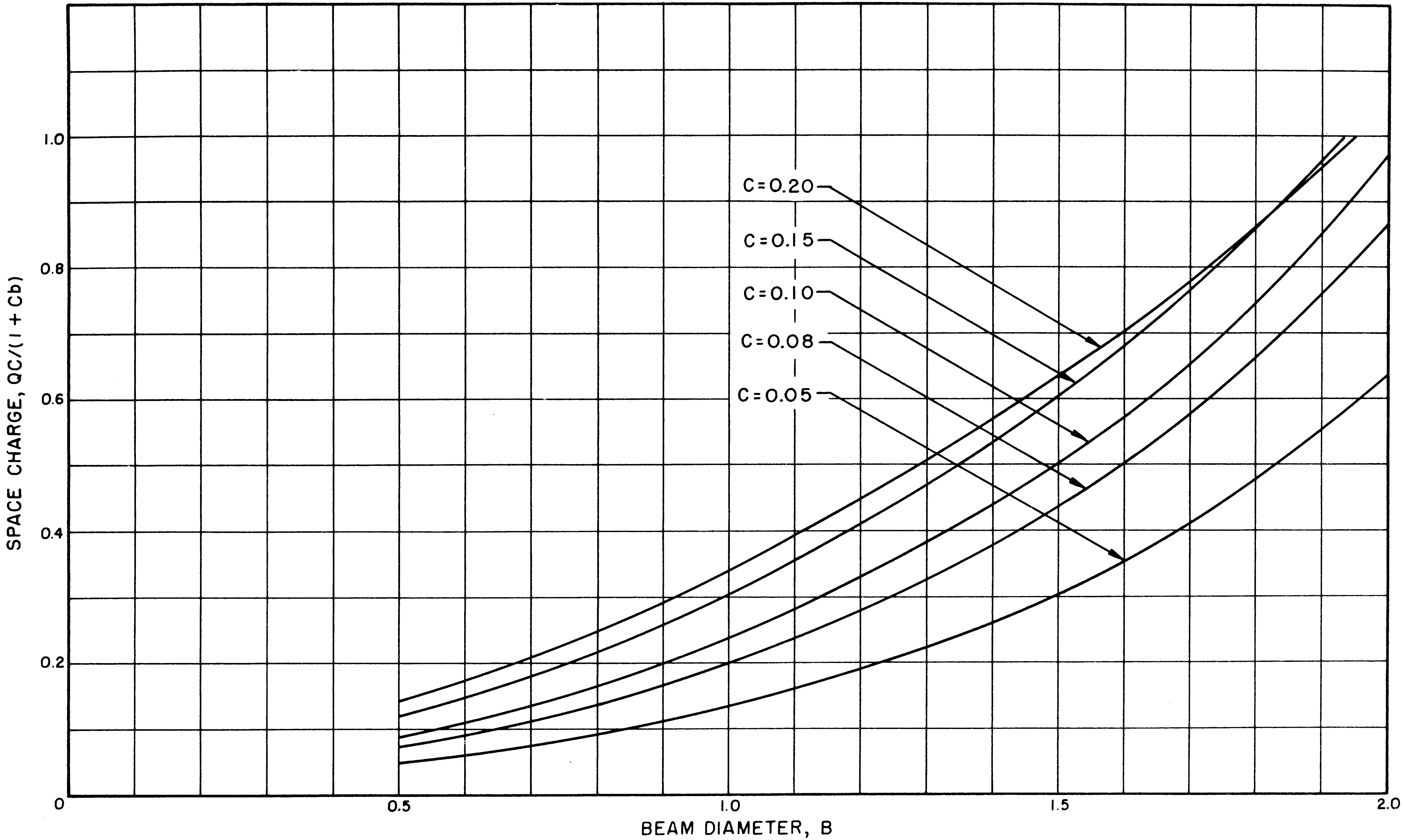


FIG. C.11 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.2$, $V_0 = 12$ KV, DLF = 70%)

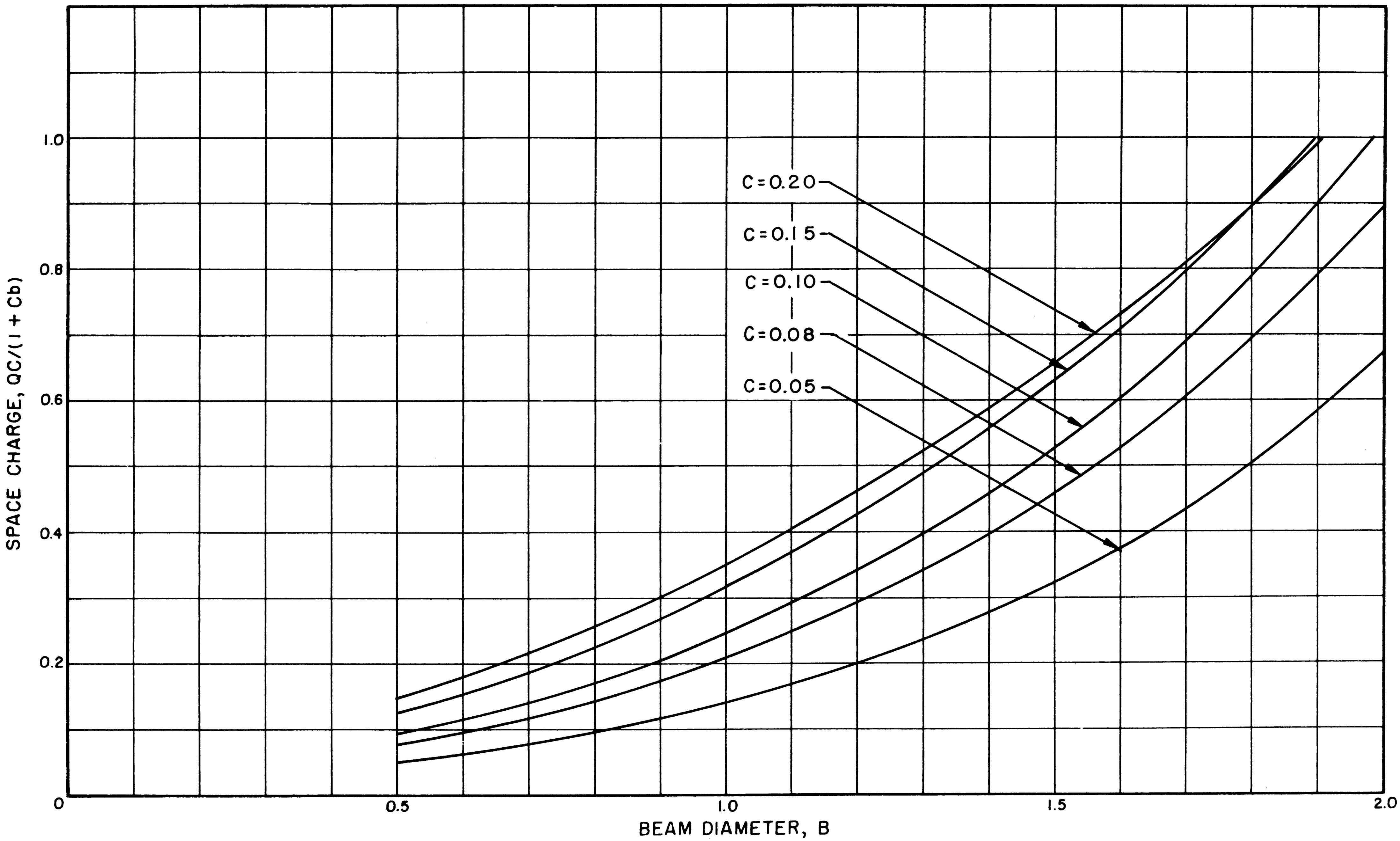


FIG. C.12 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER. ($a'/b' = 1.2$, $V_0 = 14$ KV, DLF = 70%)

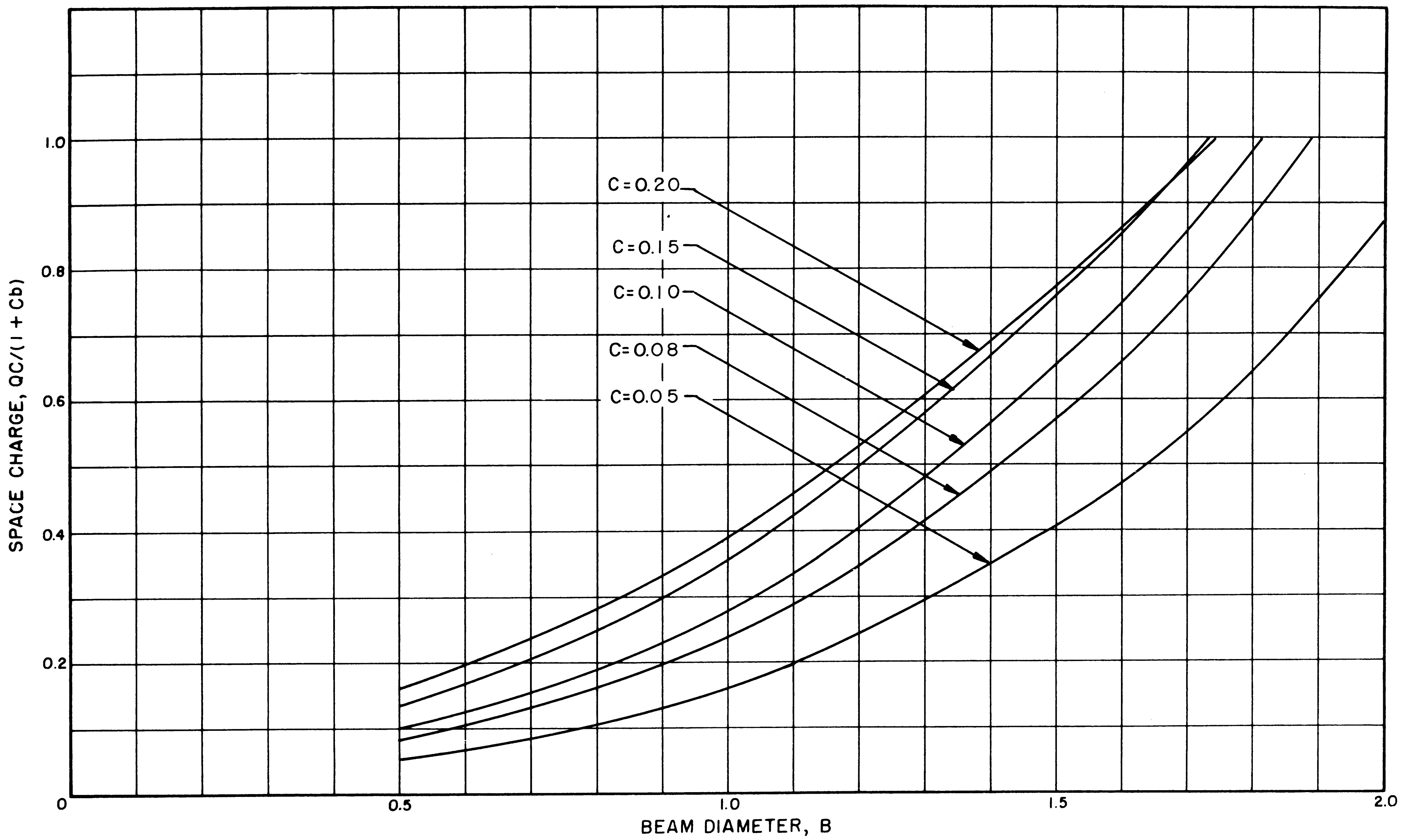


FIG. C.13 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.4$, $V_0 = 1$ KV, DLF = 70%)

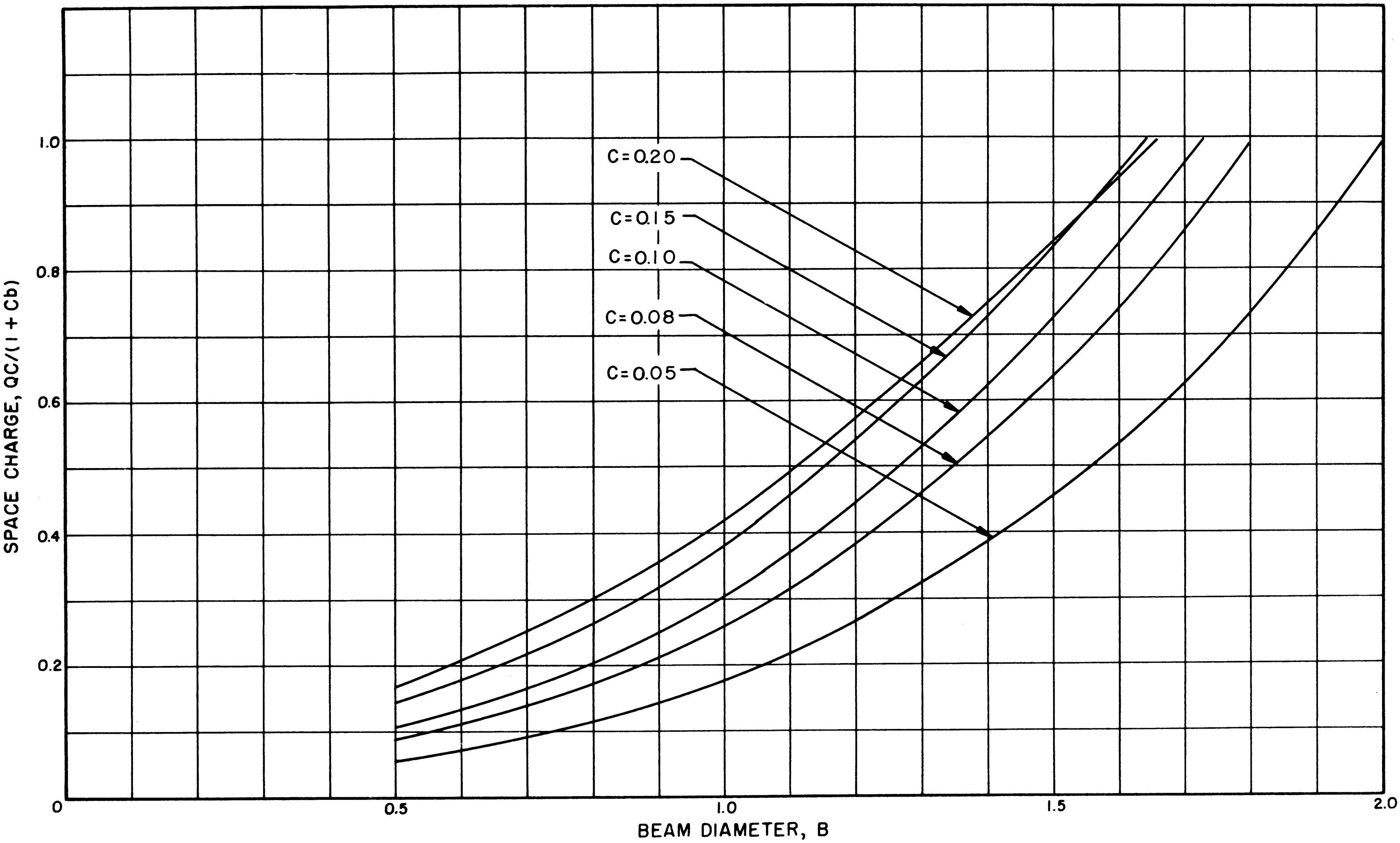


FIG. C.14 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER. ($a'/b' = 1.4$, $V_0 = 2$ KV, DLF = 70 %)

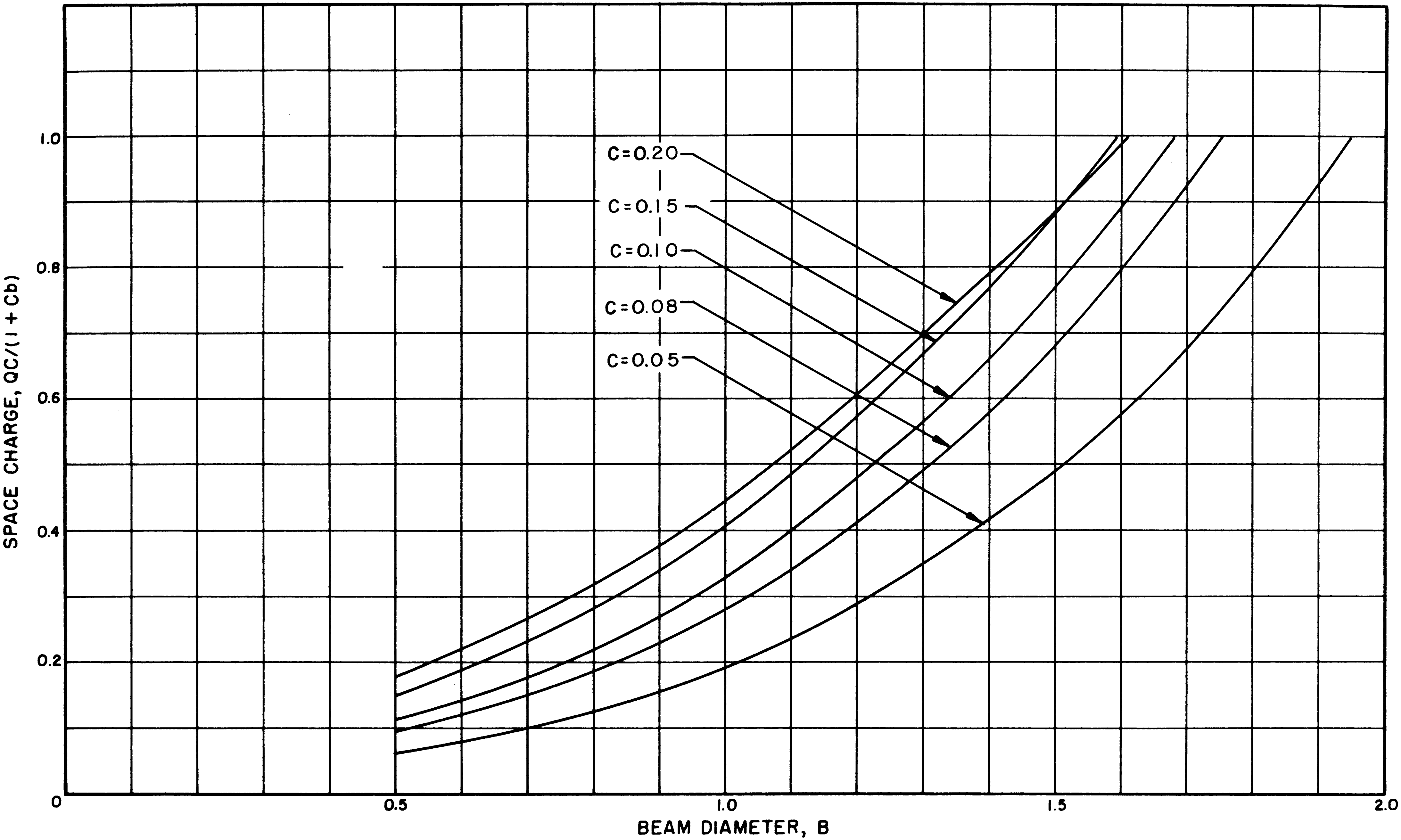


FIG. C.15 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.4$, $V_0 = 3$ KV, DLF = 70%)

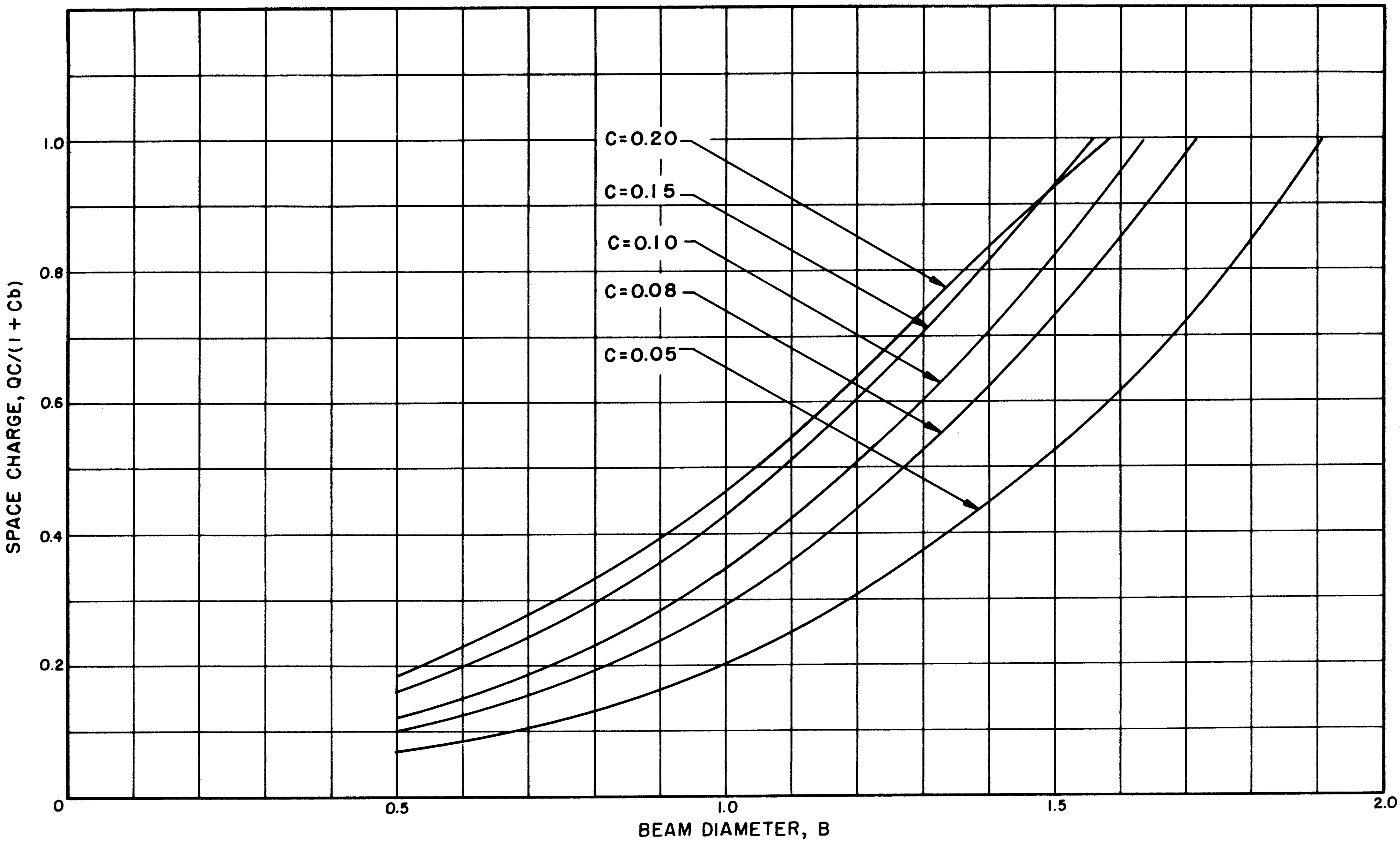


FIG. C.16 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER. ($a'/b' = 1.4$, $V_0 = 4$ KV, DLF = 70%)

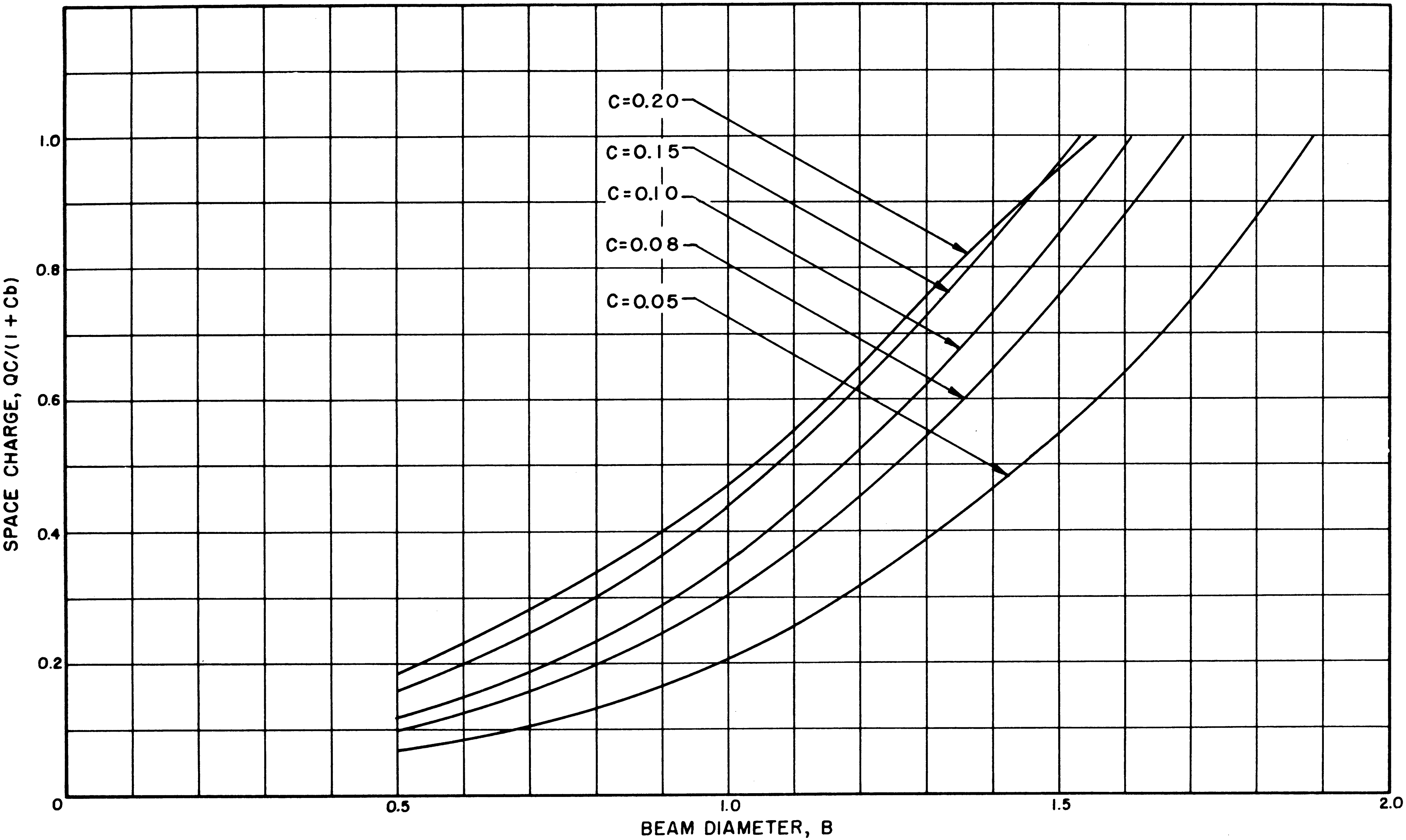


FIG. C.17 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.4$, $V_0 = 5$ KV, DLF = 70%)

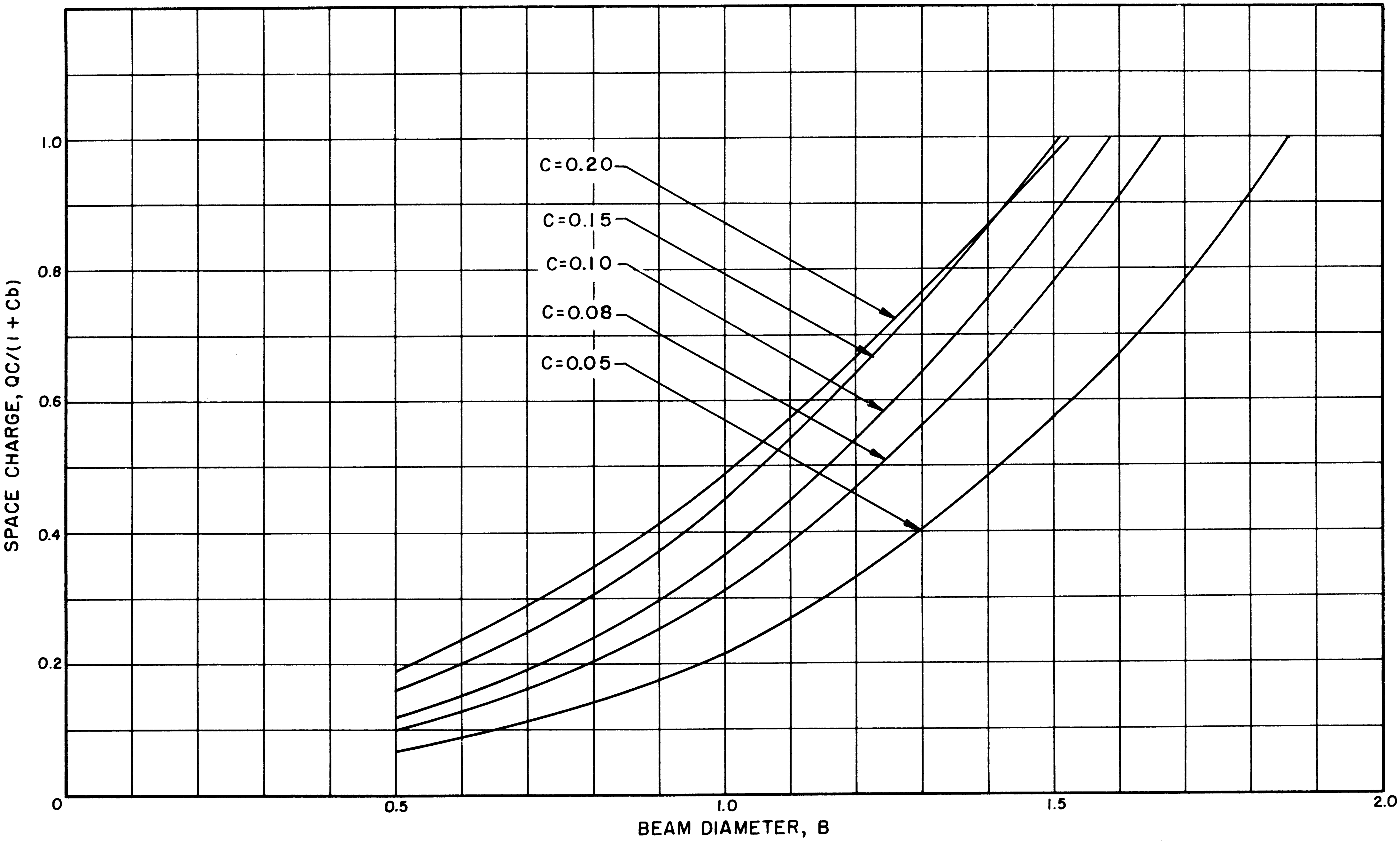


FIG. C.18 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER. ($a'/b' = 1.4$, V_0 = 6 KV, DLF = 70%)

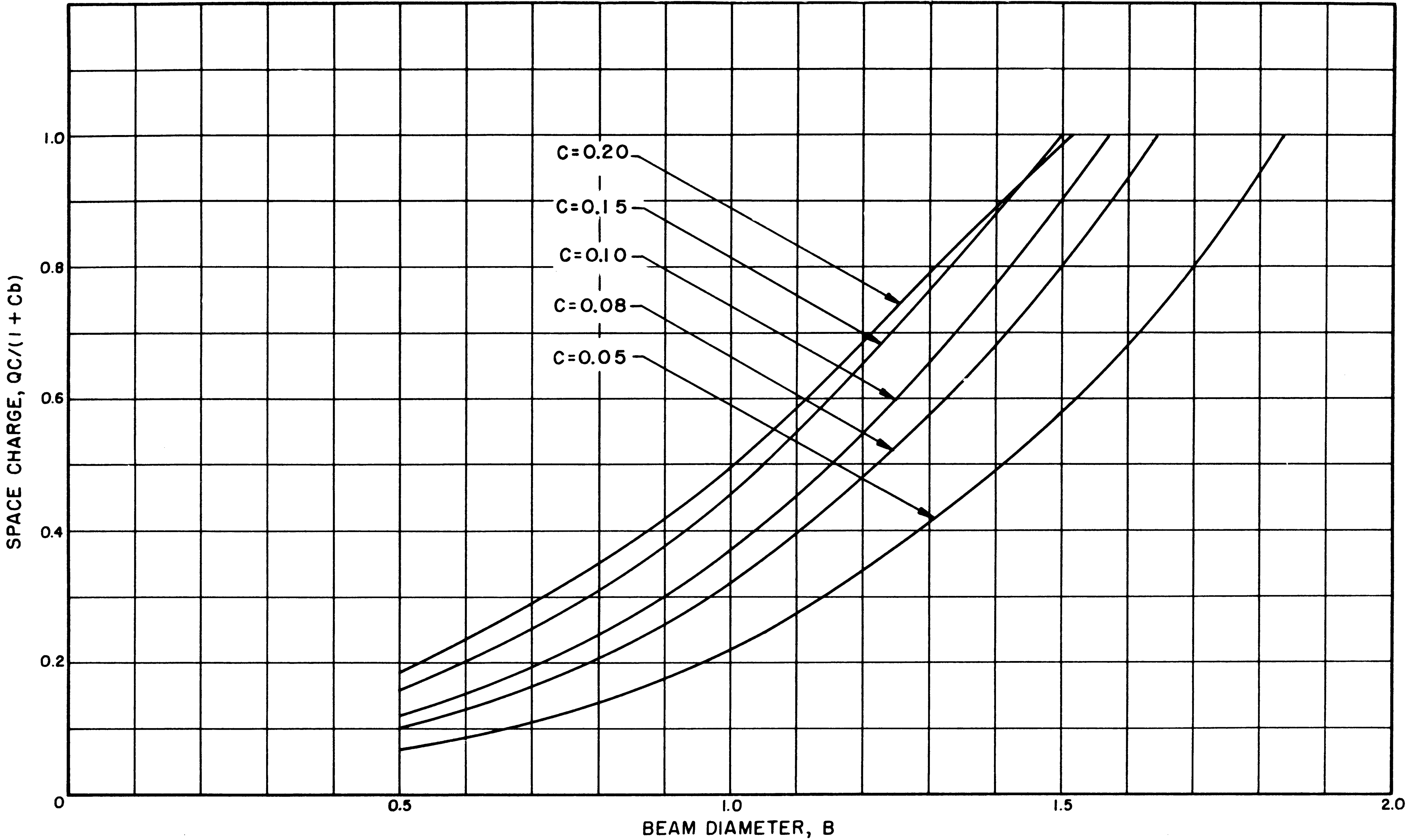


FIG. C.19 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.4$, $V_0 = 7$ KV, DLF = 70%)

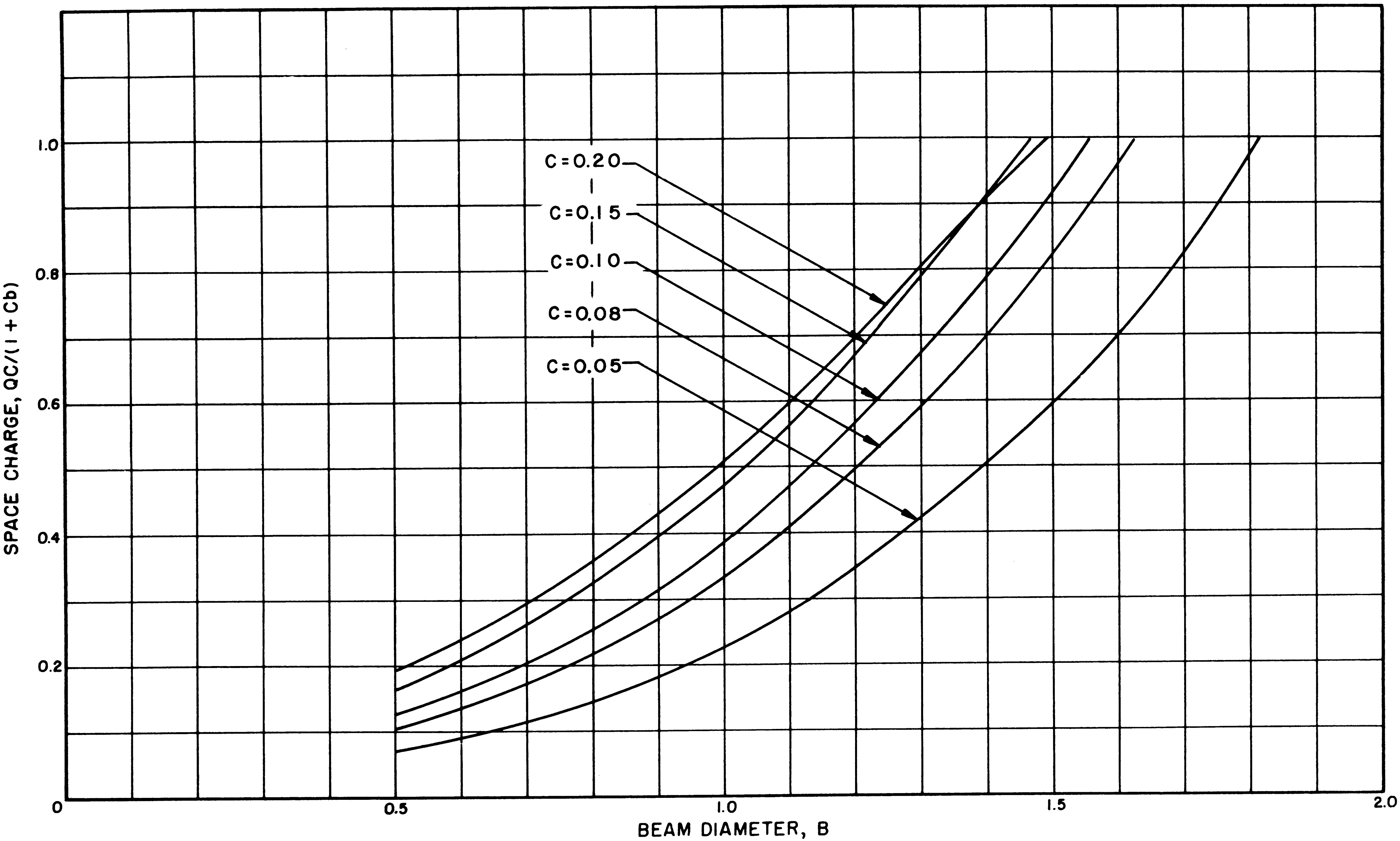


FIG. C.20 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.4$, $V_0 = 8$ KV, DLF = 70%)

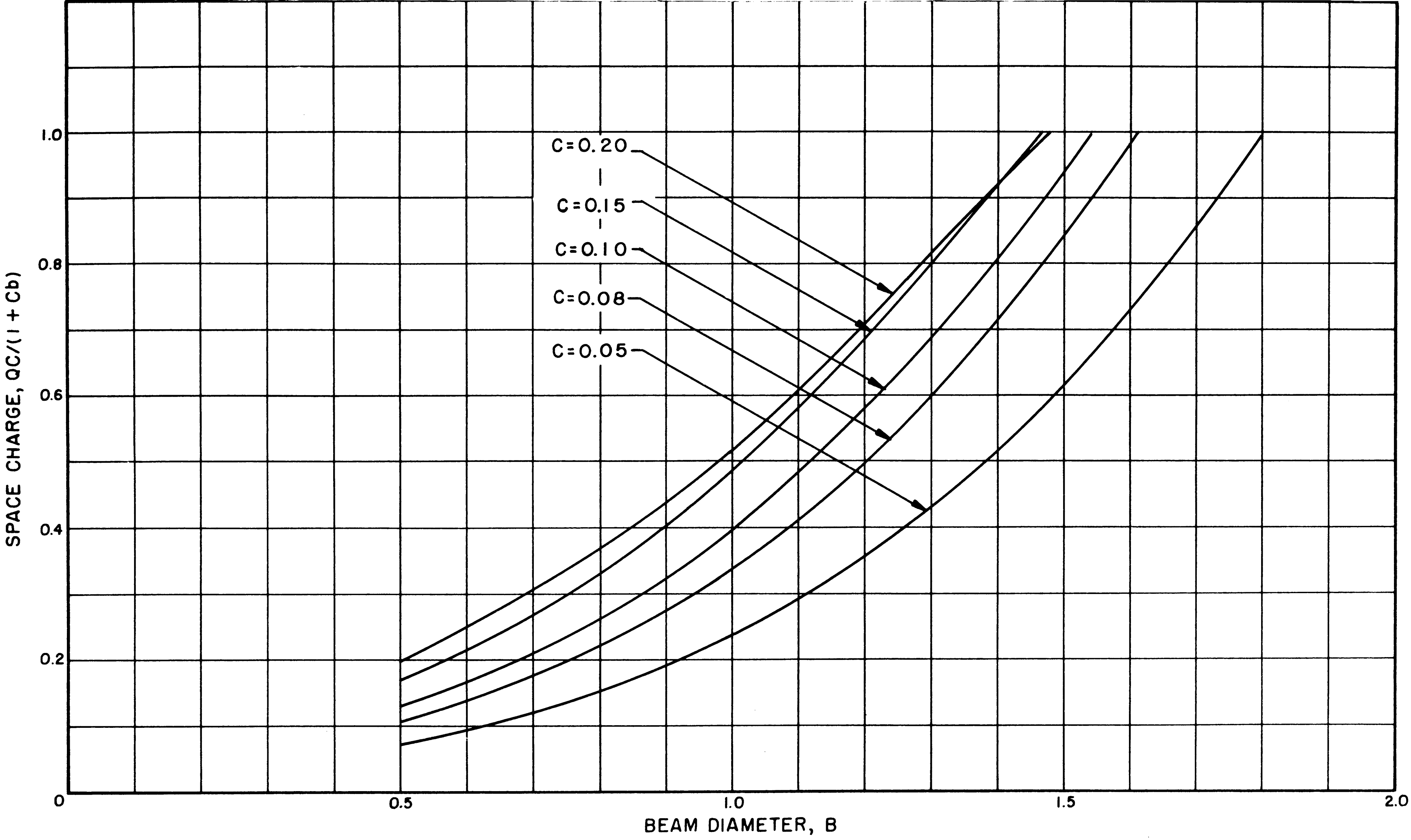


FIG. C.21 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER. ($a'/b' = 1.4$, V_0 = 9 KV, DLF = 70%)

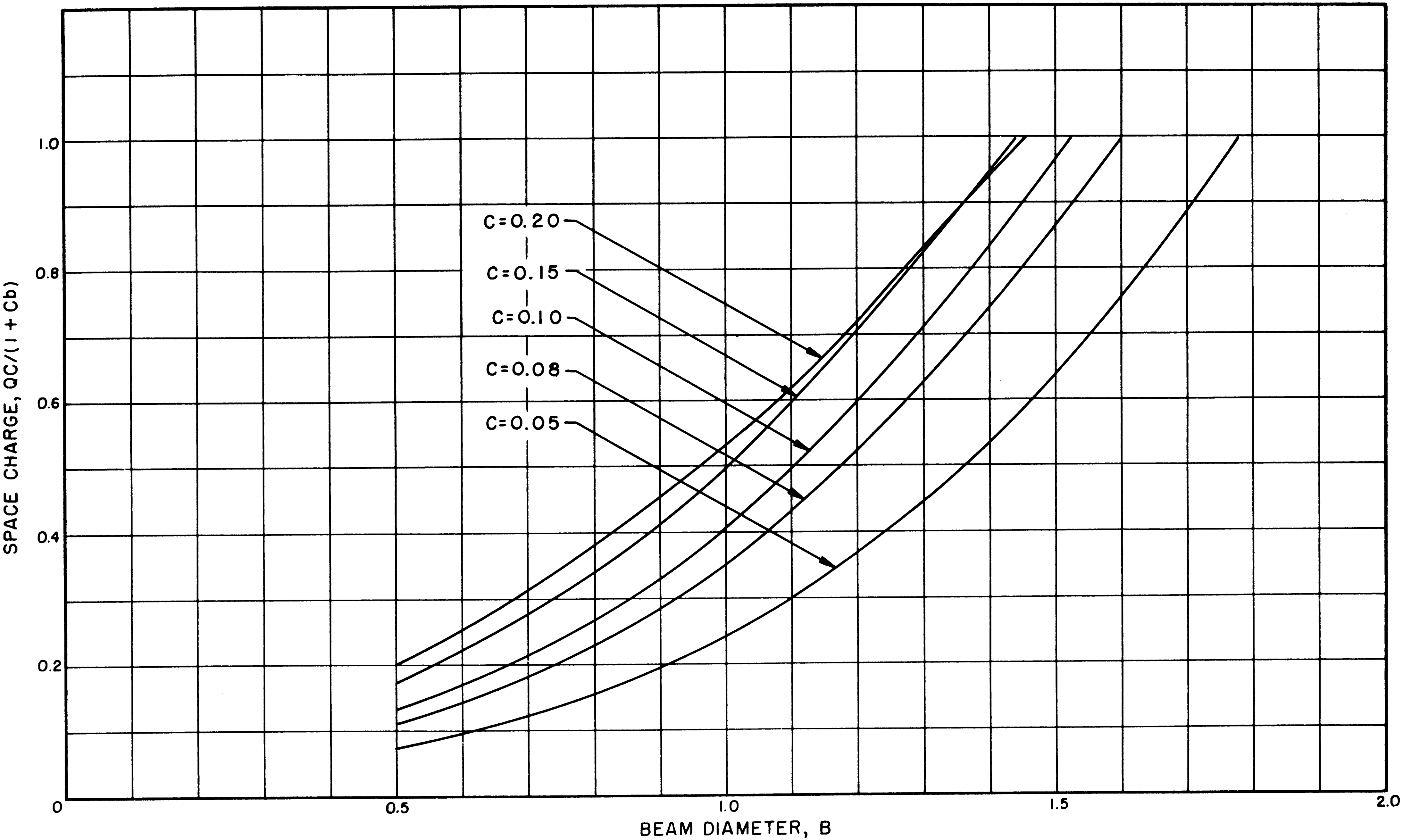


FIG. C.22 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.4$, $V_0 = 10$ KV, DLF = 70%)

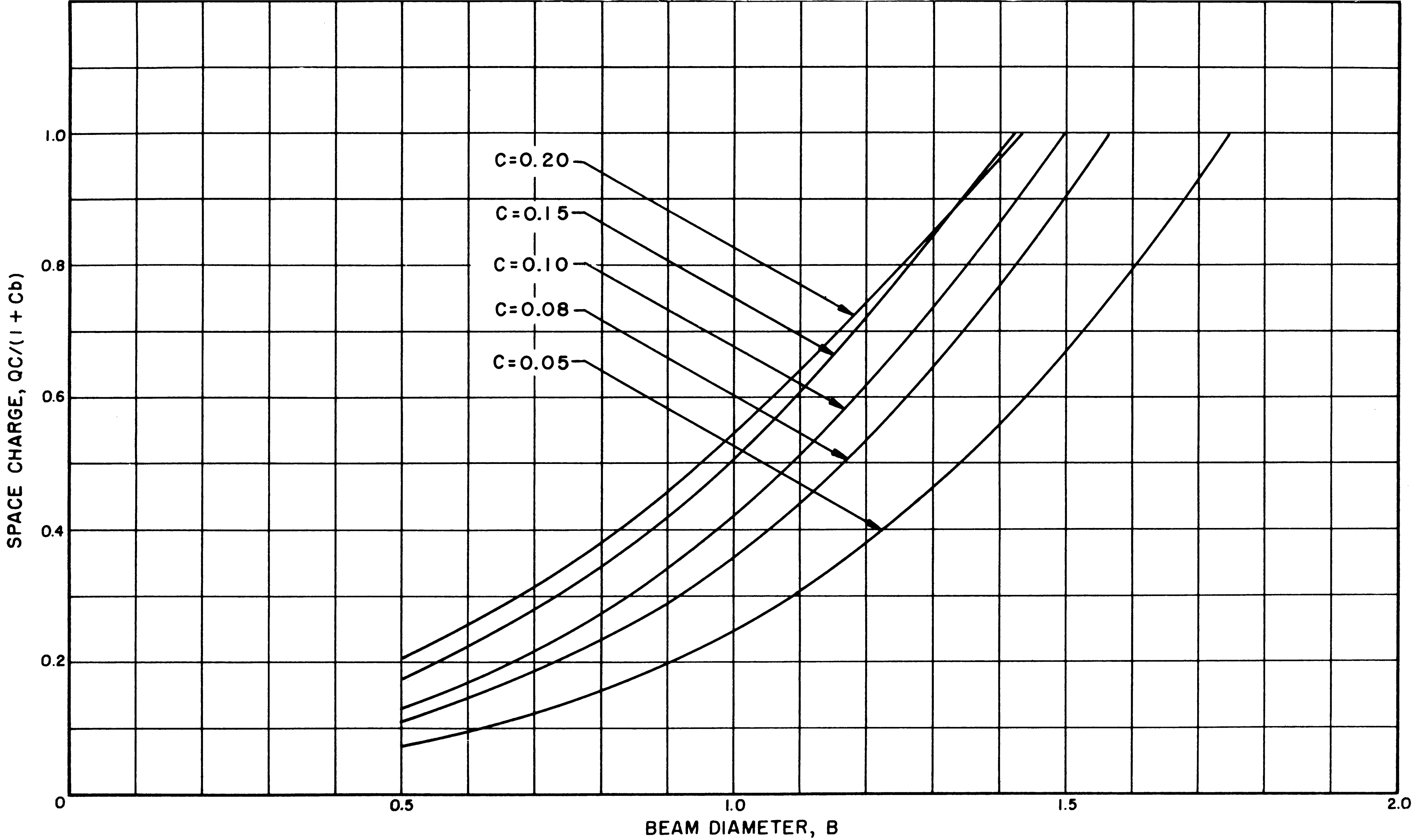


FIG. C.23 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.4$, $V_0 = 12$ KV, DLF = 70%)

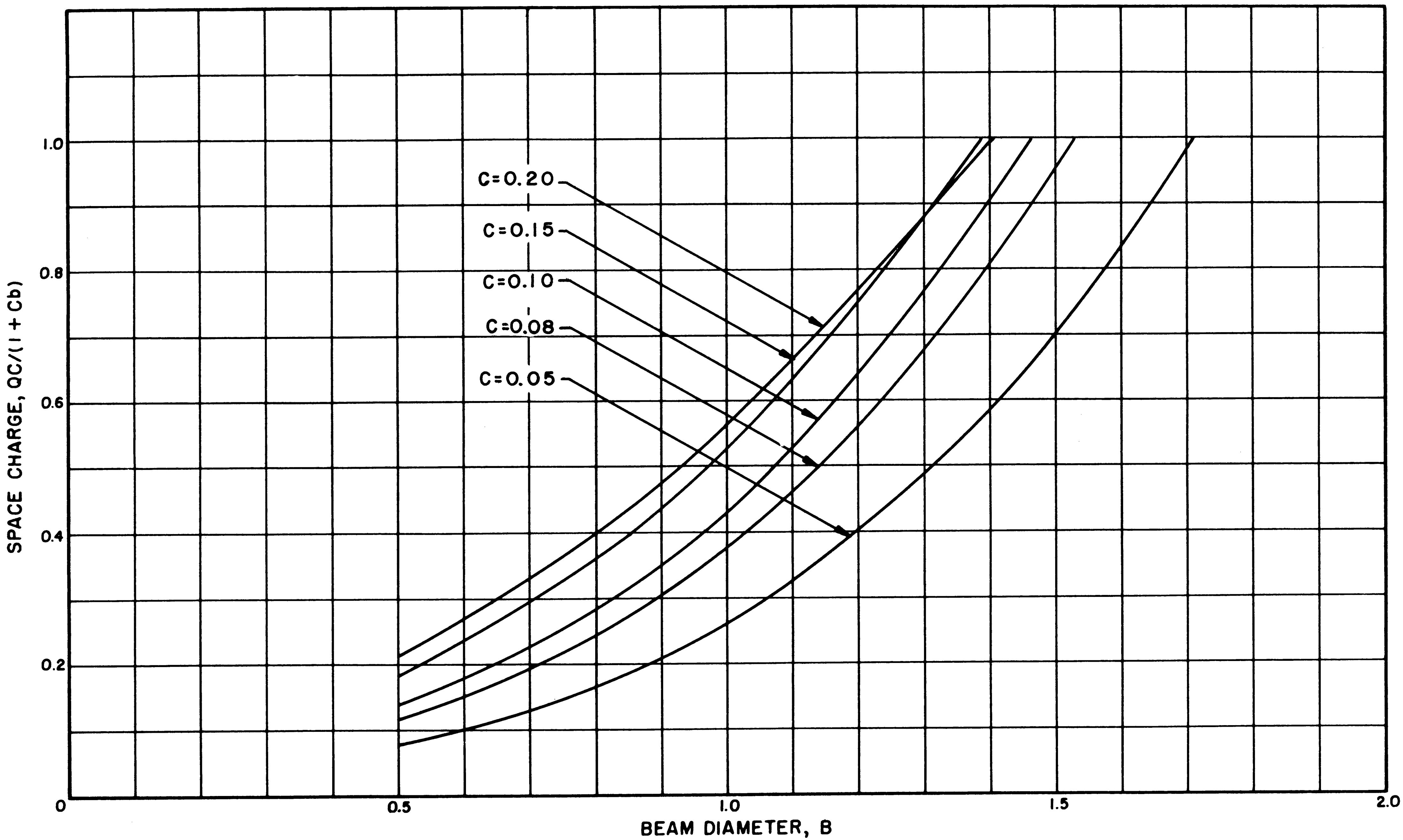


FIG. C.24 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.4$, $V_0 = 14$ KV, DLF = 70%)

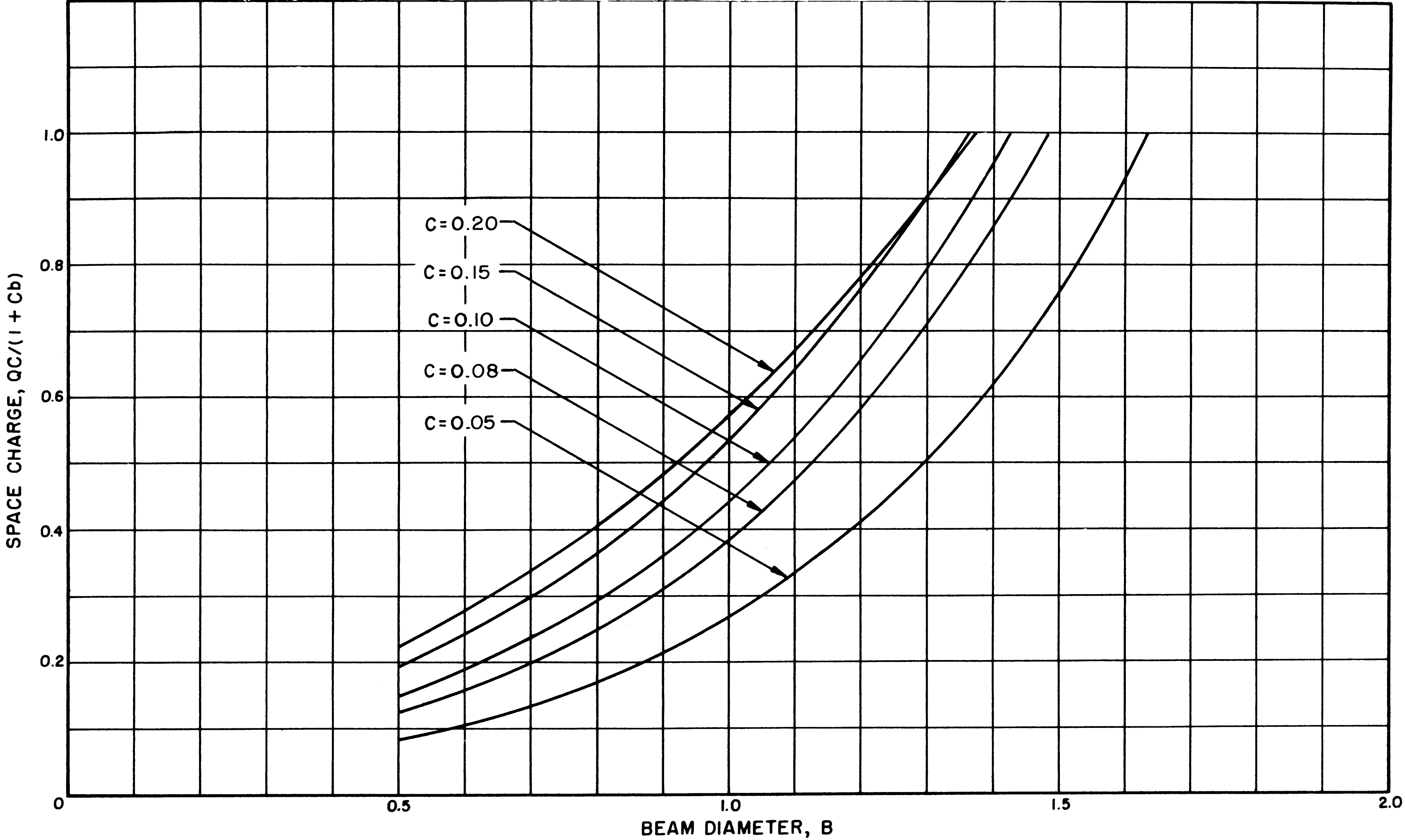


FIG. C.25 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.6$, $V_0 = 1$ KV, DLF = 70%)

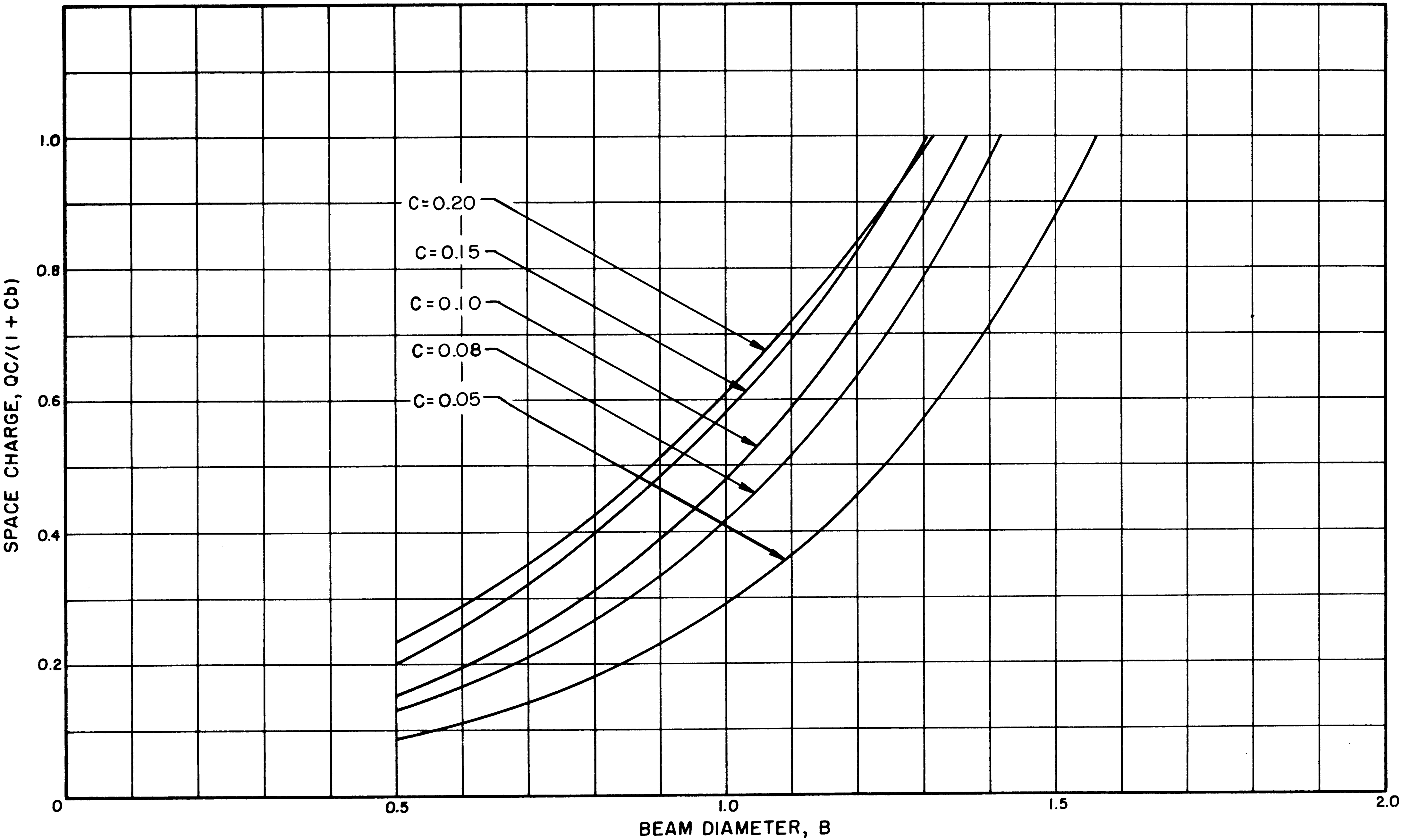


FIG. C.26 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.6$, $V_0 = 2$ KV, DLF = 70%)

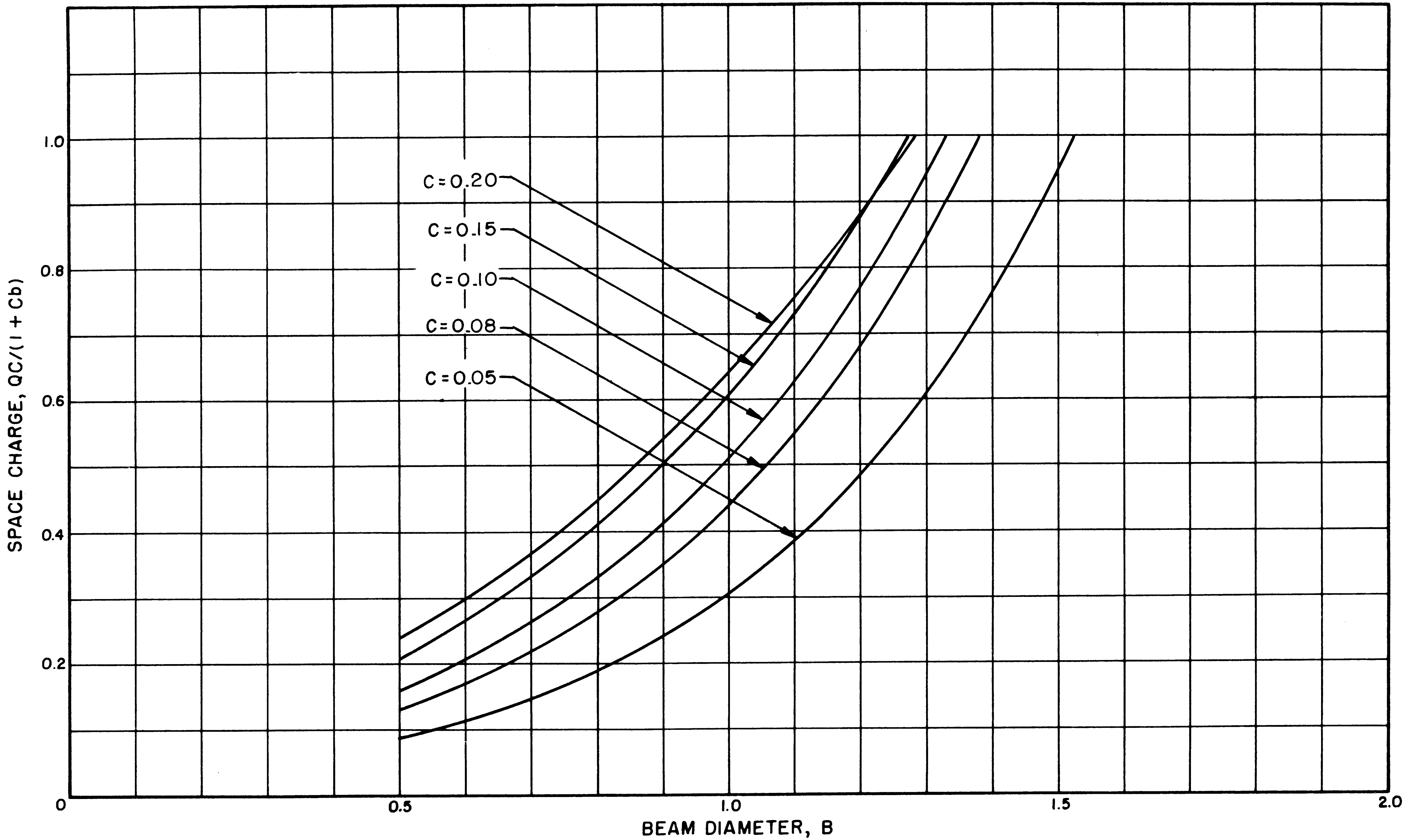


FIG. C.27 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.6$, $V_0 = 3$ KV, DLF = 70%)

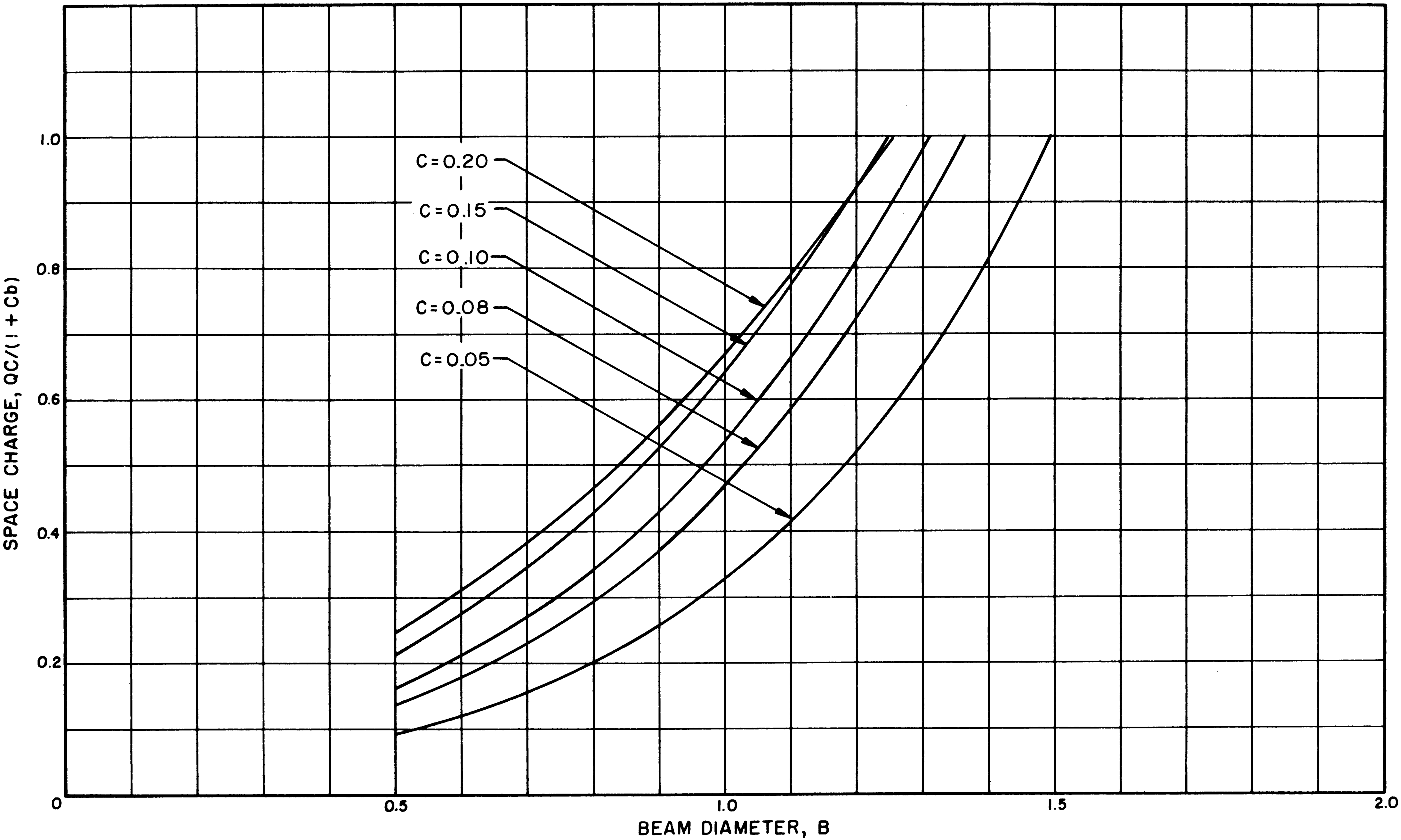


FIG. C.28 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.6$, $V_0 = 4$ KV, DLF = 70%)

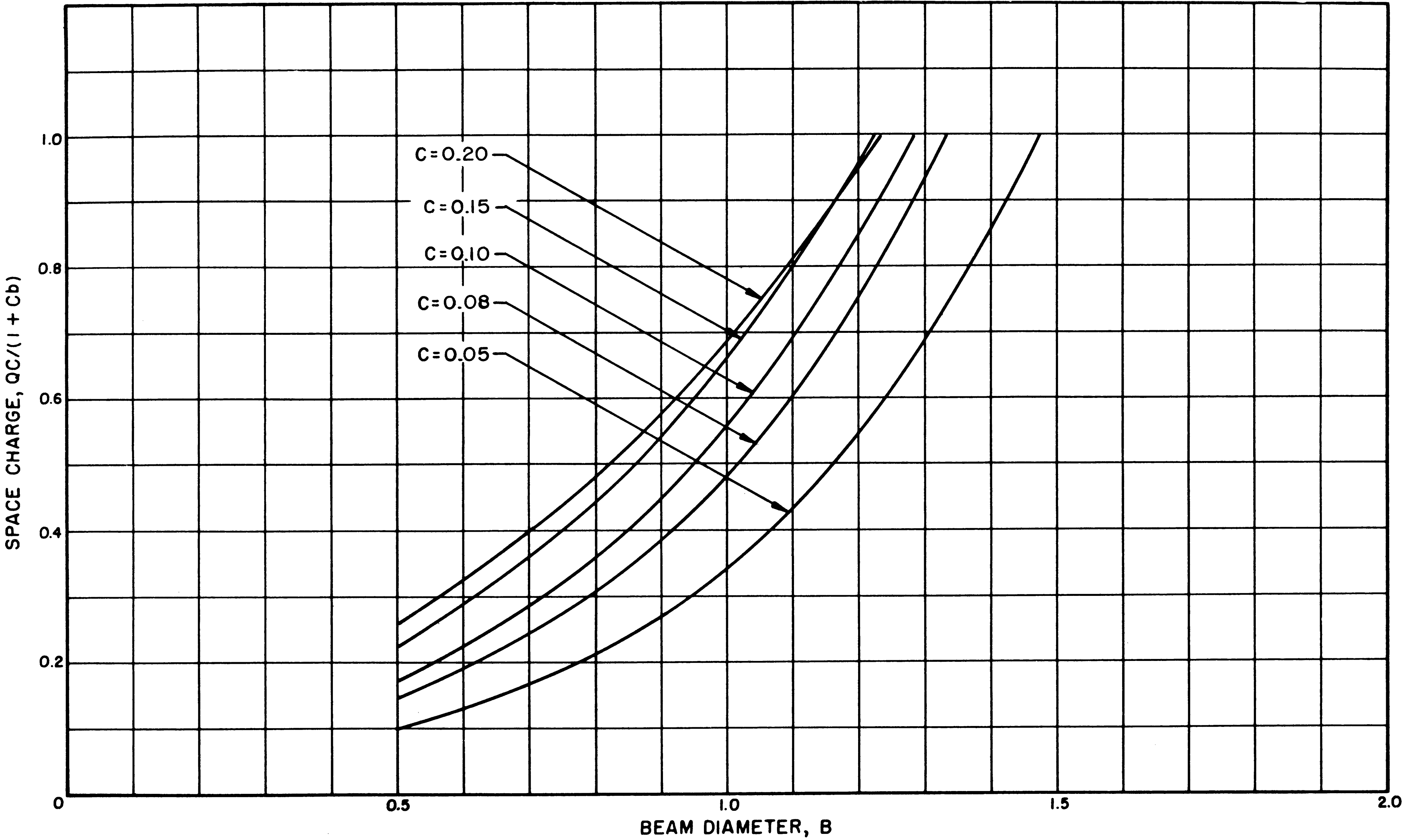


FIG. C.29 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.6$, $V_0 = 5$ KV, DLF = 70%)

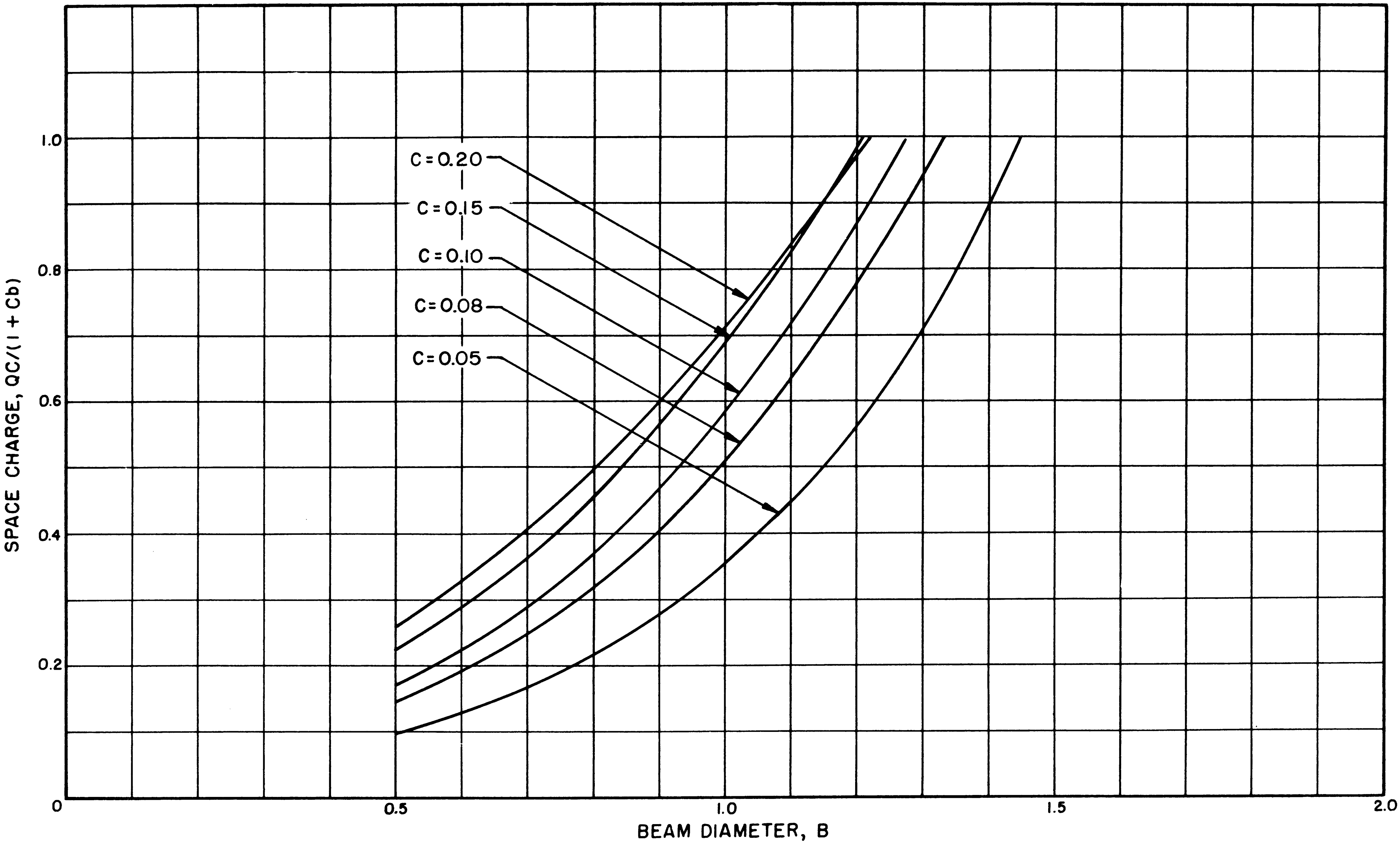


FIG. C. 30 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER. ($a'/b' = 1.6$, $V_0 = 6$ KV, DLF = 70%)

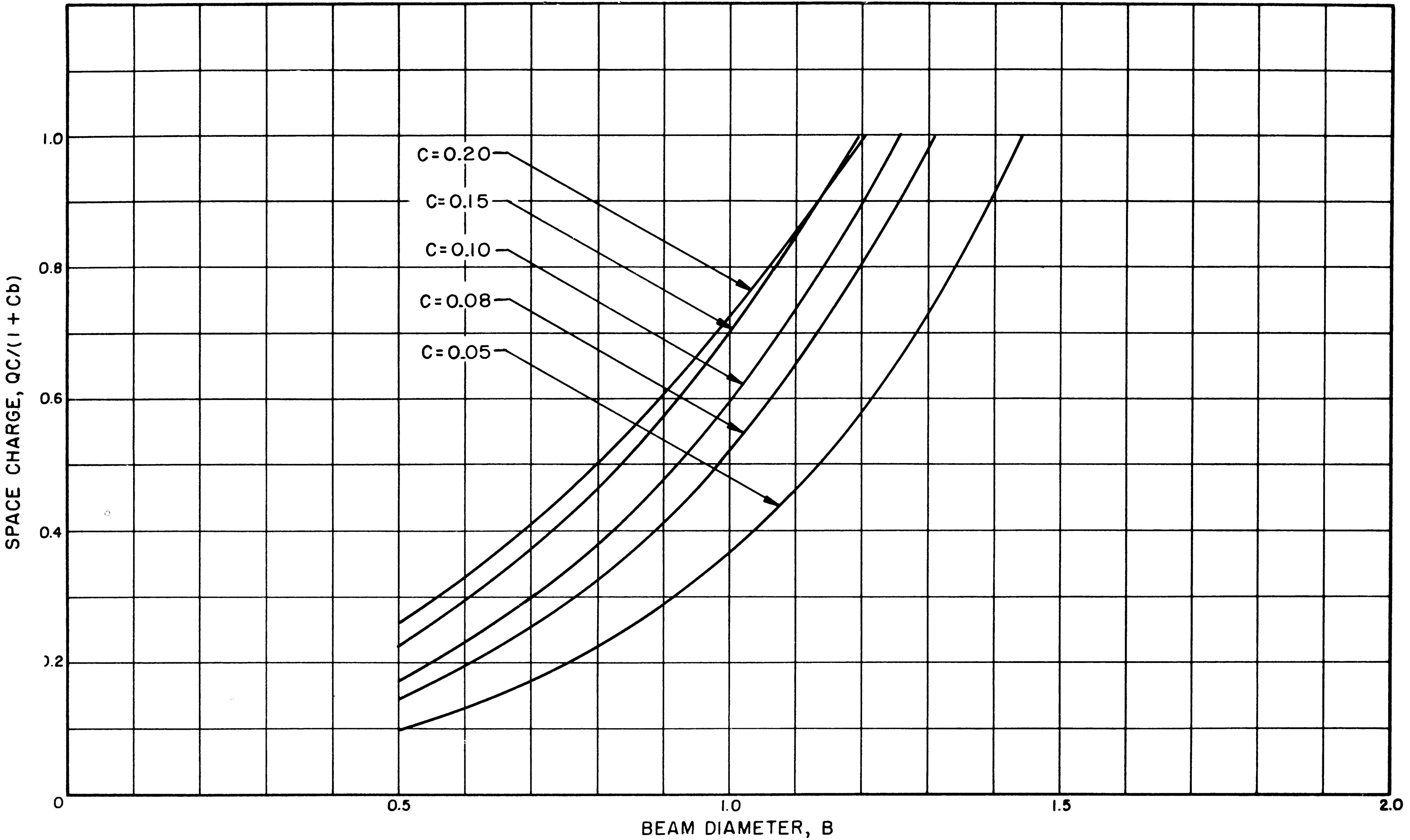


FIG. C.31 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER. ($a'/b' = 1.6$, $V_0 = 7$ KV, DLF = 70%)

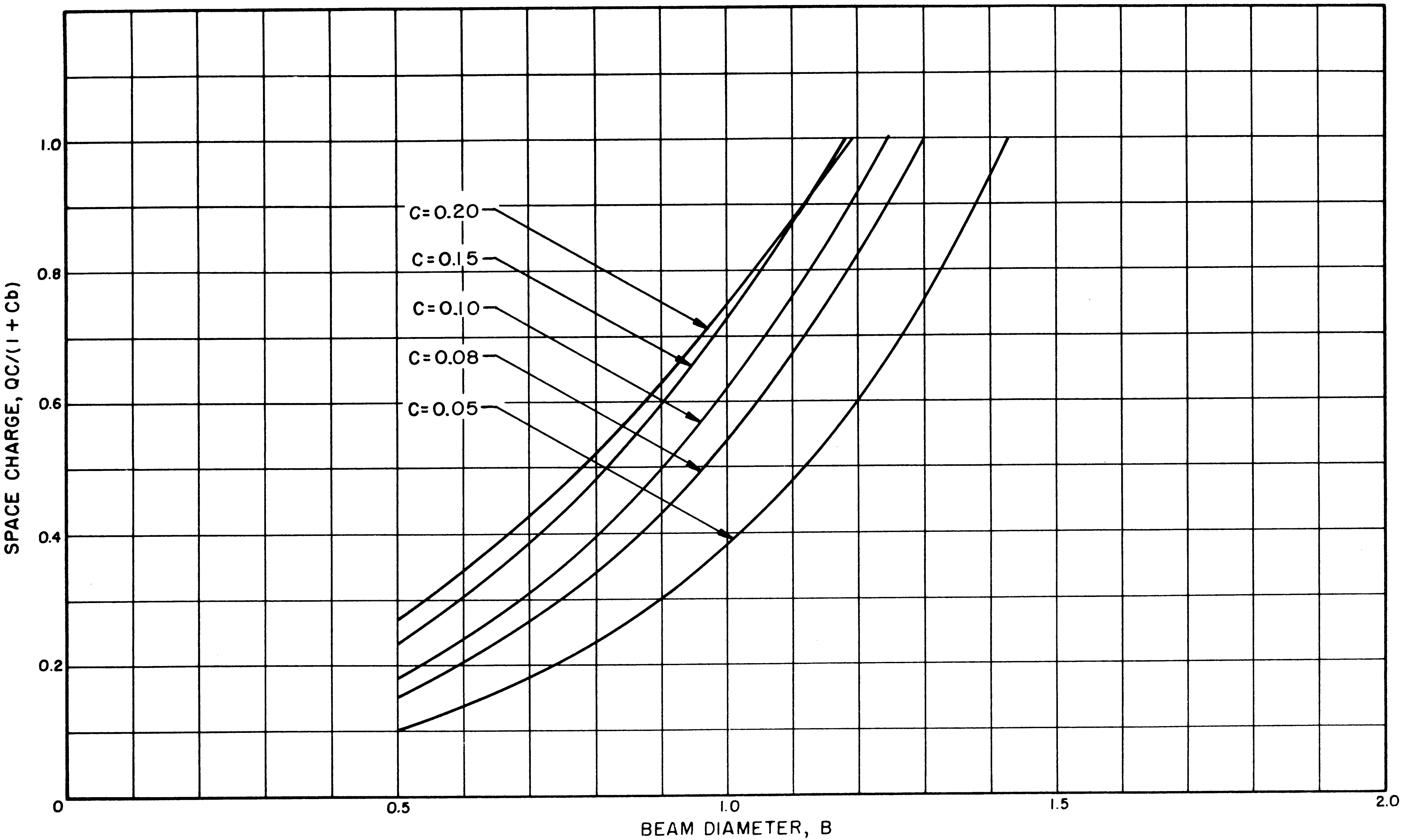


FIG. C.32 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.6$, V_0 = 8 KV, DLF = 70 %)

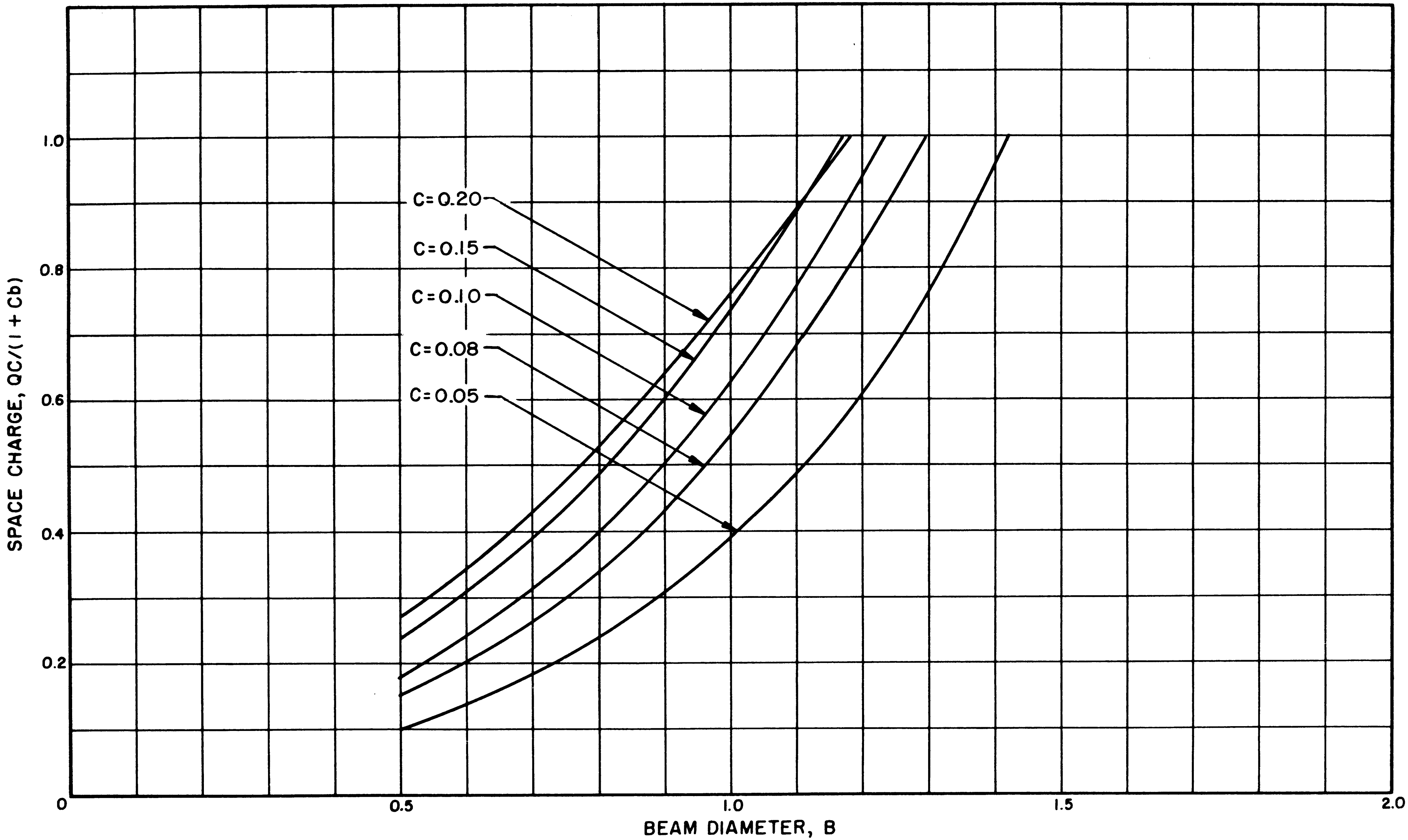


FIG. C.33 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.6$, V_0 = 9 KV, DLF = 70 %)

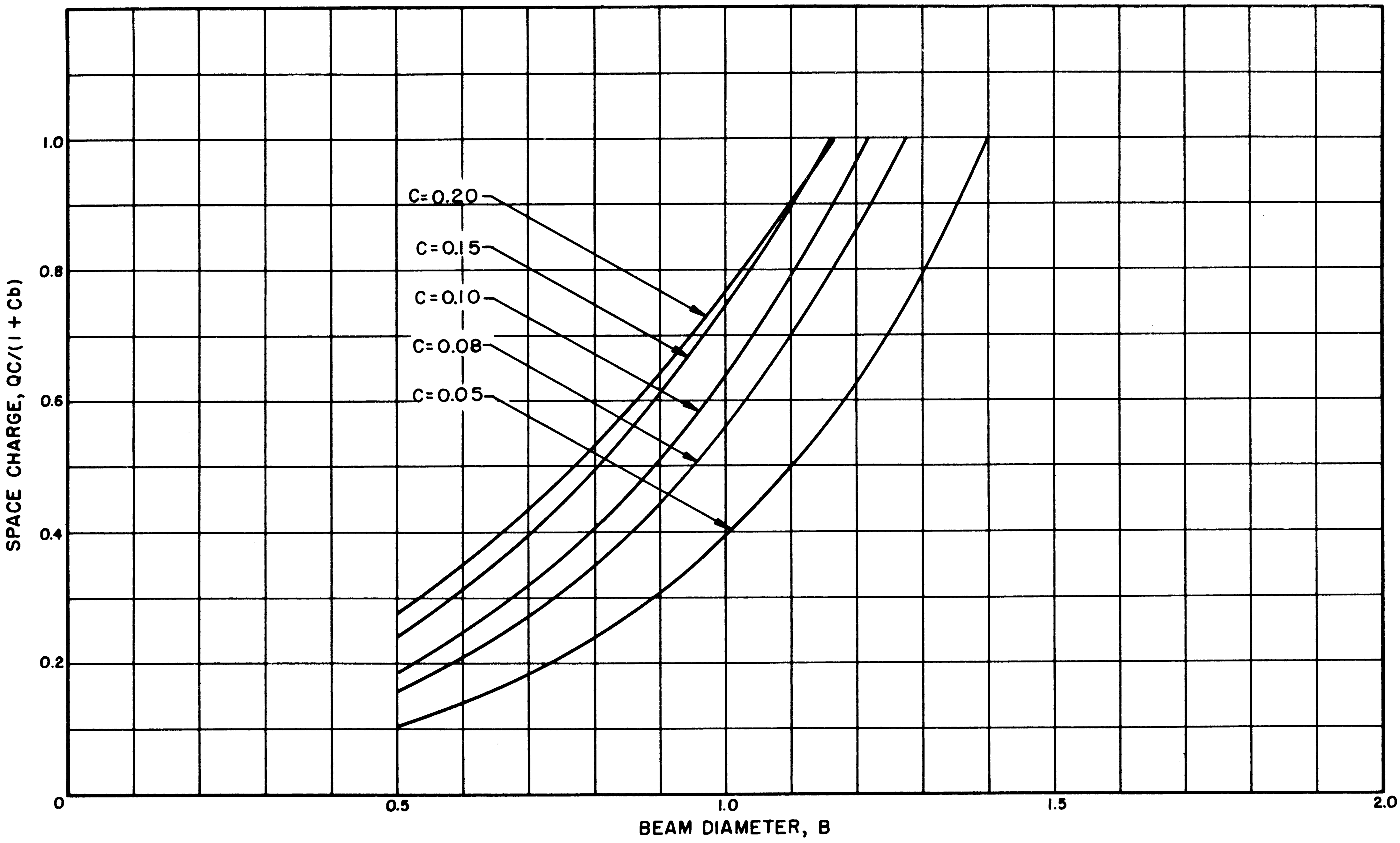


FIG. C.34 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.6$, $V_0 = 10$ KV, DLF = 70%)

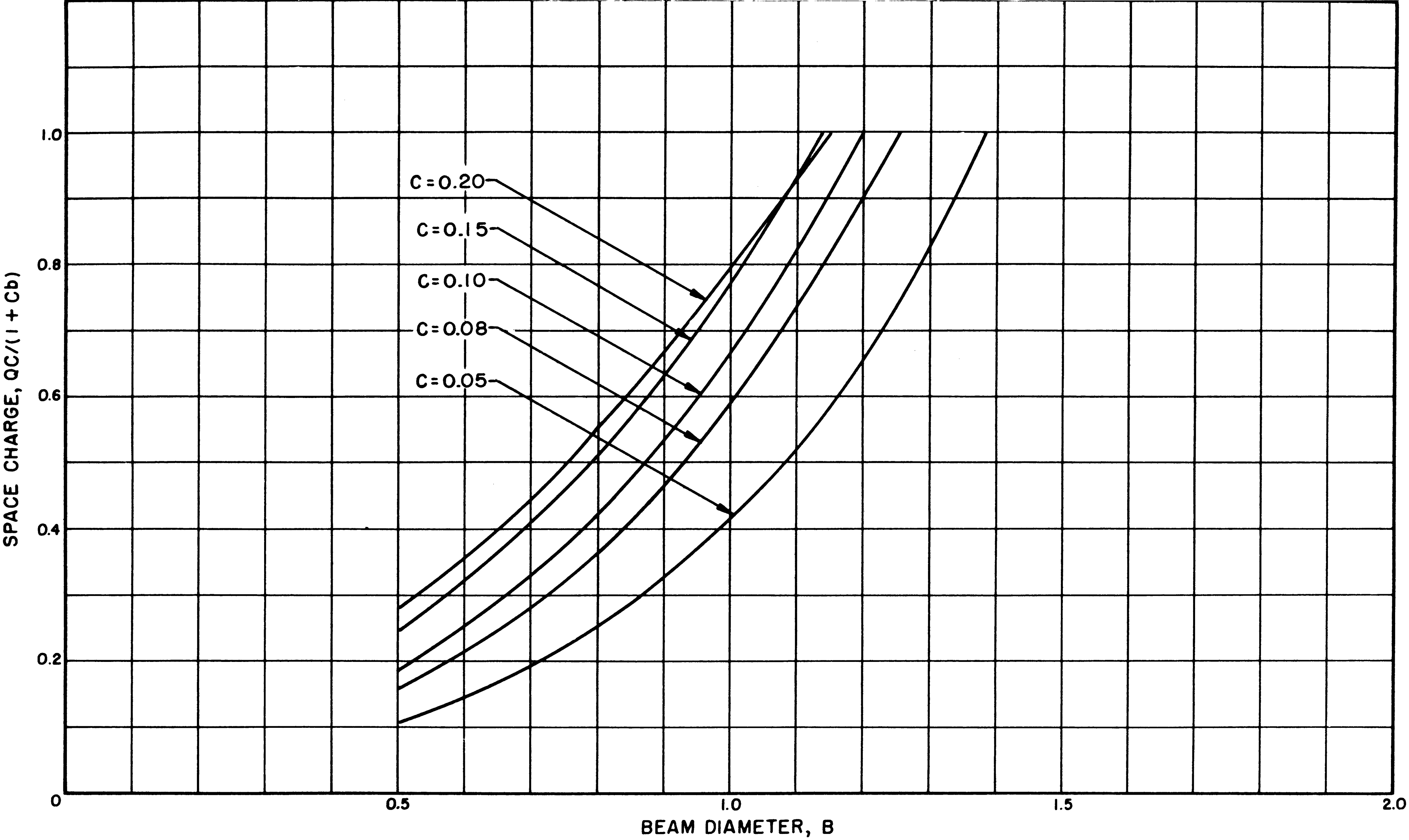


FIG. C.35 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.6$, $V_0 = 12$ KV, DLF = 70 %)

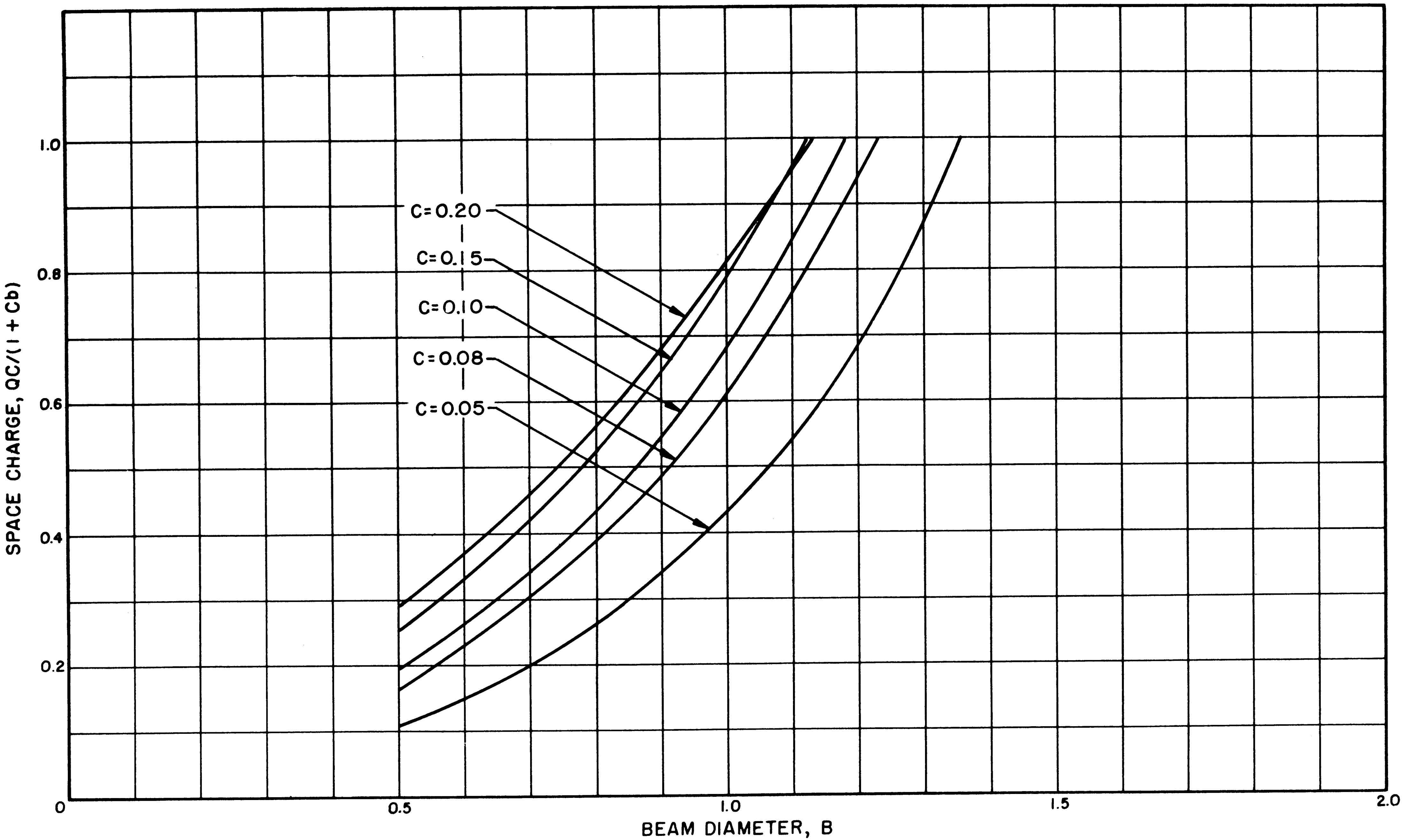


FIG. C.36 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.6$, $V_0 = 14$ KV, DLF = 70%)

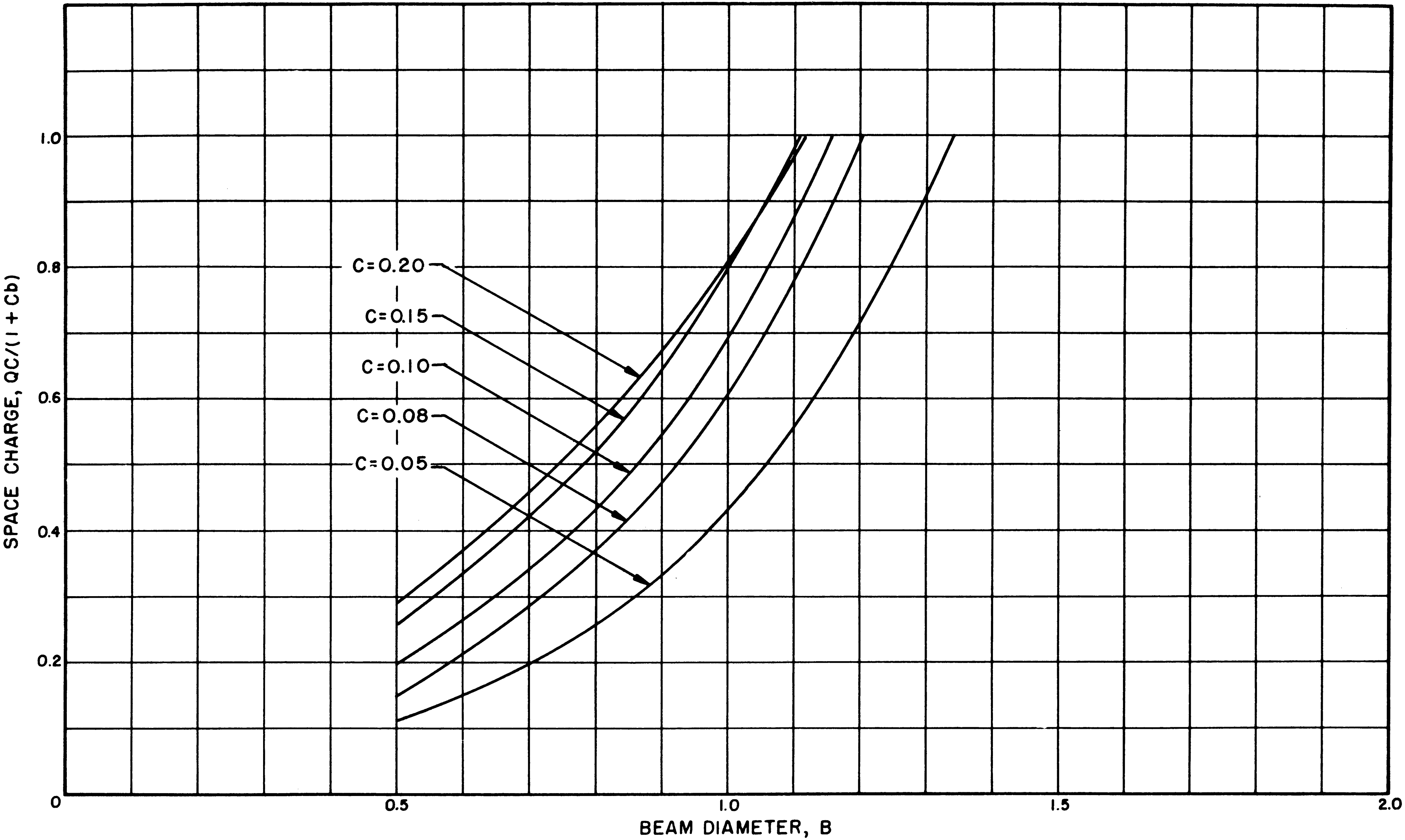


FIG. C.37 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.8$, $V_0 = 1$ KV, DLF = 70%)

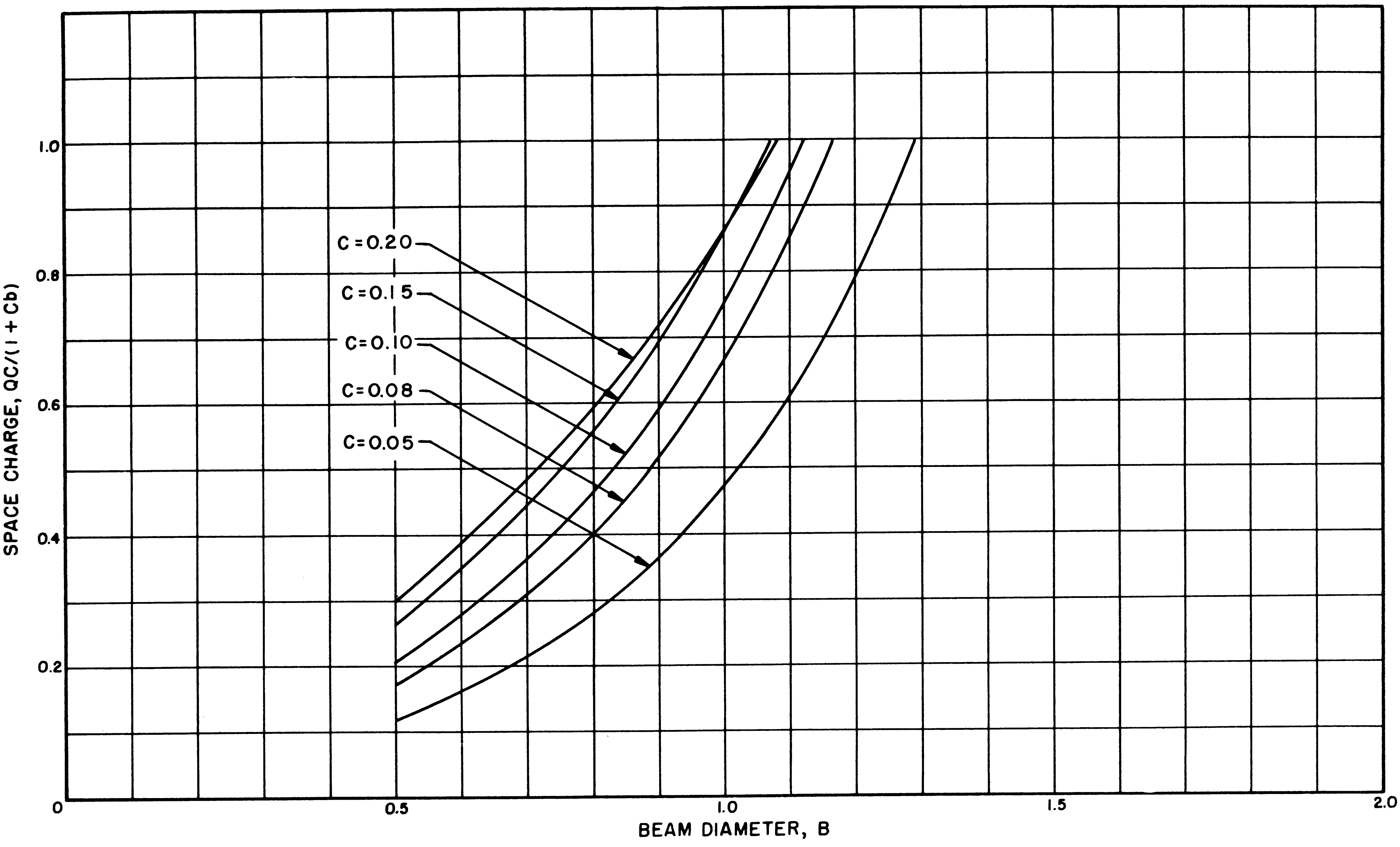


FIG. C.38 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.8$, $V_0 = 2$ KV, DLF = 70%)

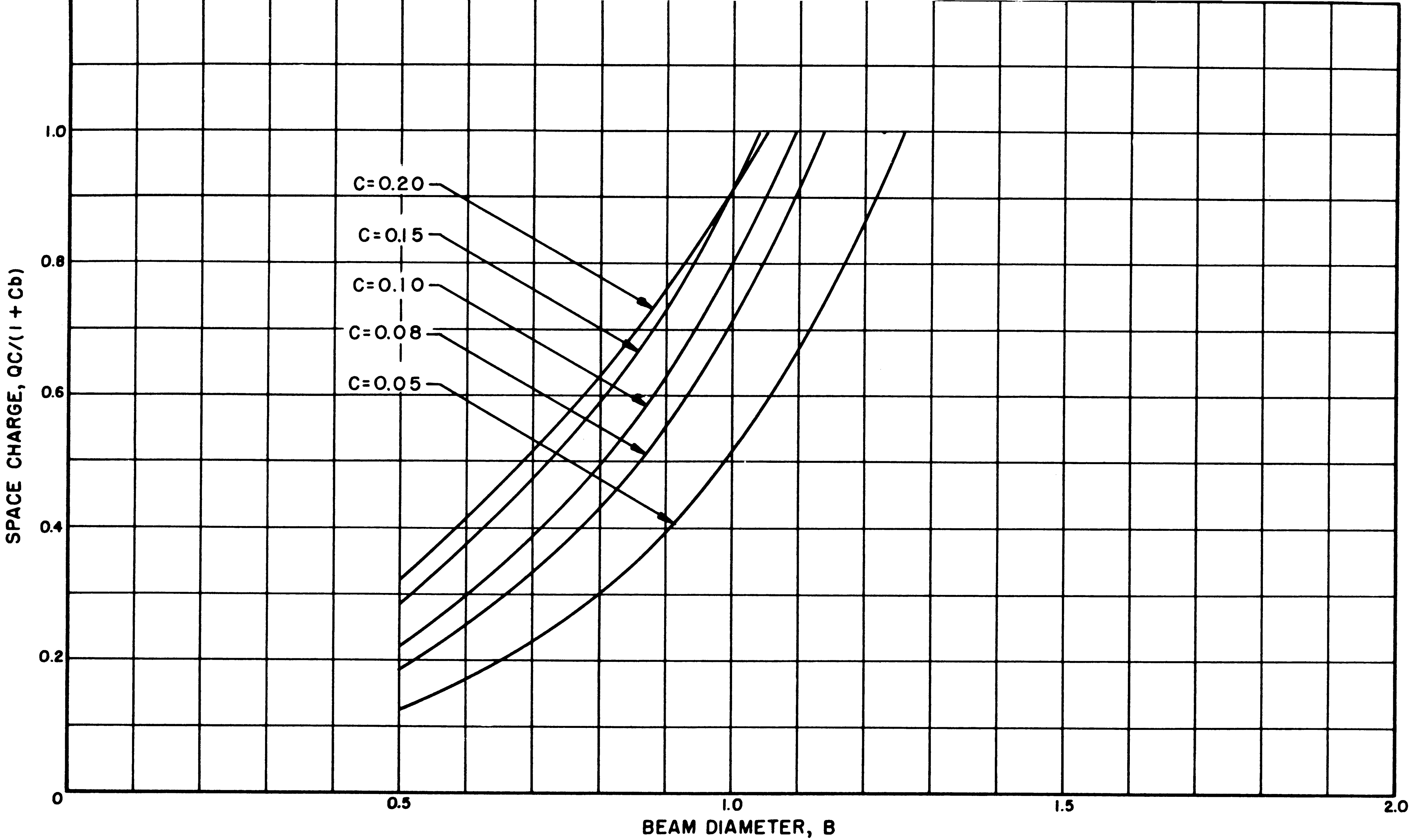


FIG. C.39 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.8$, $V_0 = 3$ KV, DLF = 70%)

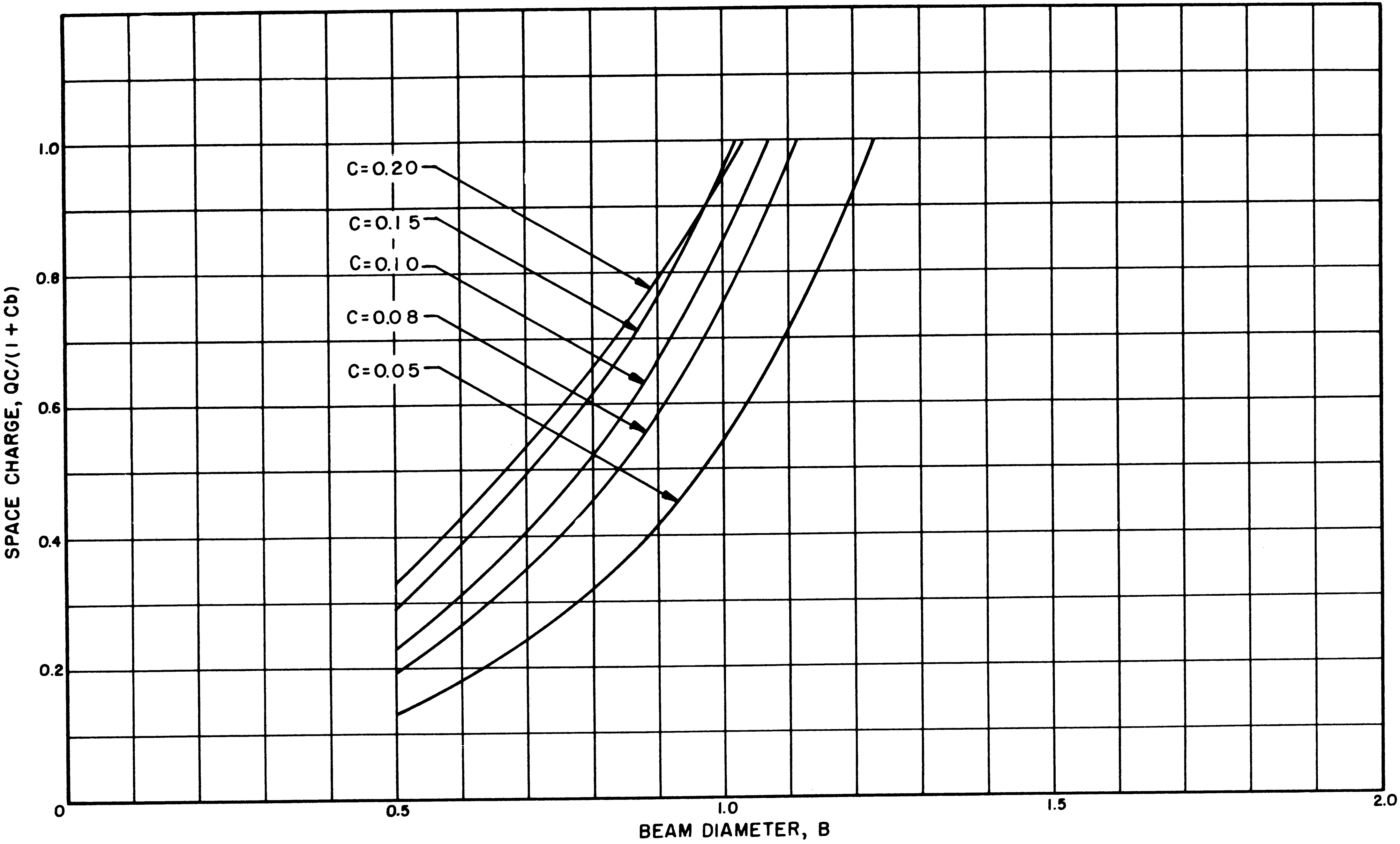


FIG. C.40 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.8$, $V_0 = 4$ KV, DLF = 70%)

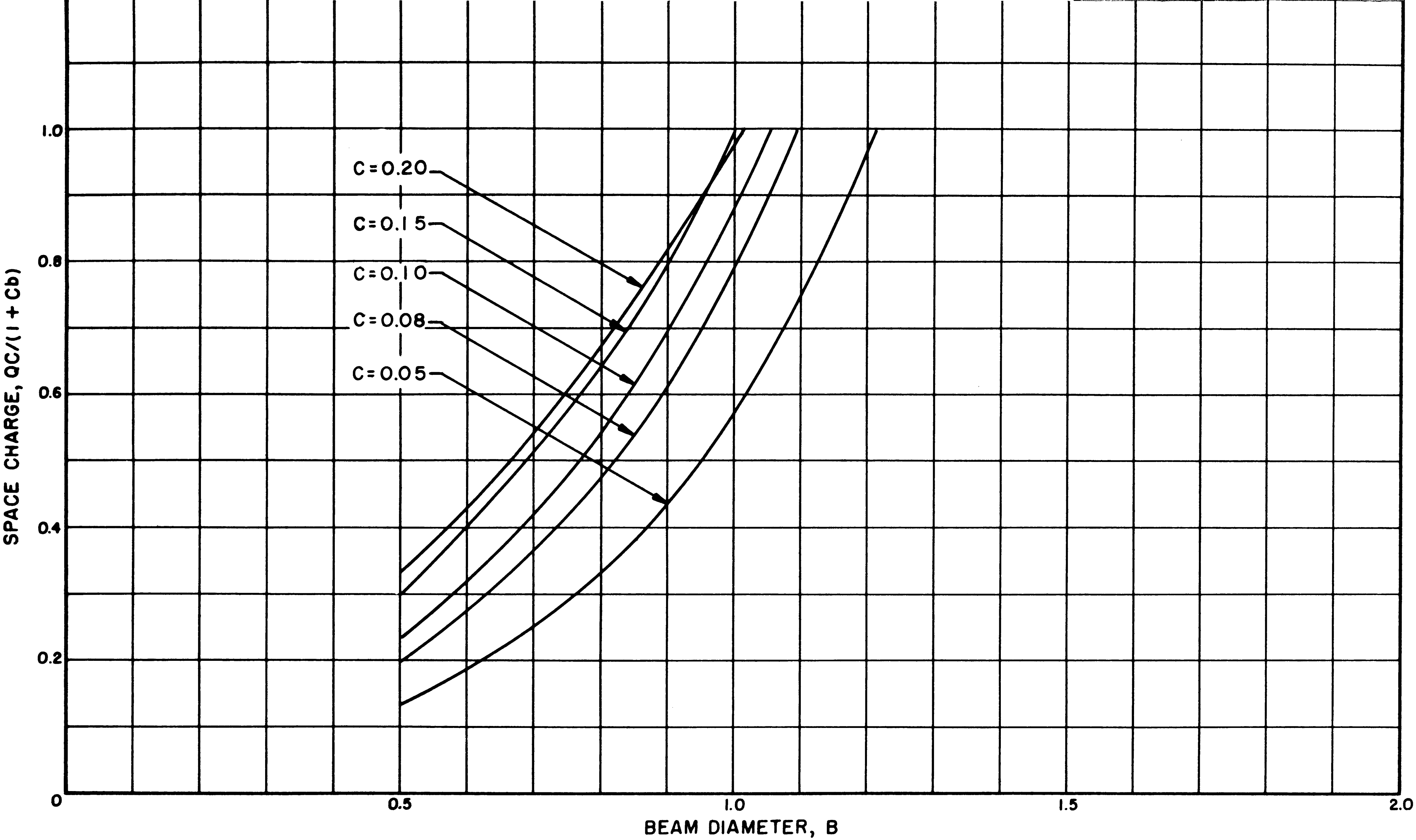


FIG. C.41 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER. ($a'/b' = 1.8$, $V_0 = 5$ KV, DLF = 70%)

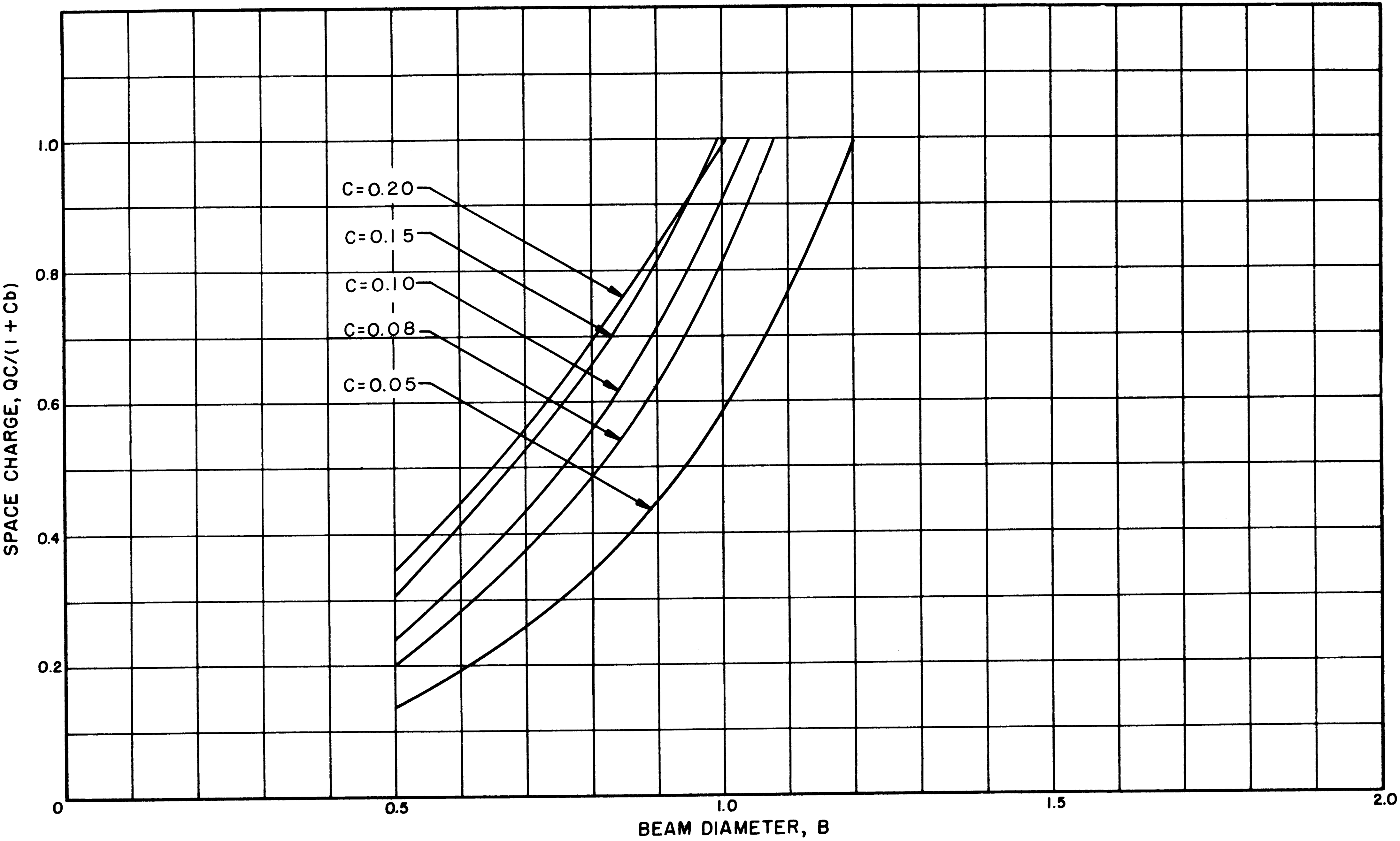


FIG. C.42 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.8$, $V_0 = 6$ KV, DLF = 70%)

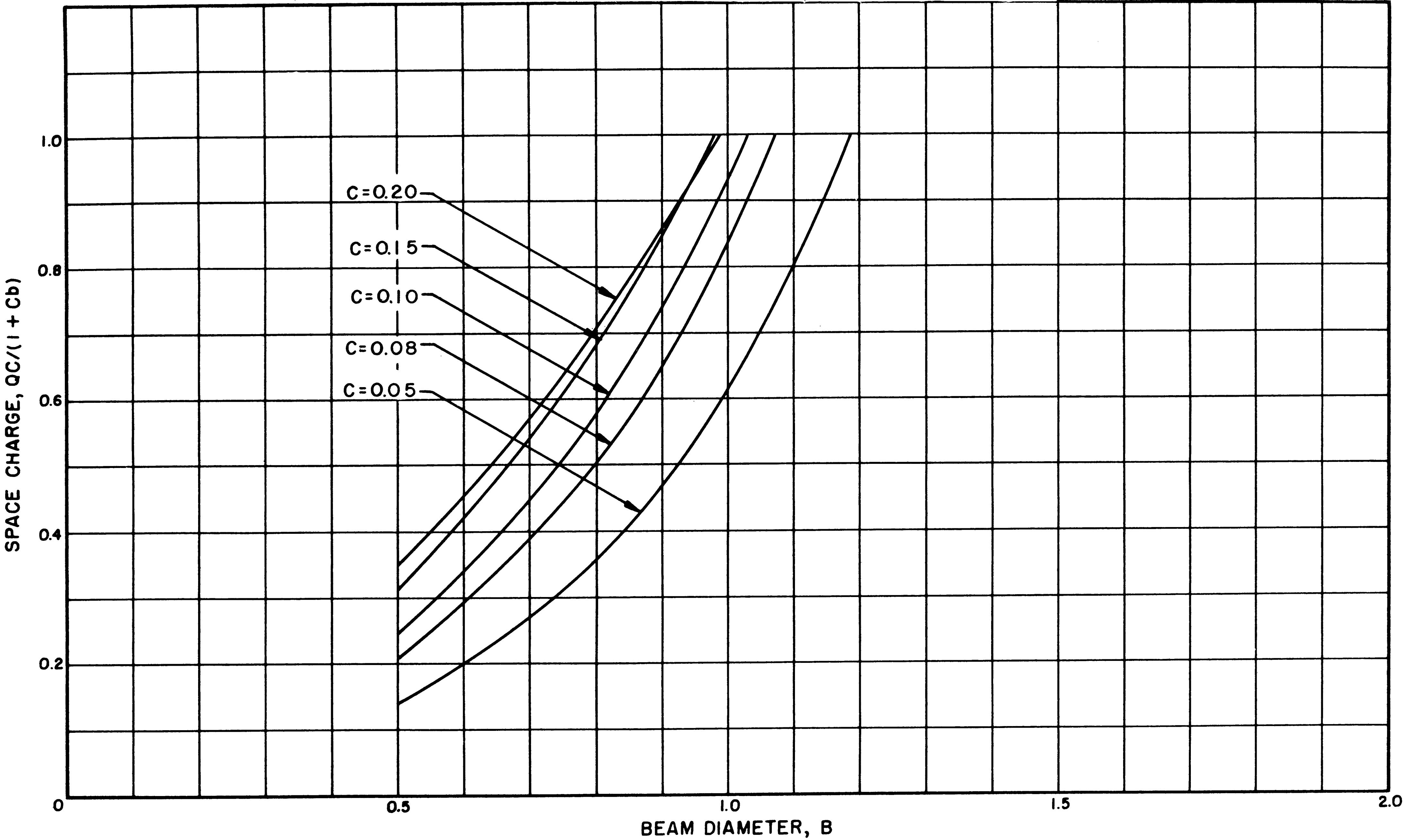


FIG. C.43 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER. ($a'/b' = 1.8$, $V_0 = 7$ KV, DLF = 70%)

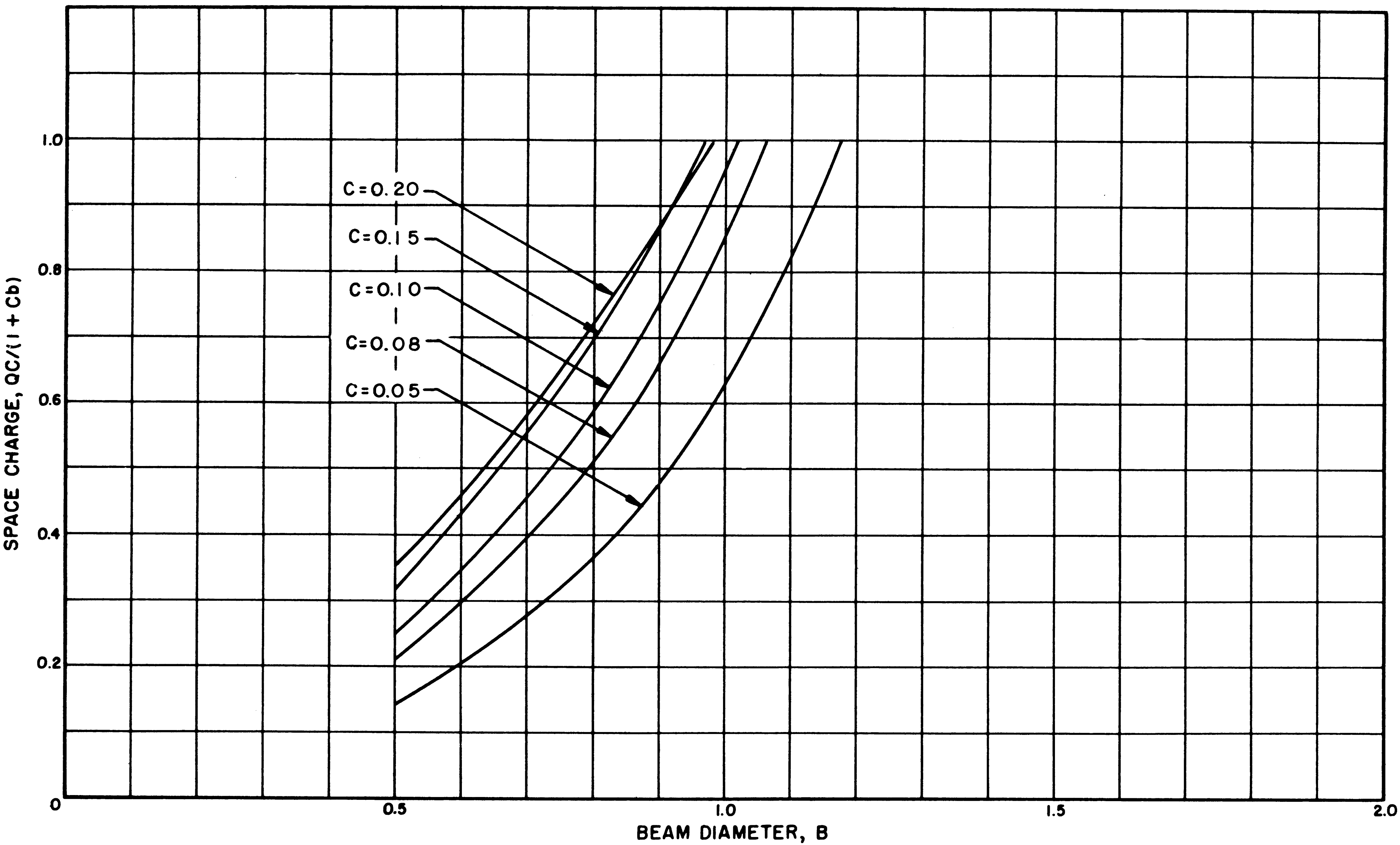


FIG. C.44 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.8$, $V_0 = 8$ KV, DLF = 70%)

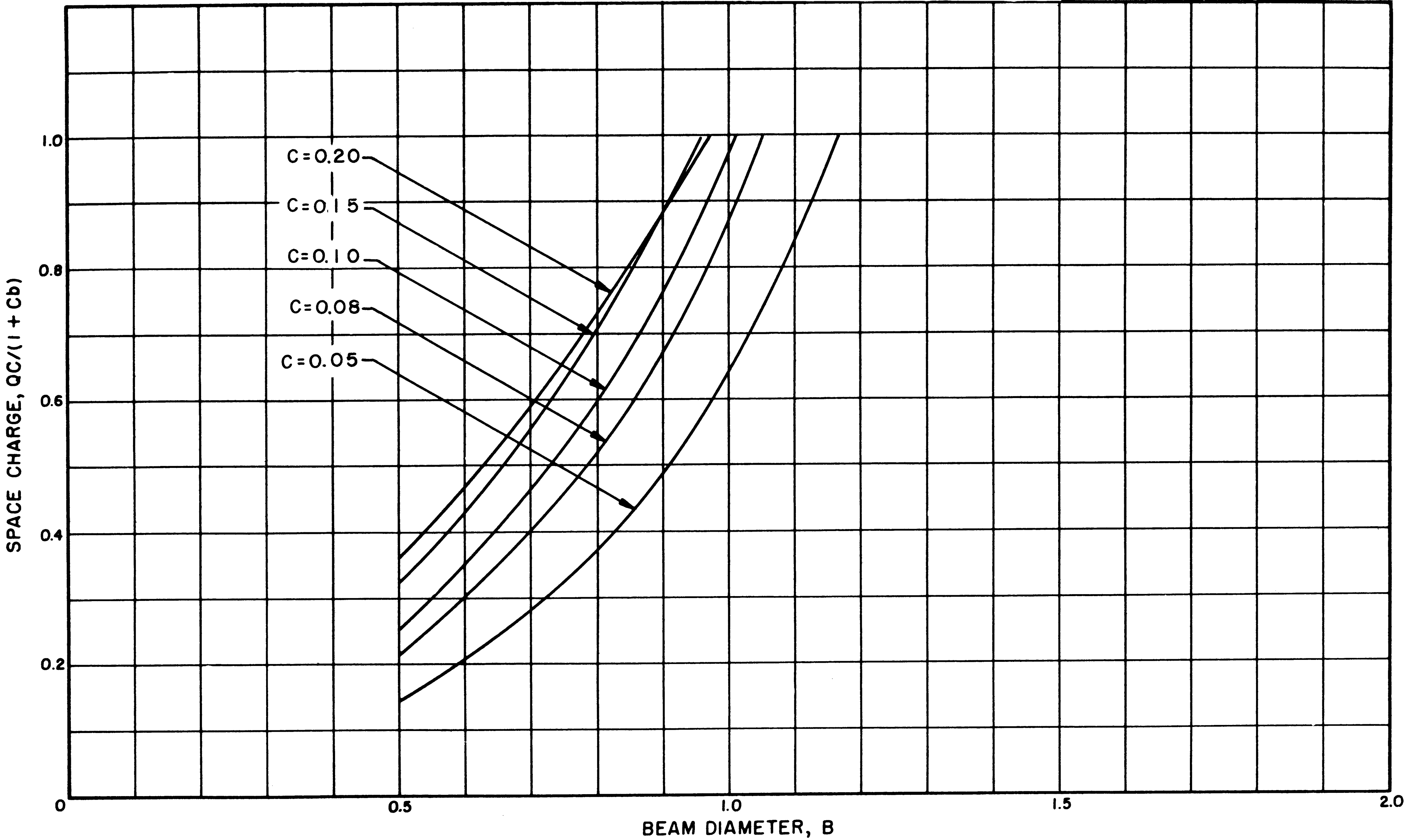


FIG. C. 45 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.8$, $V_0 = 9$ KV, DLF = 70%)

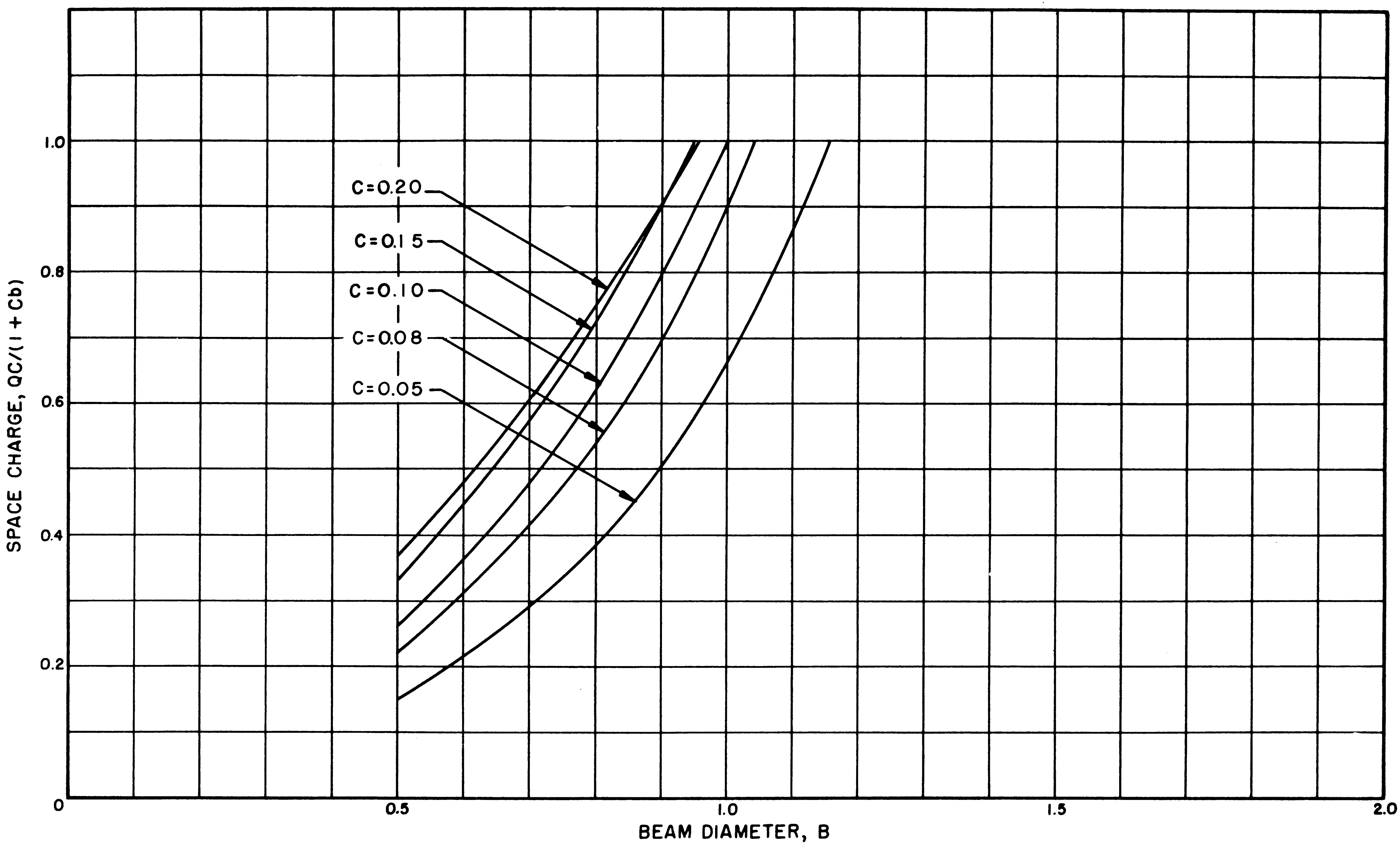


FIG. C.46 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.8$, $V_0 = 10$ KV, DLF = 70%)

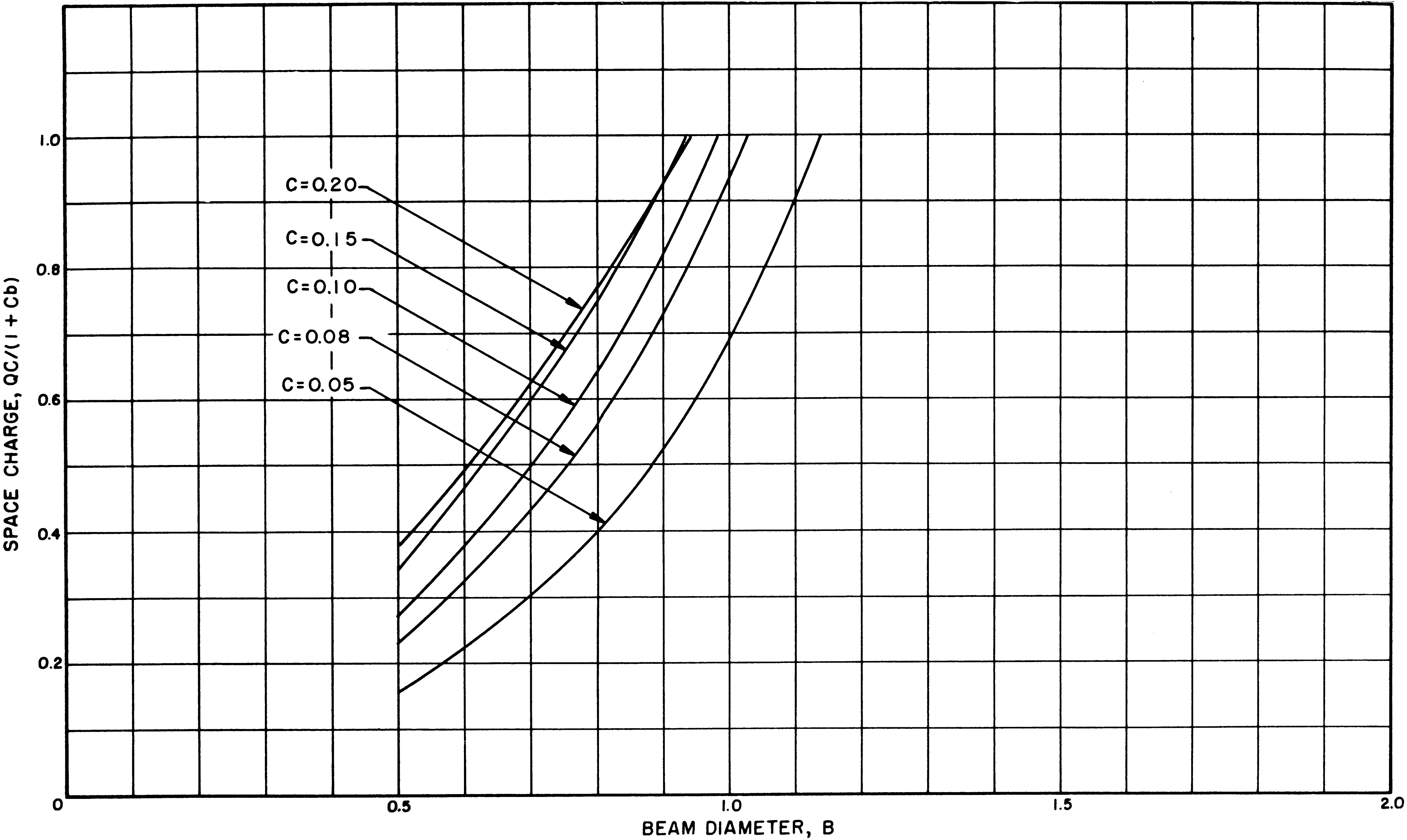


FIG. C.47 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER. ($a'/b' = 1.8$, $V_0 = 12$ KV, DLF = 70%)

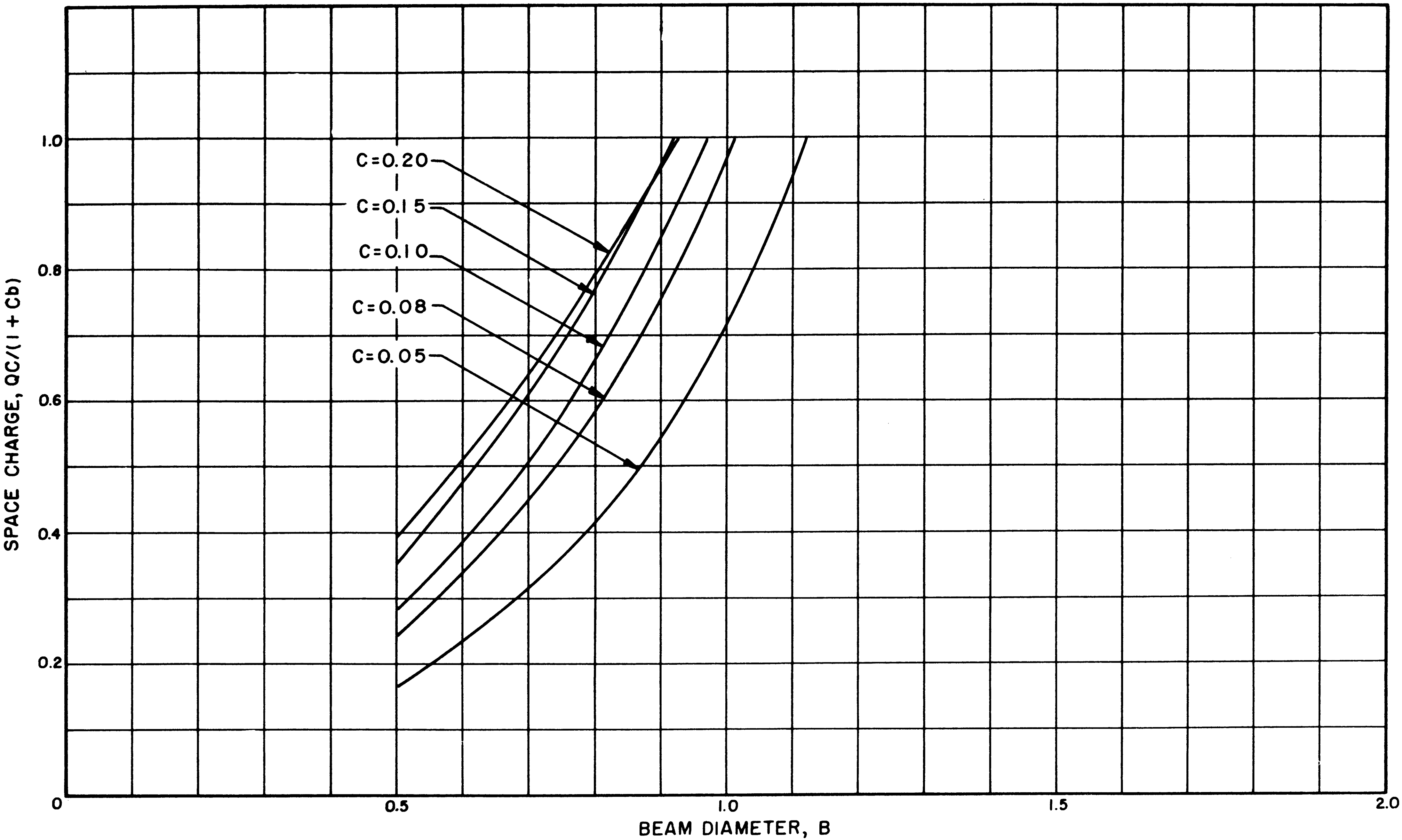


FIG. C.48 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER. ($a'/b' = 1.8$, $V_0 = 14$ KV, DLF = 70%)

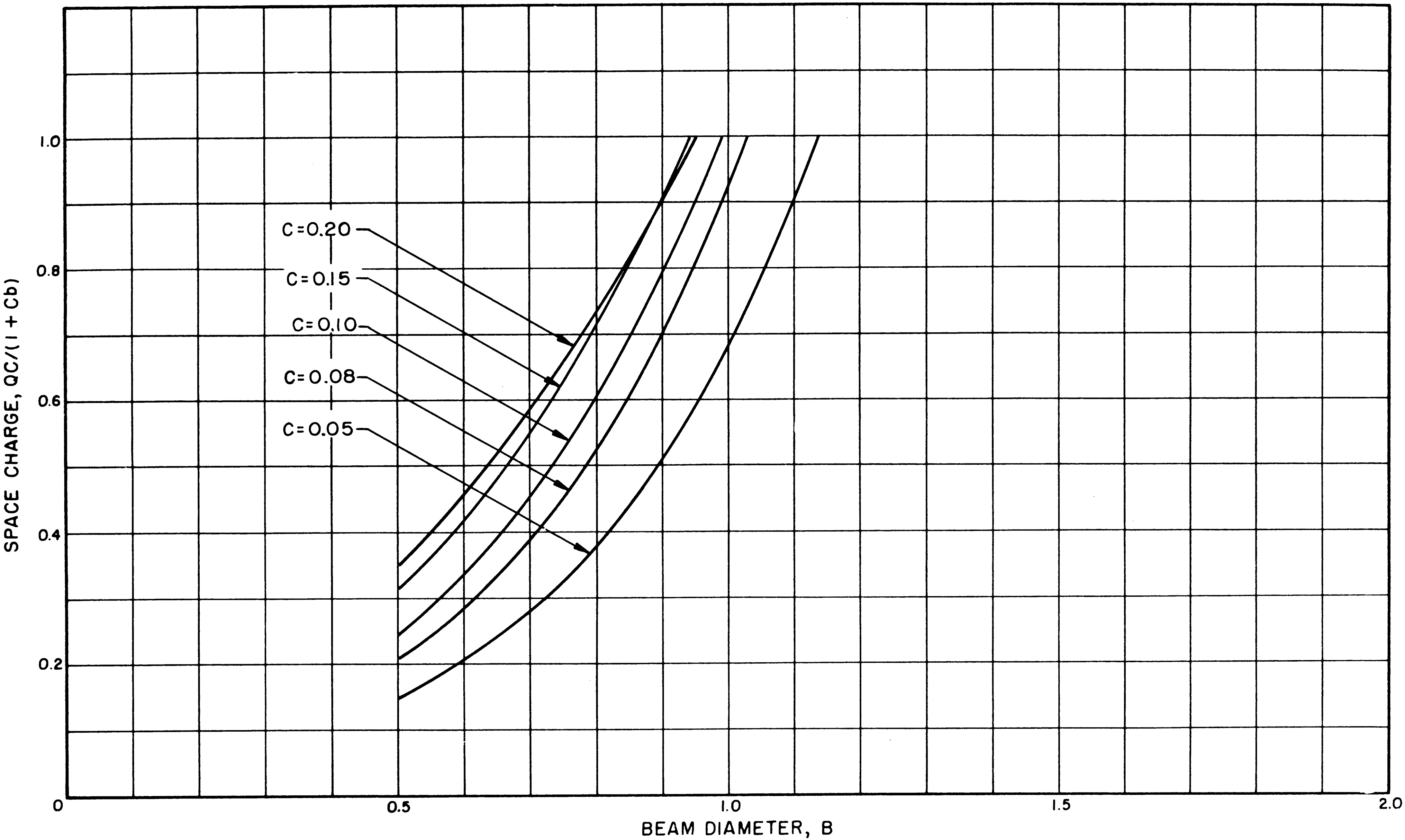


FIG. C.49 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 2.0$, $V_0 = 1$ KV, DLF = 70 %)

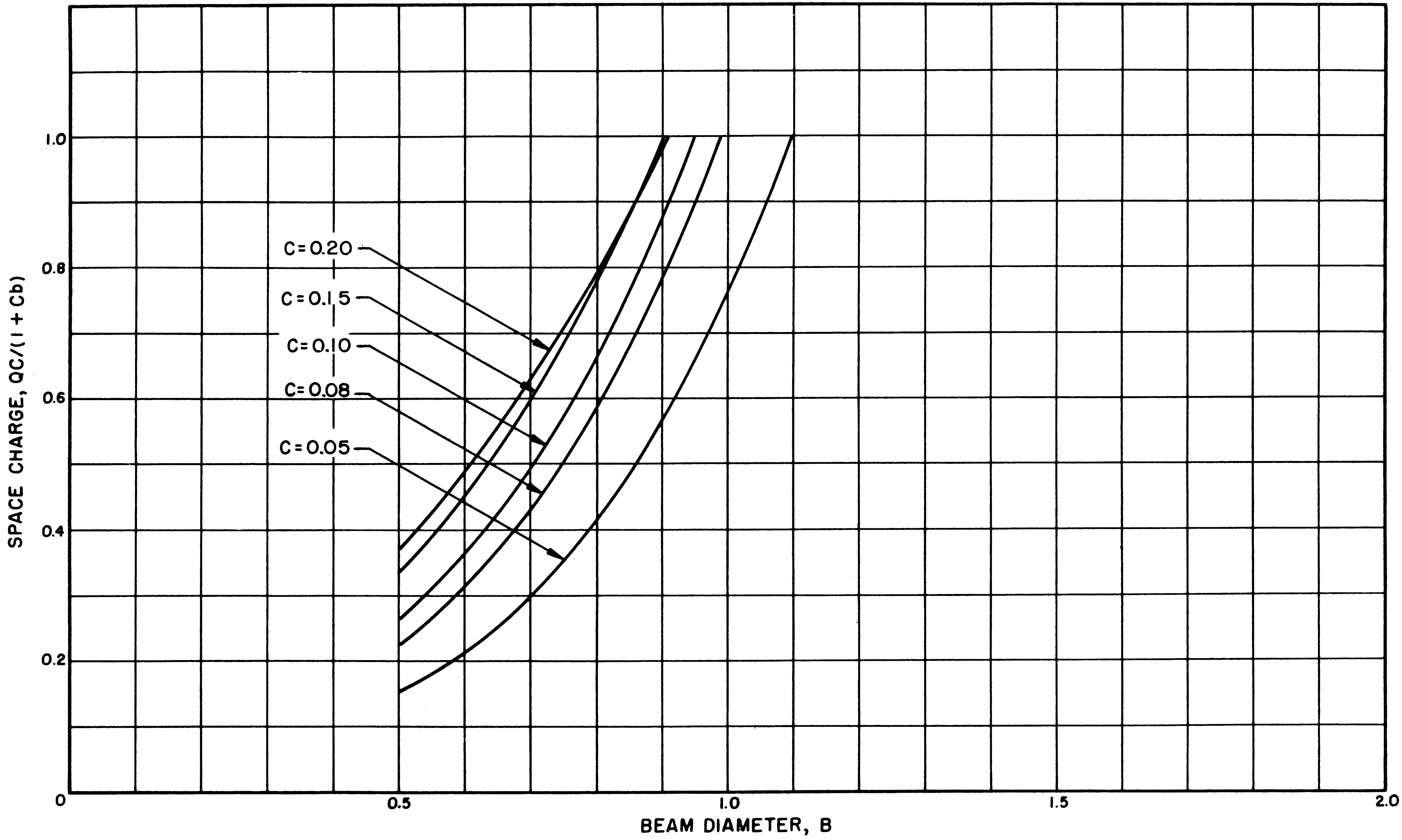


FIG. C.50 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 2.0$, $V_0 = 2$ KV, DLF = 70%)

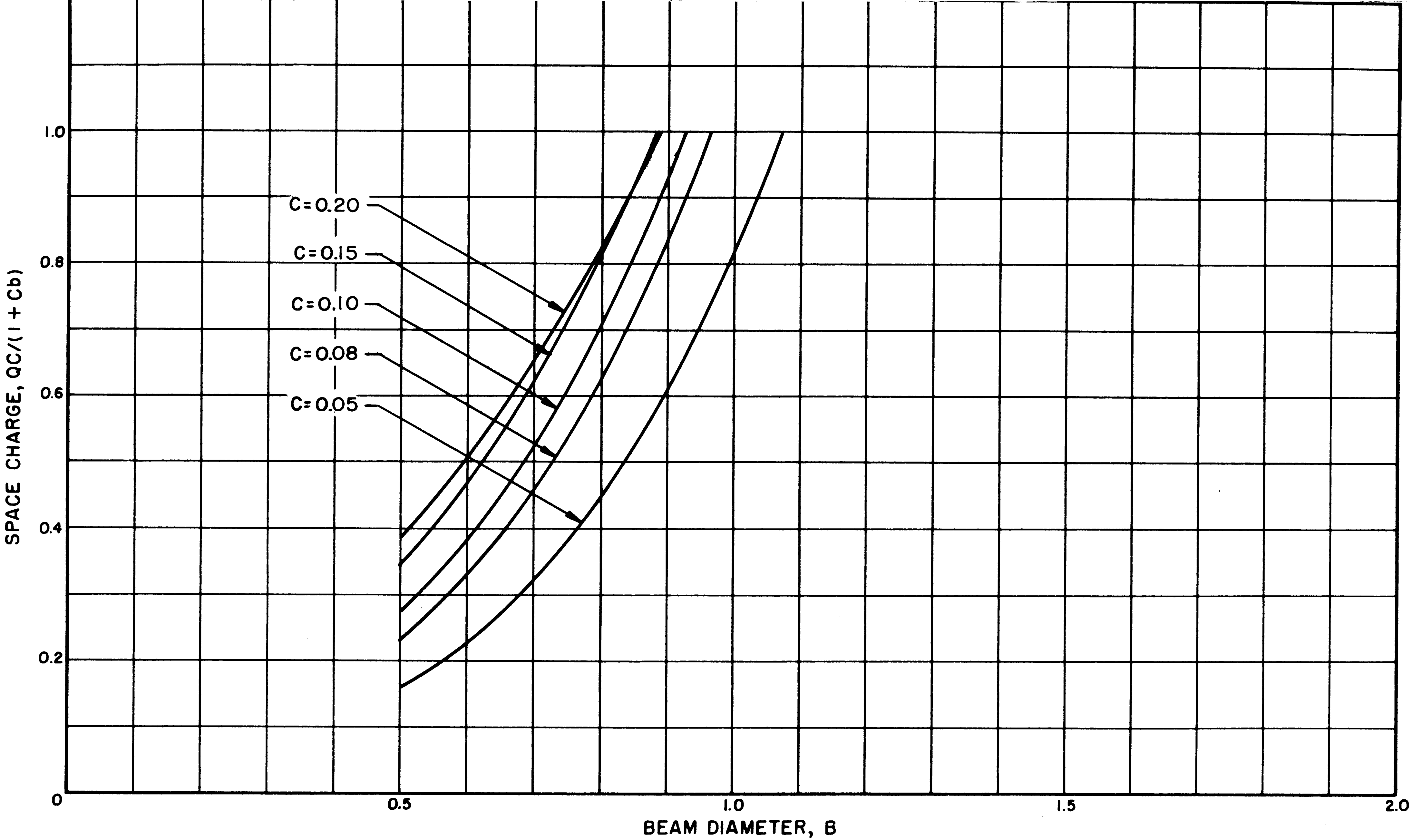


FIG. C.51 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 2.0$, $V_0 = 3$ KV, DLF = 70 %)

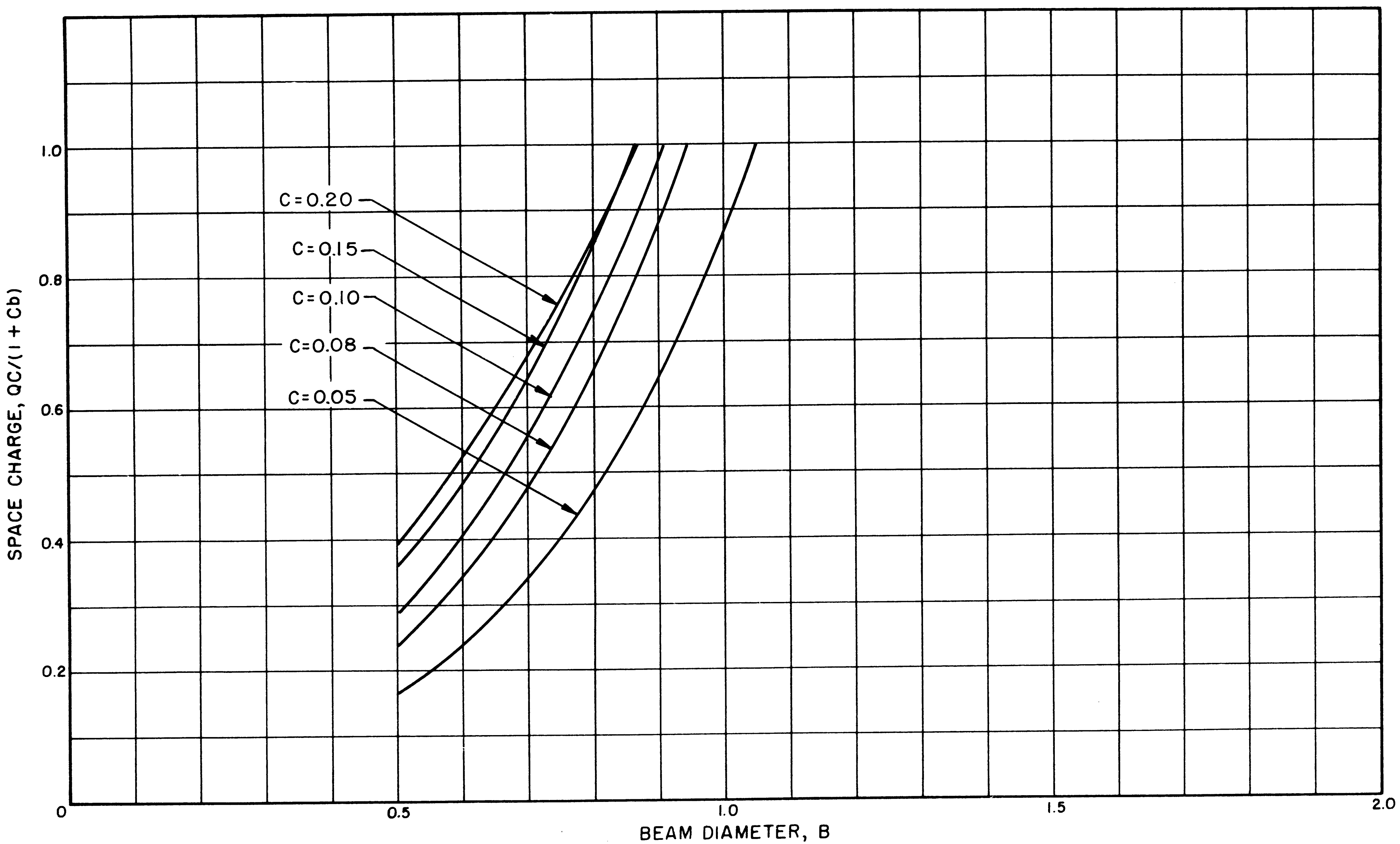


FIG. C.52 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 2.0$, $V_0 = 4$ KV, DLF = 70%)

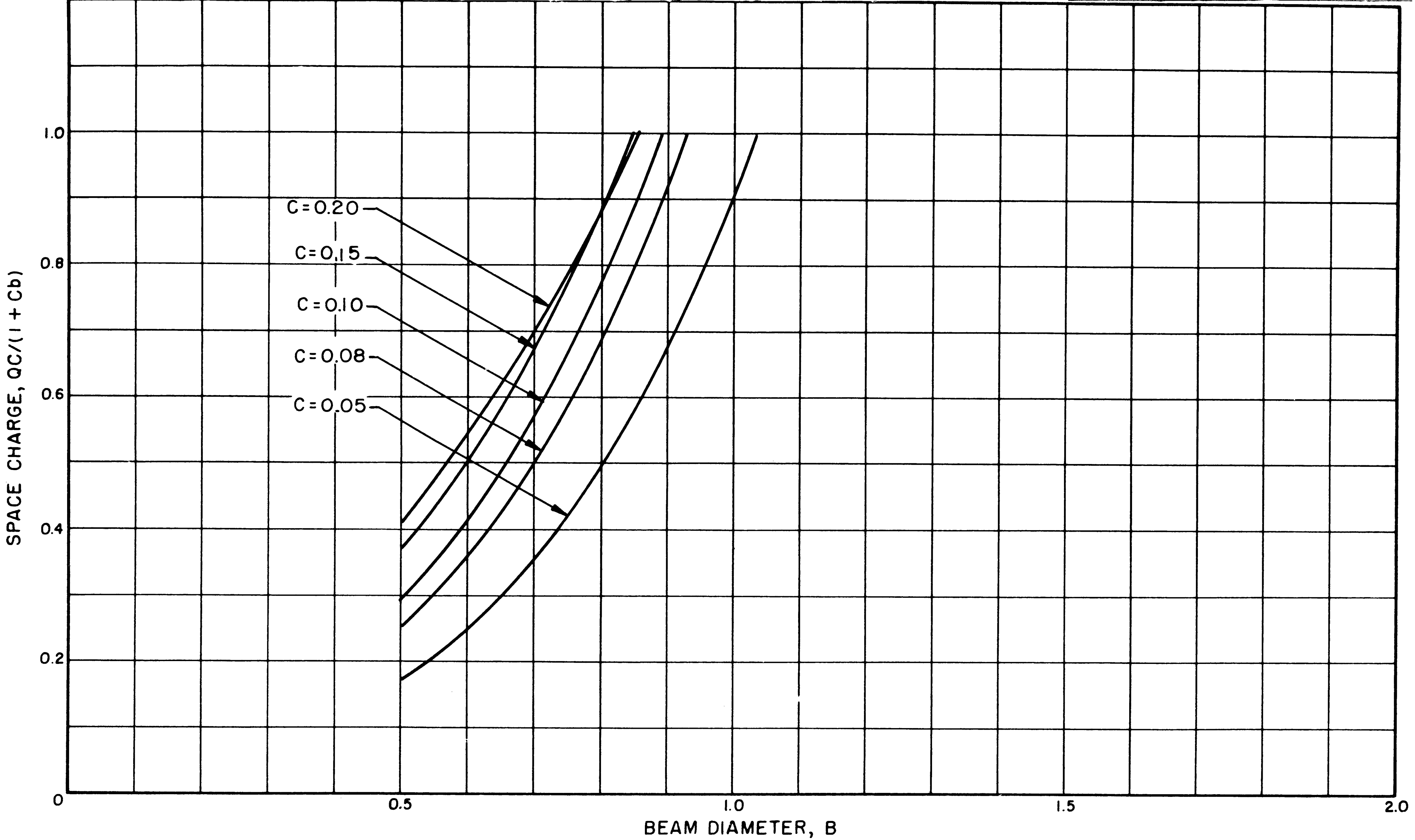


FIG. C.53 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER. (a'/b' = 2.0, V_0 = 5 KV, DLF = 70 %)

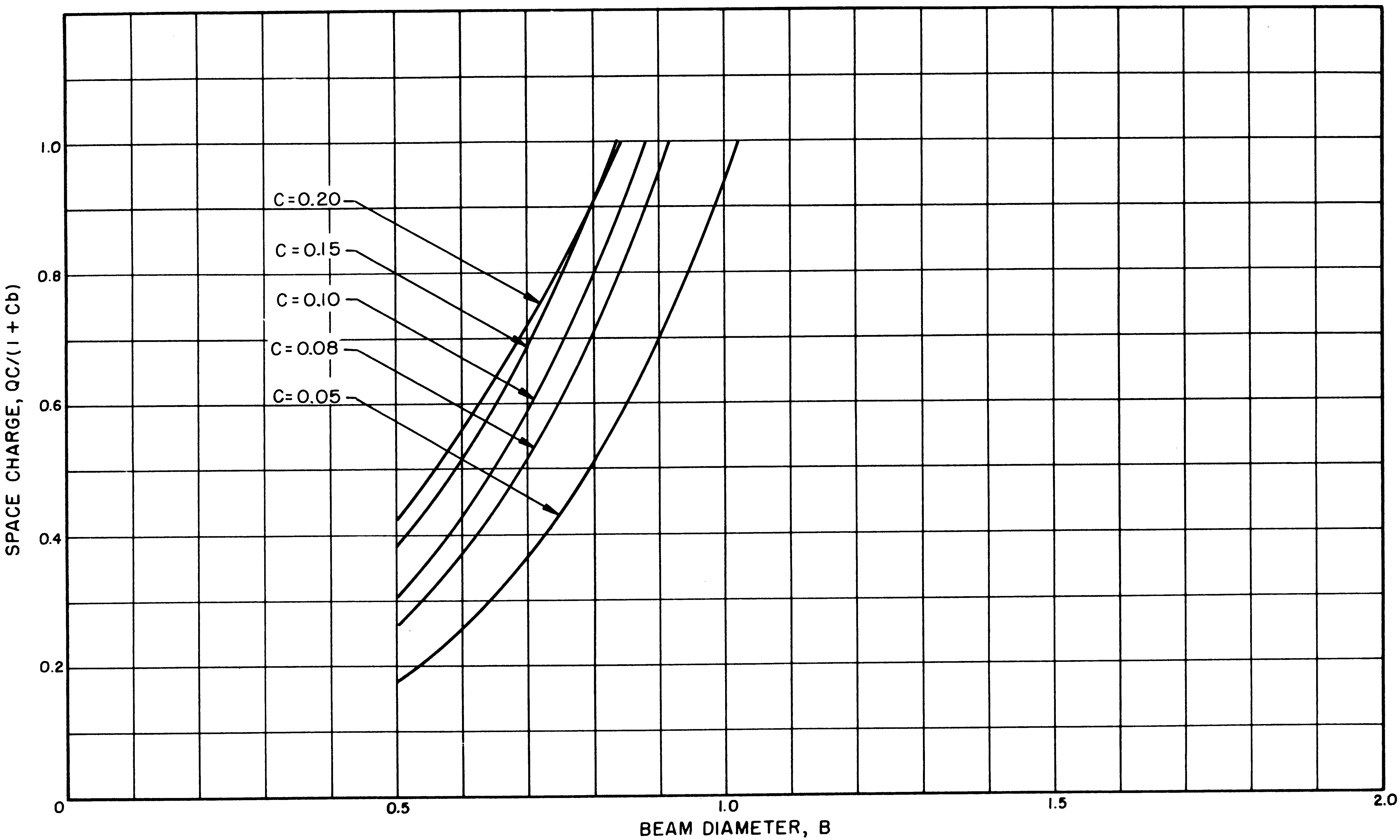


FIG. C.54 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 2.0$, $V_0 = 6$ KV, DLF = 70%)

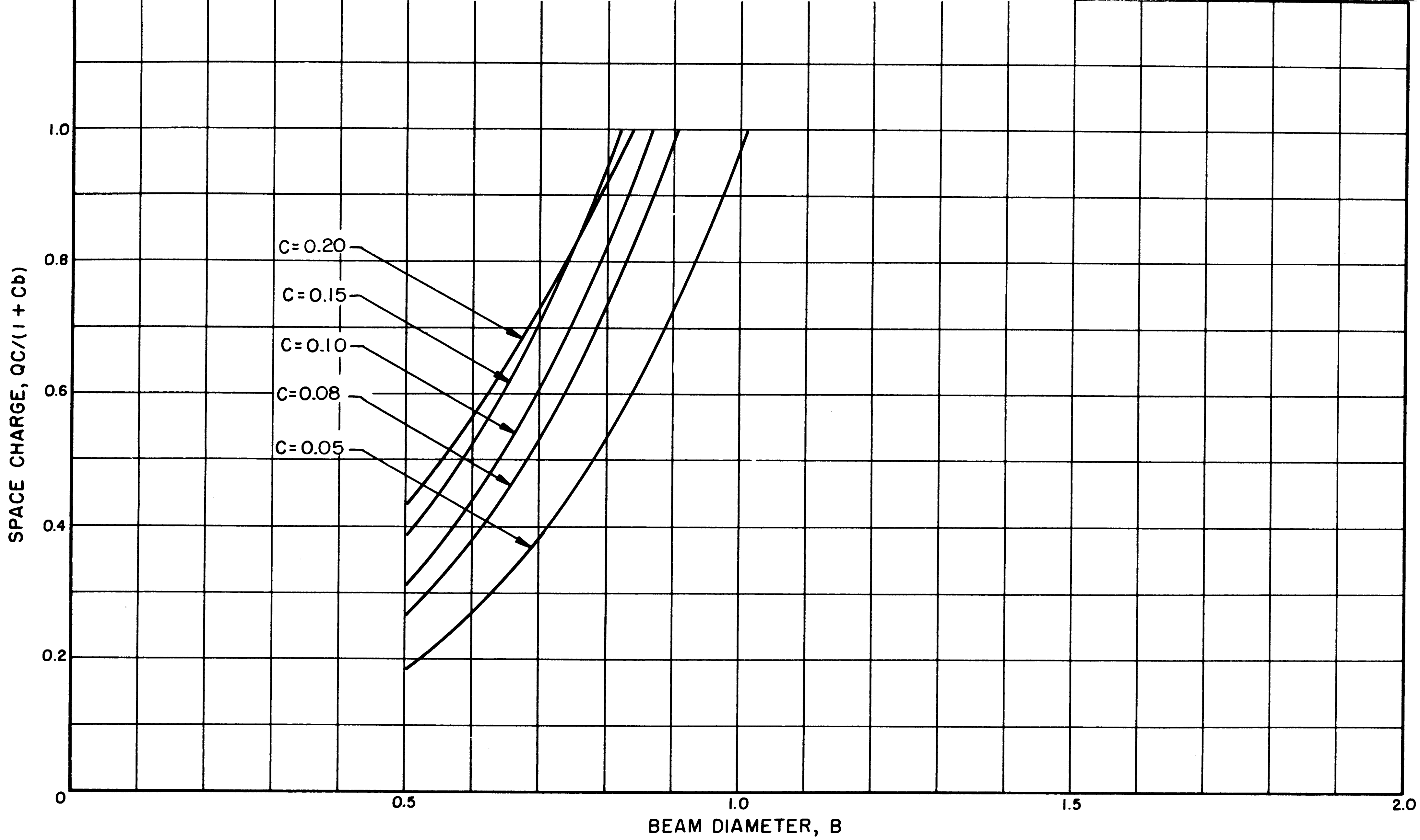


FIG. C.55 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER. ($a'/b' = 2.0$, V_0 = 7 KV, DLF = 70%)

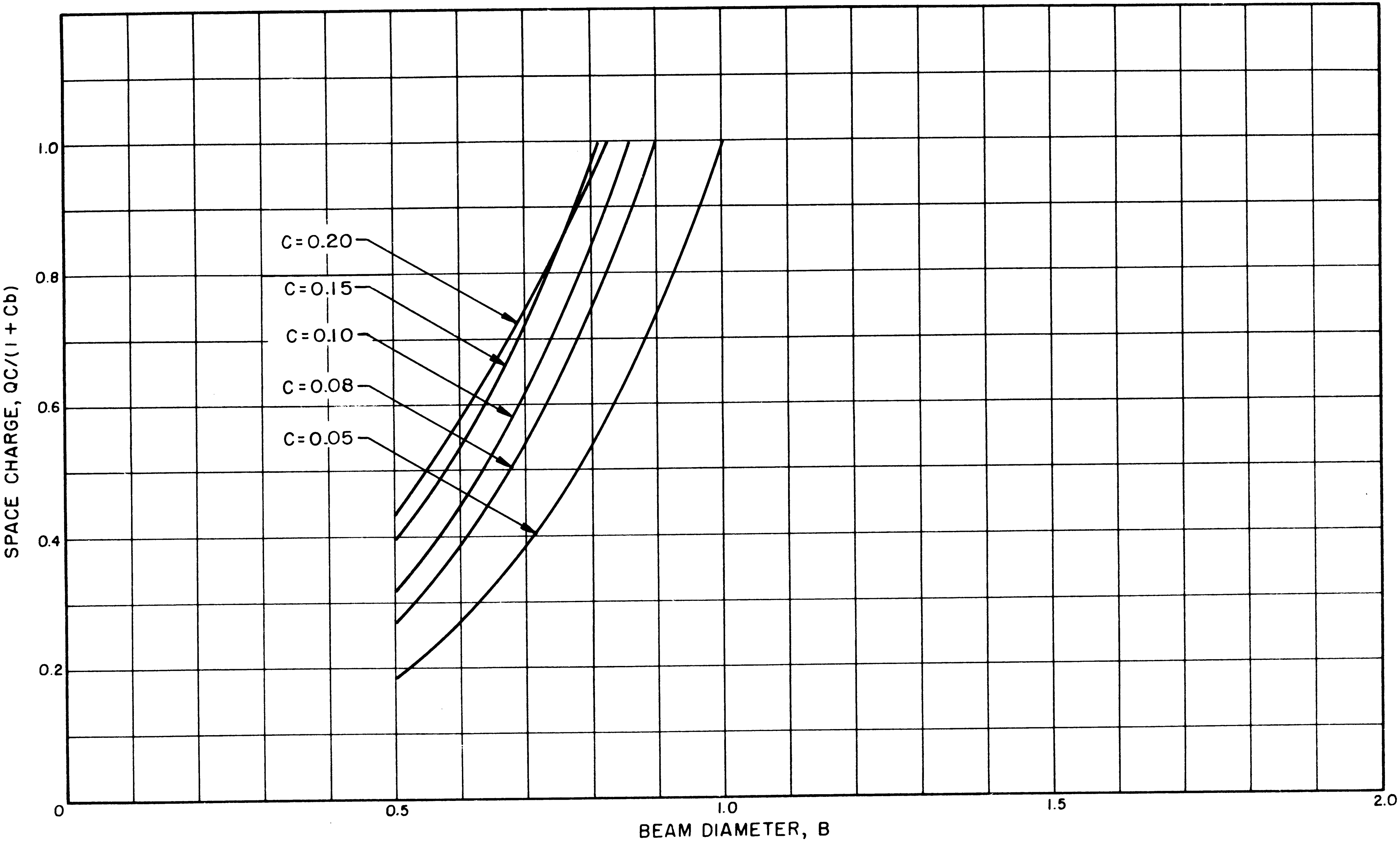


FIG. C.56 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 2.0$, $V_0 = 8$ KV, DLF = 70%)

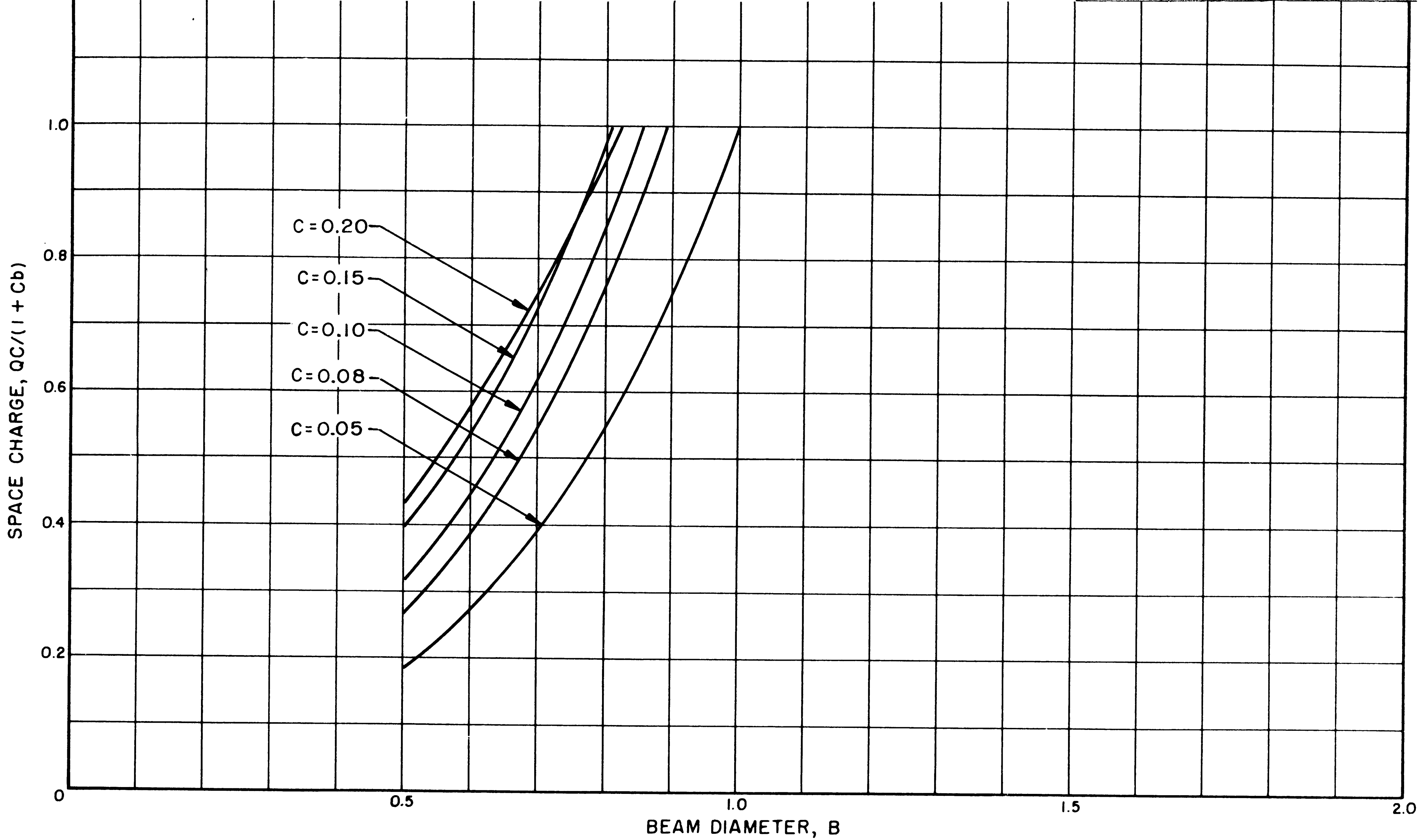


FIG. C.57 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER. ($a'/b' = 2.0$, $V_0 = 9$ KV, DLF = 70%)

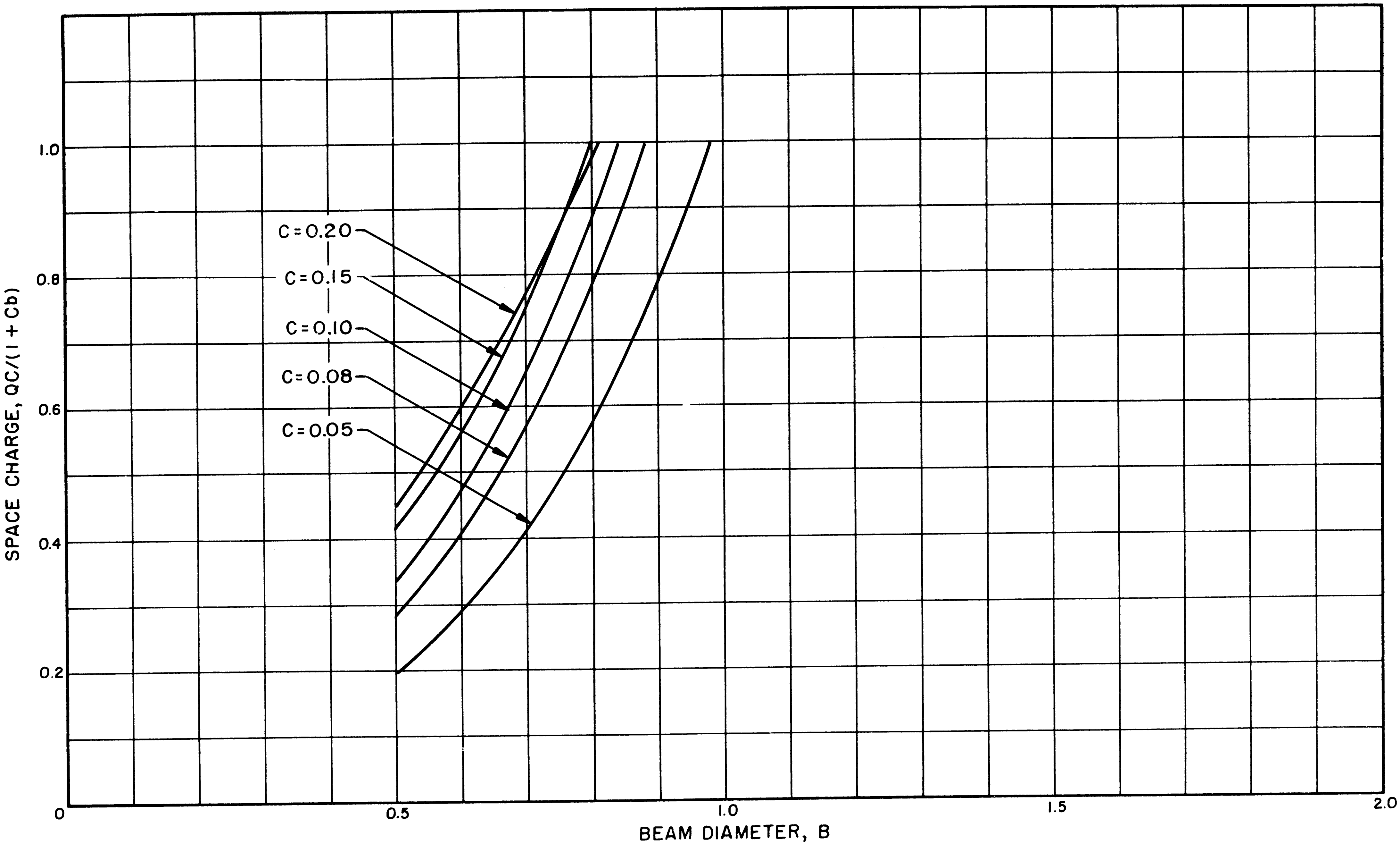


FIG. C.58 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 2.0$, $V_0 = 10$ KV, DLF = 70 %)

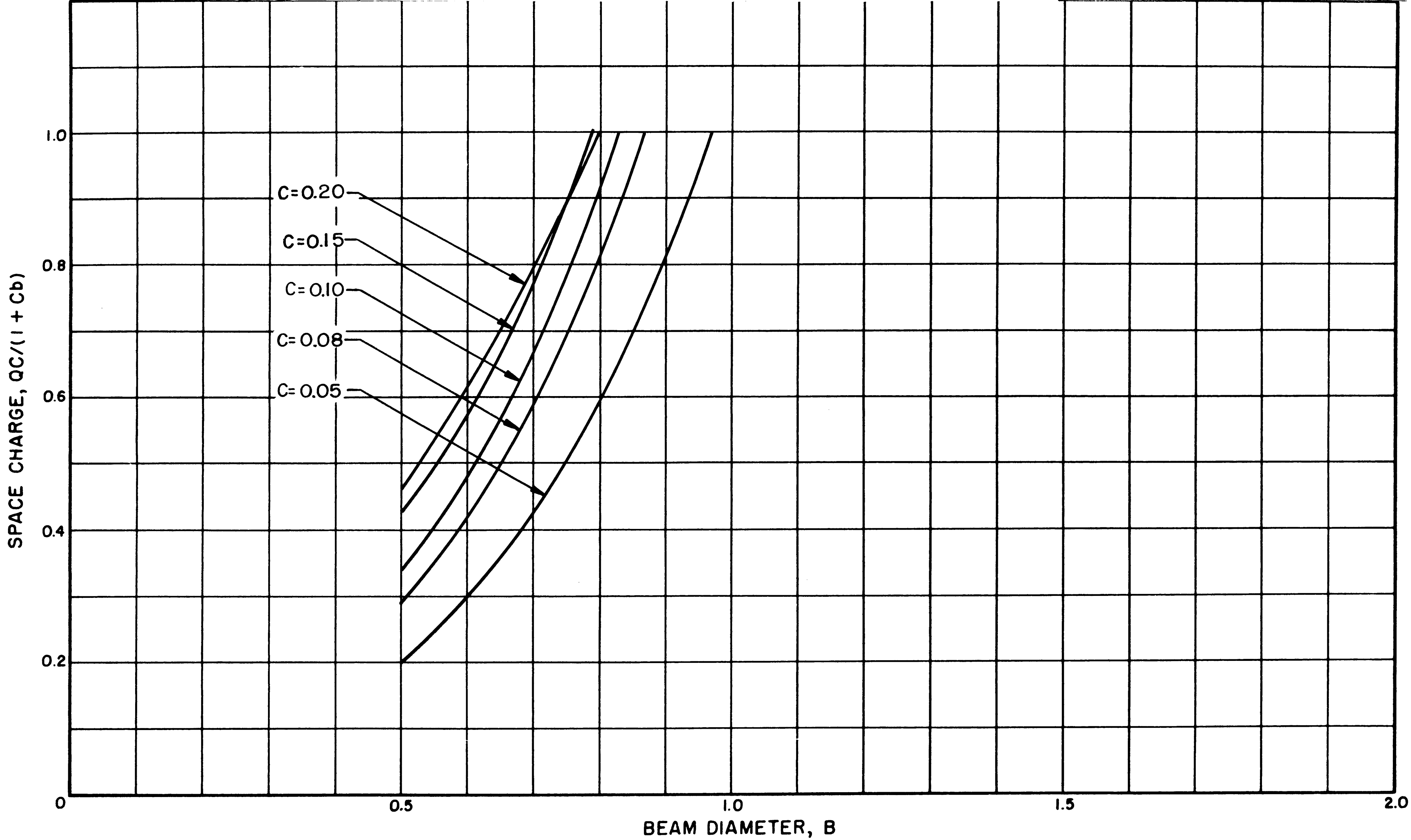


FIG. C.59 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER. ($a'/b' = 2.0$, $V_0 = 12$ KV, DLF = 70%)

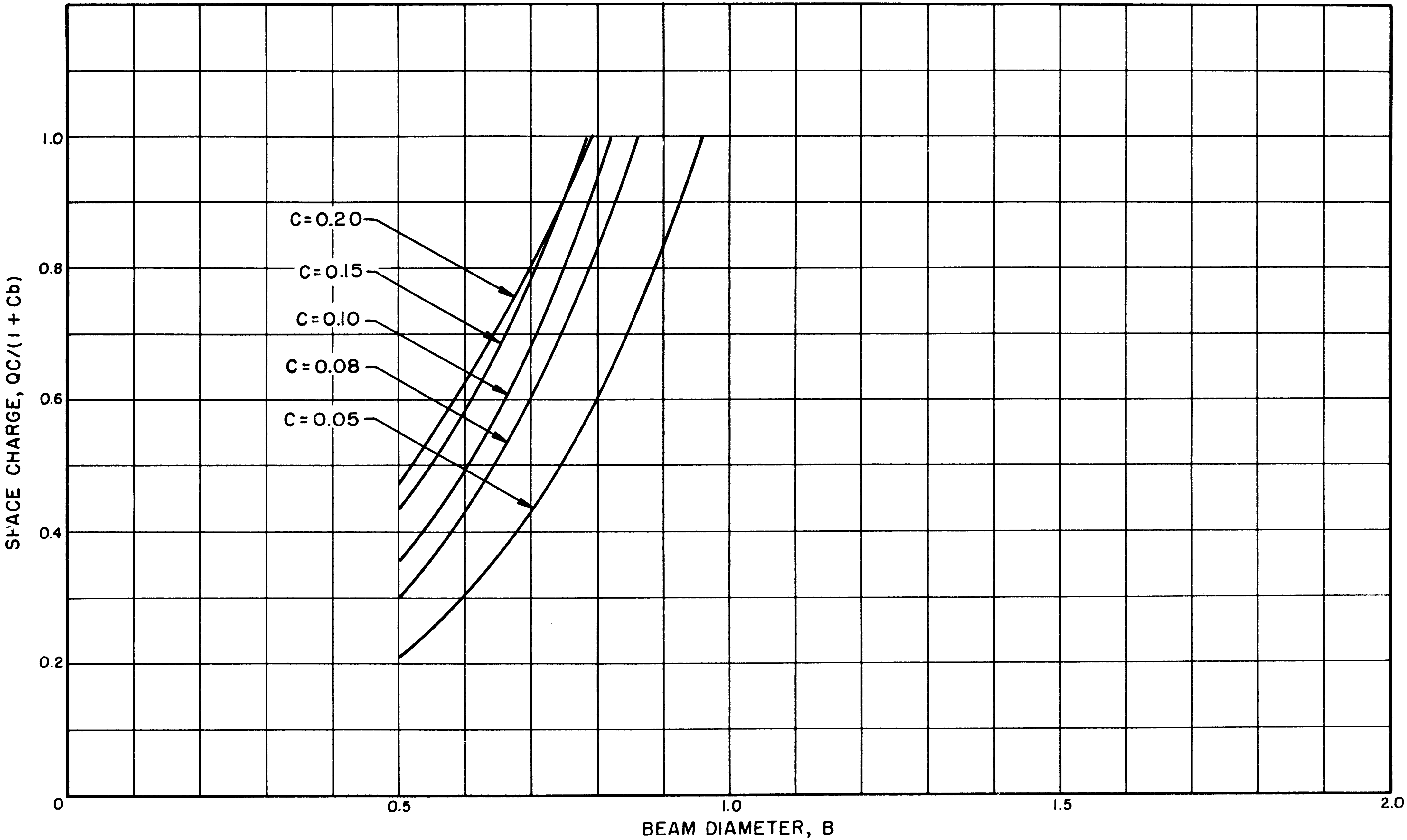


FIG. C.60 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 2.0$, $V_0 = 14$ KV, DLF = 70 %)

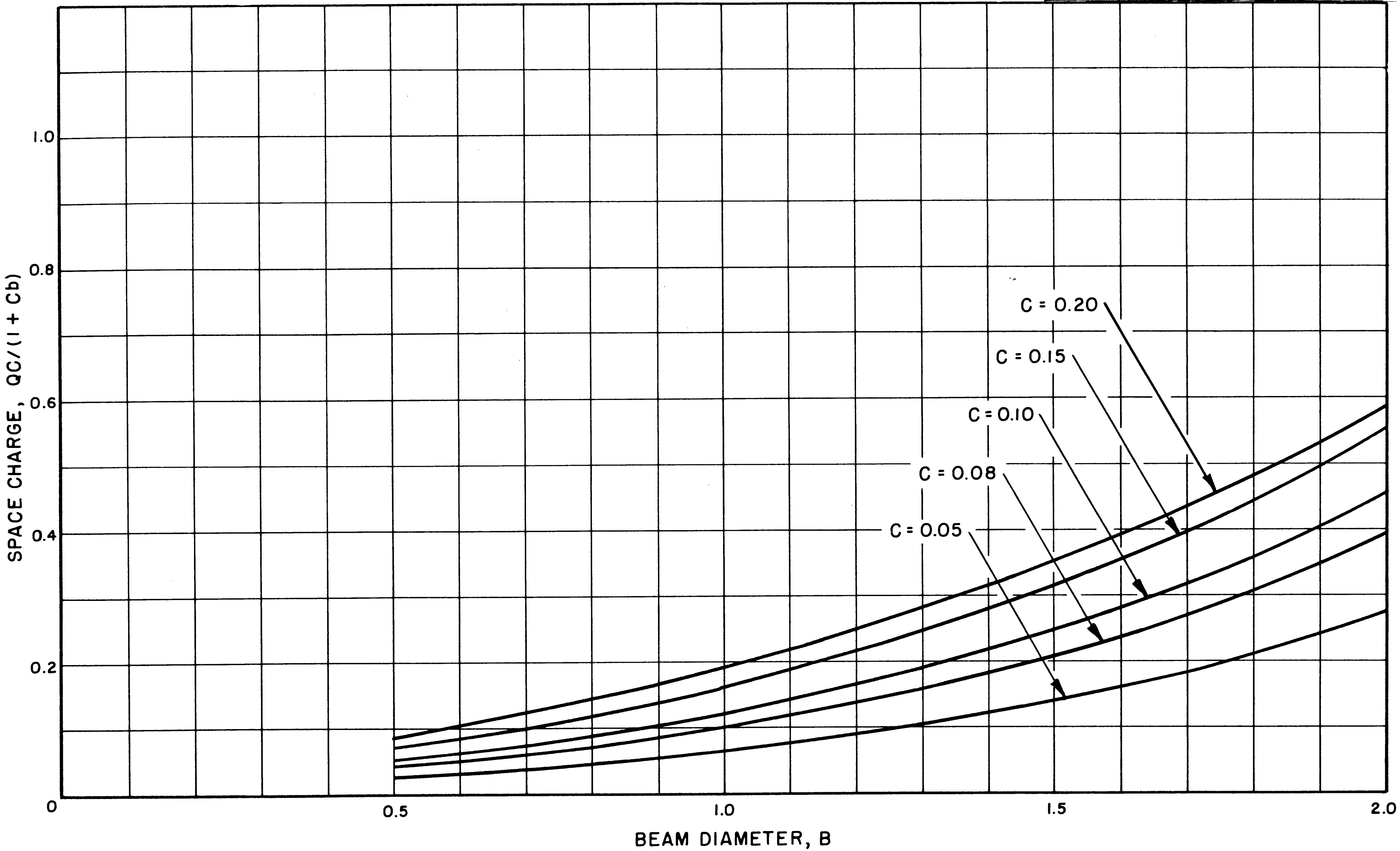


FIG. C.61 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.2$, $V_0 = 1$ KV, DLF = 80%)

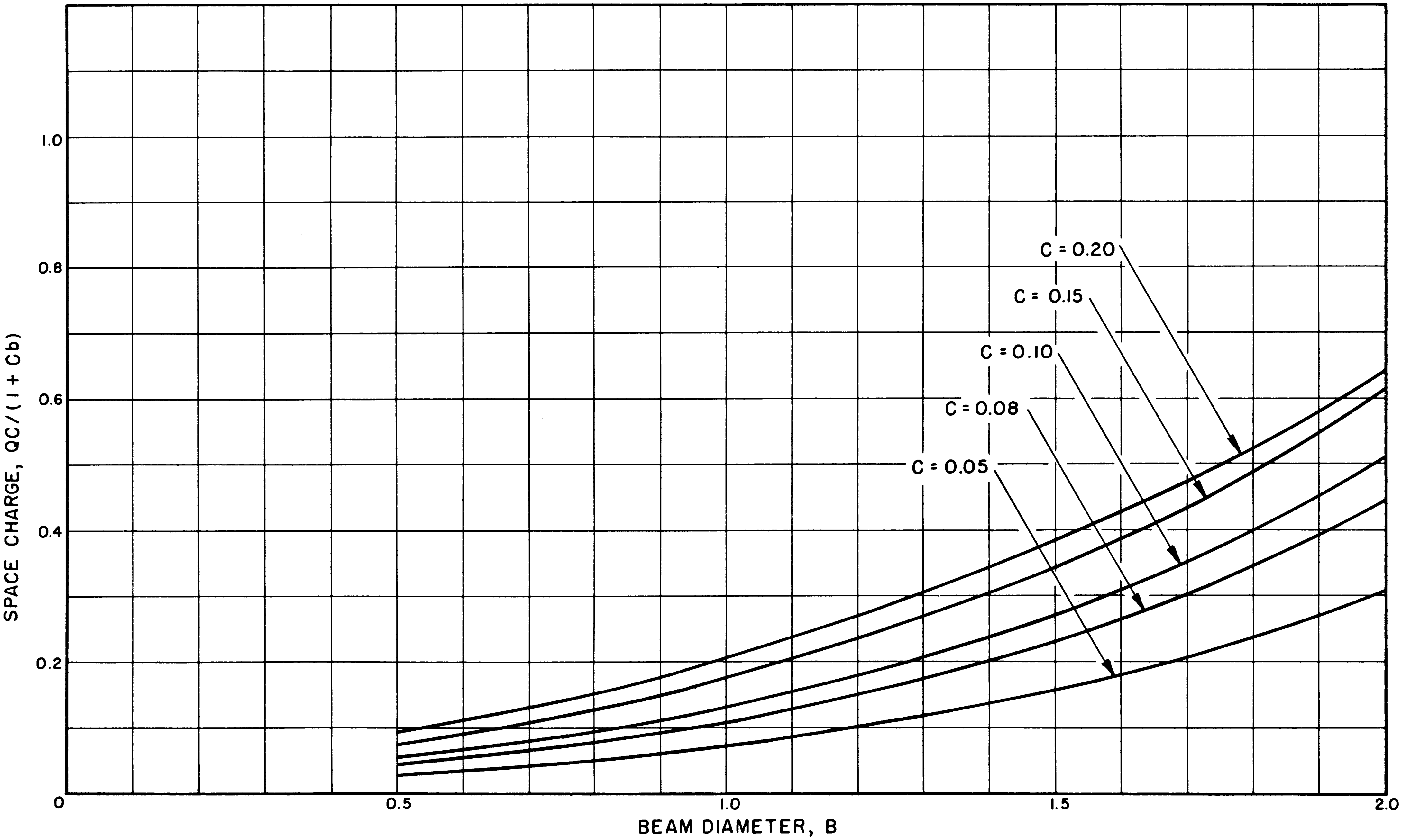


FIG. C.62 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.2$, $V_0 = 2$ KV, DLF = 80 %)

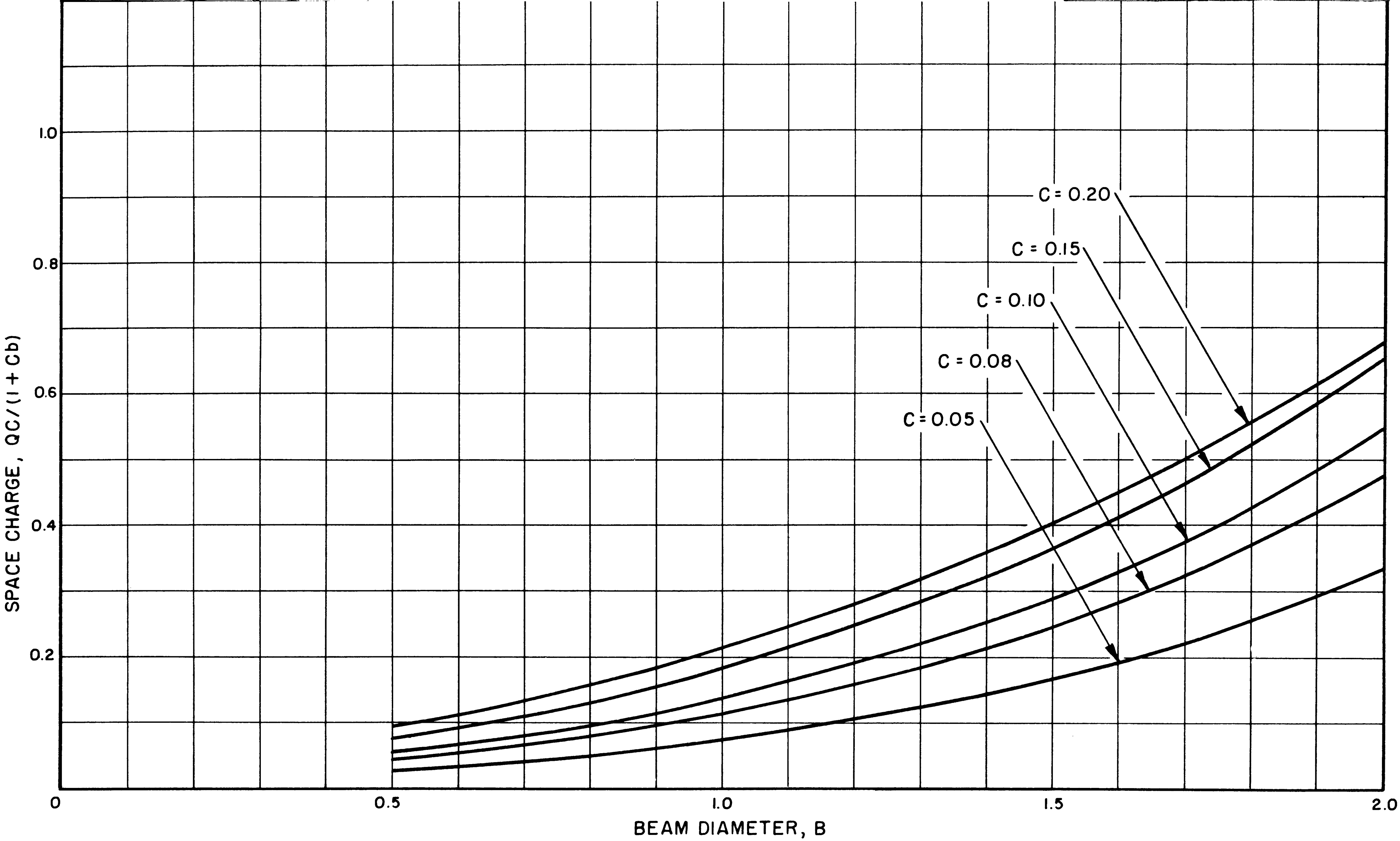


FIG. C.63 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER. ($a'/b' = 1.2$, $V_0 = 3$ KV, DLF = 80 %)

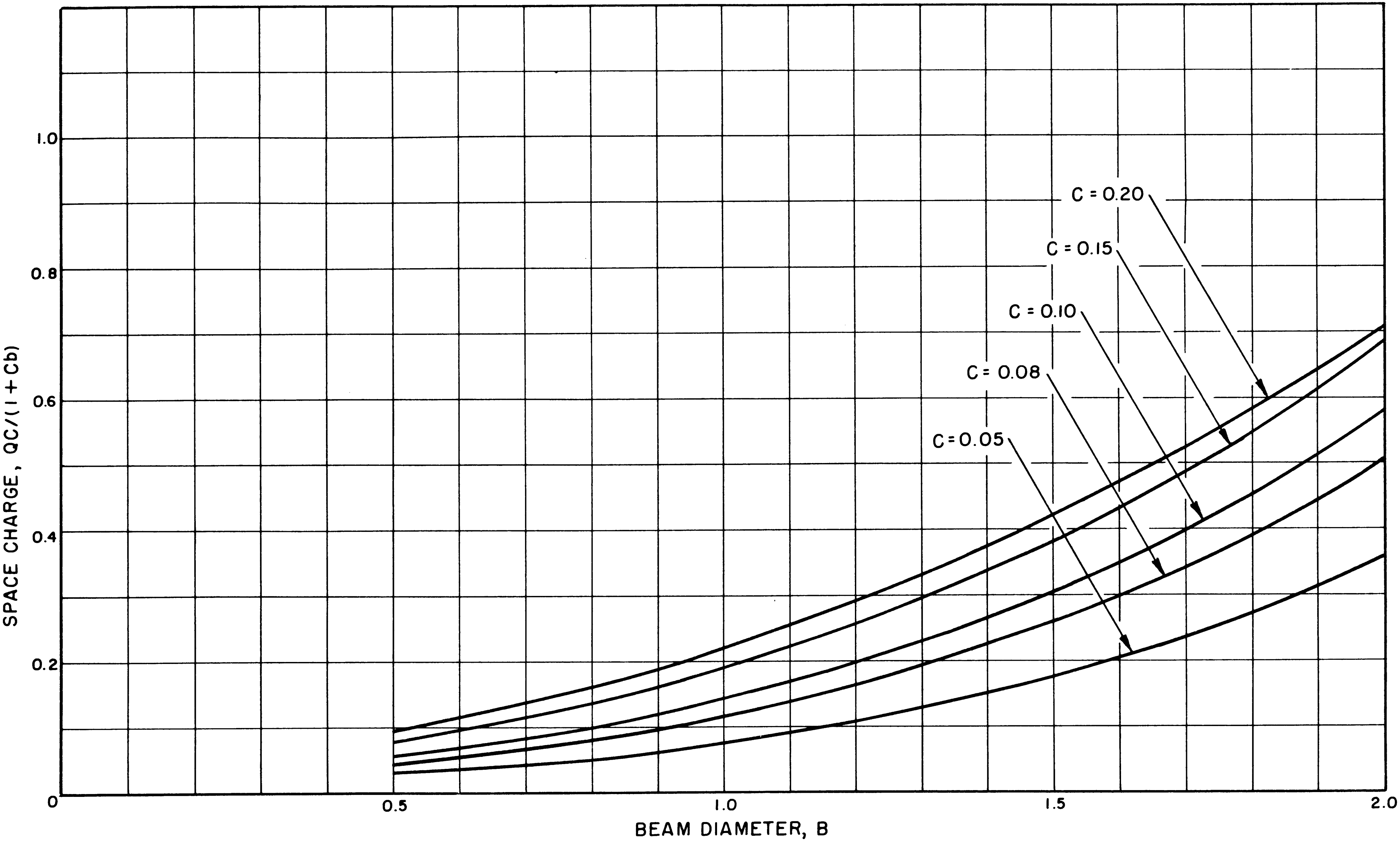


FIG. C.64 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER
($a'/b' = 1.2$, $V_0 = 4$ KV, DLF = 80 %)

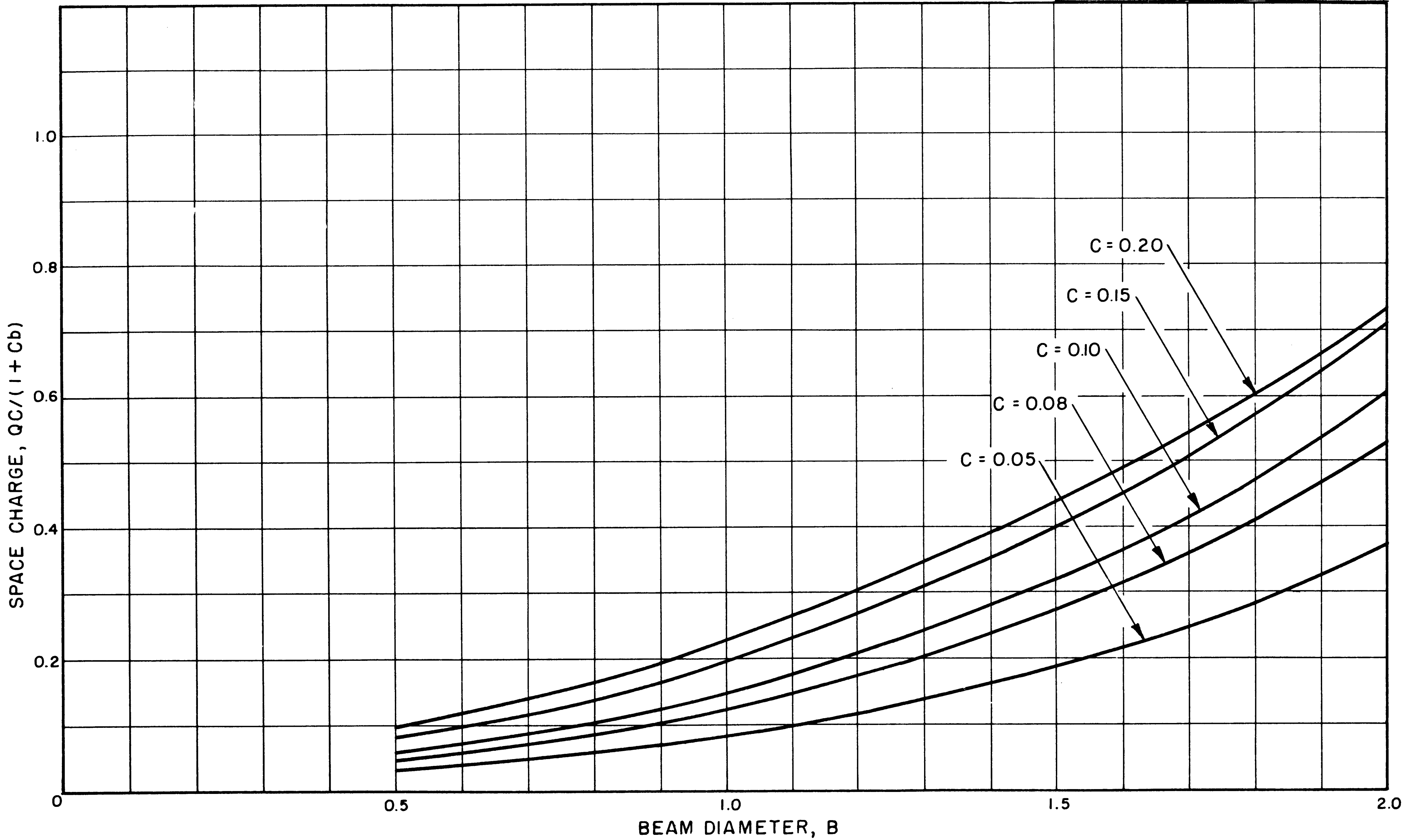


FIG. C.65 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.2$, $V_0 = 5$ KV, DLF = 80 %)

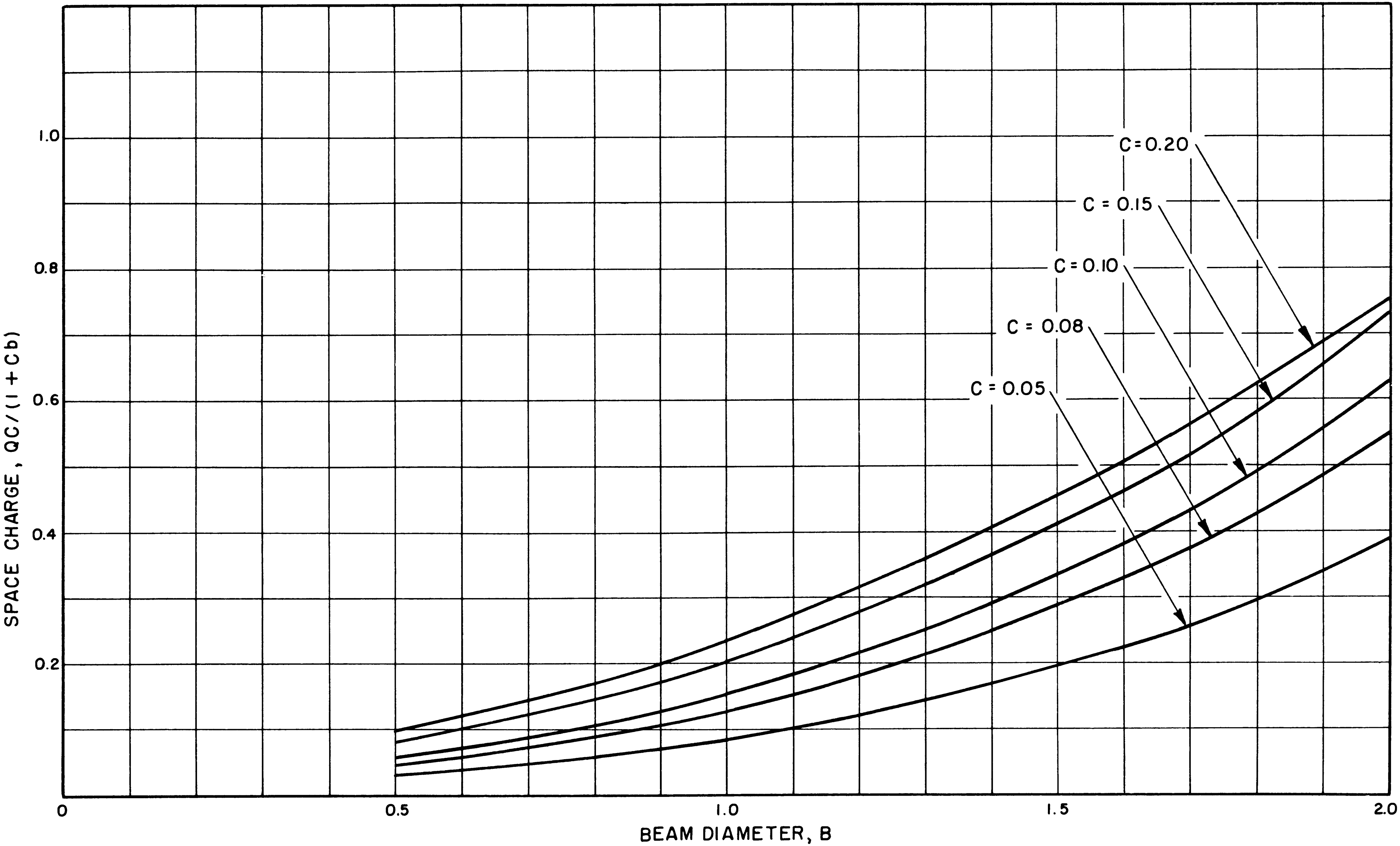


FIG. C 66 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.2$, $V_0 = 6$ KV., DLF = 80 %)

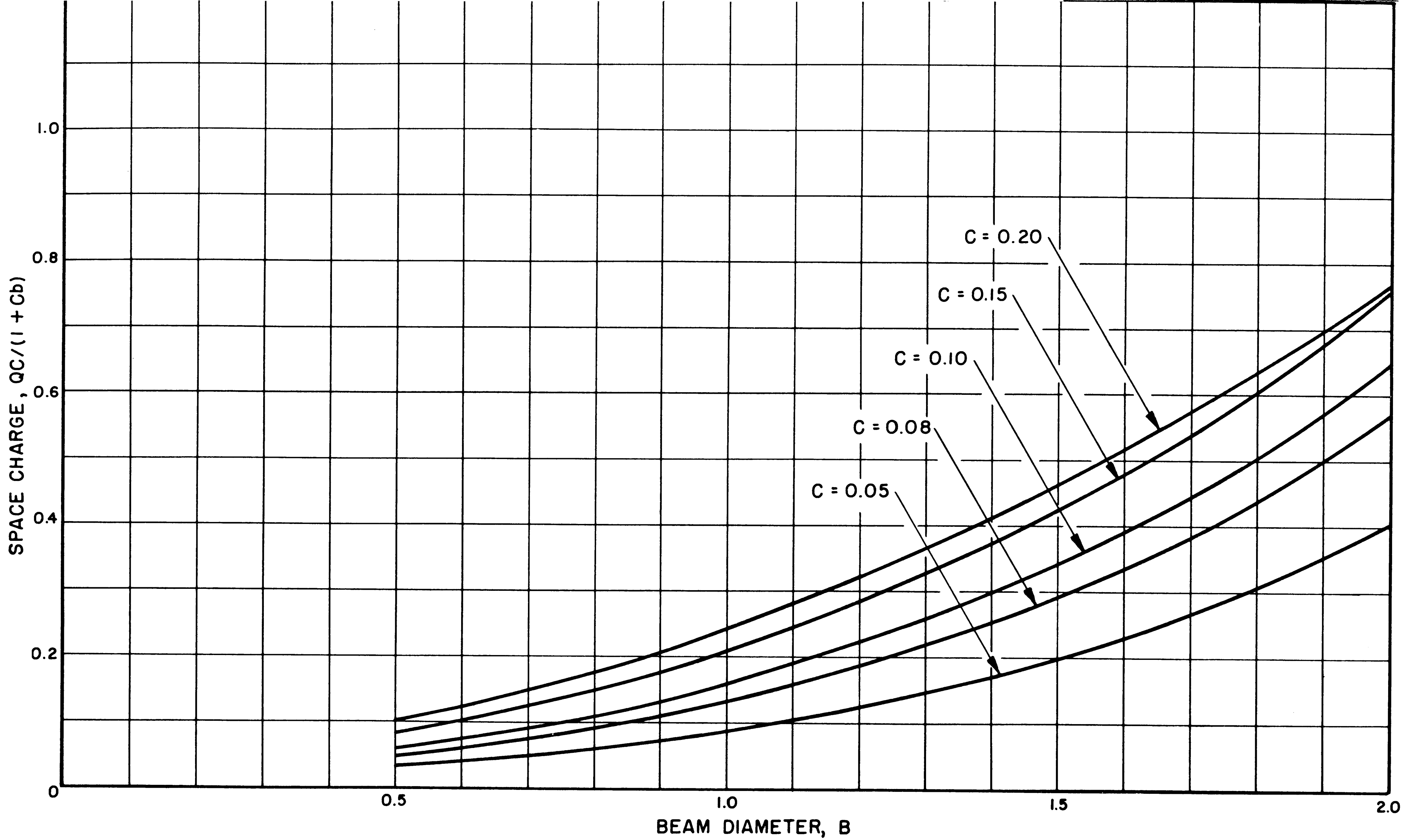


FIG. C.67 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER. ($a'/b' = 1.2$, $V_0 = 7$ KV, DLF = 80 %)

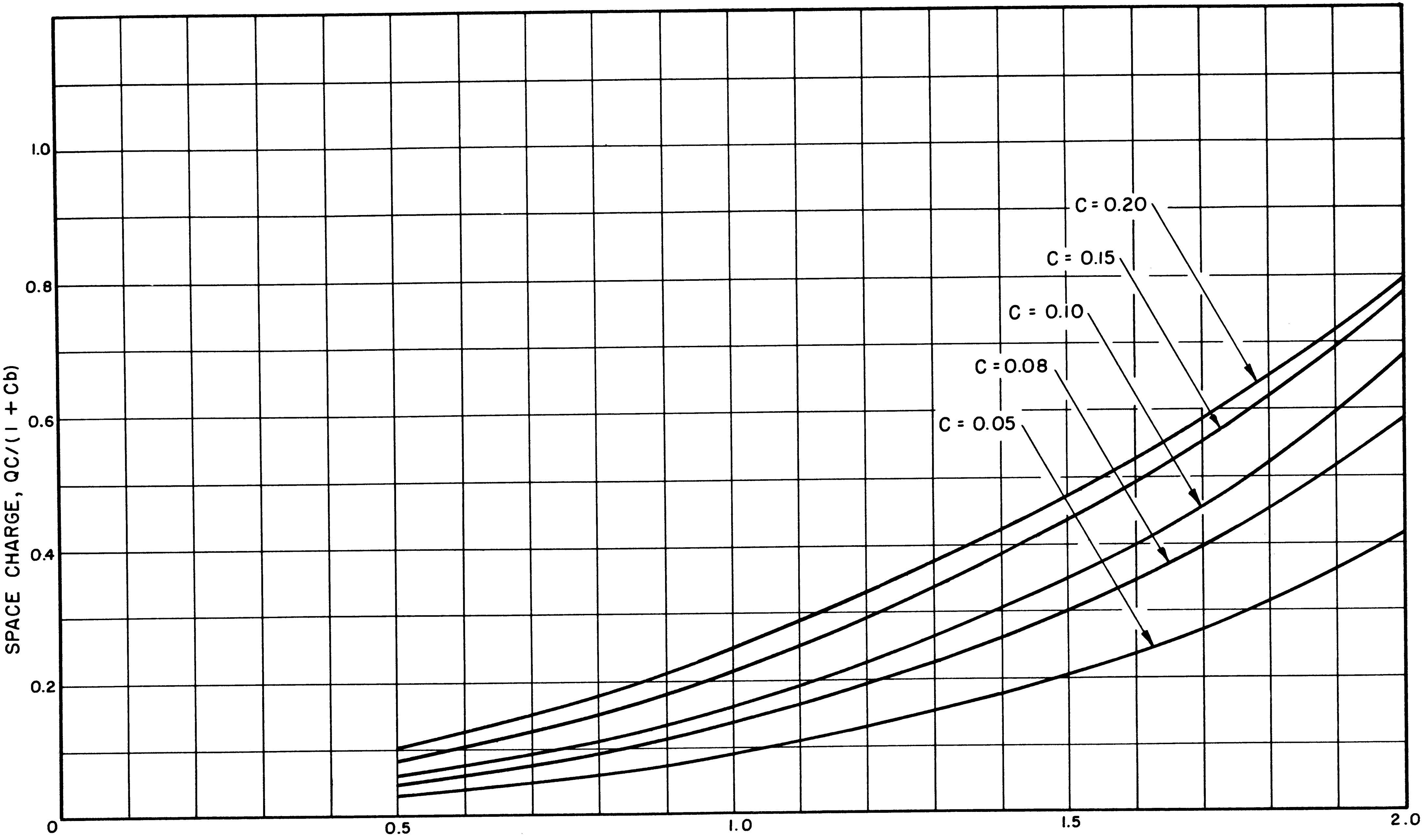


FIG. C.68 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER. ($a'/b' = 1.2$, V_0 = 8 KV, DLF = 80%)

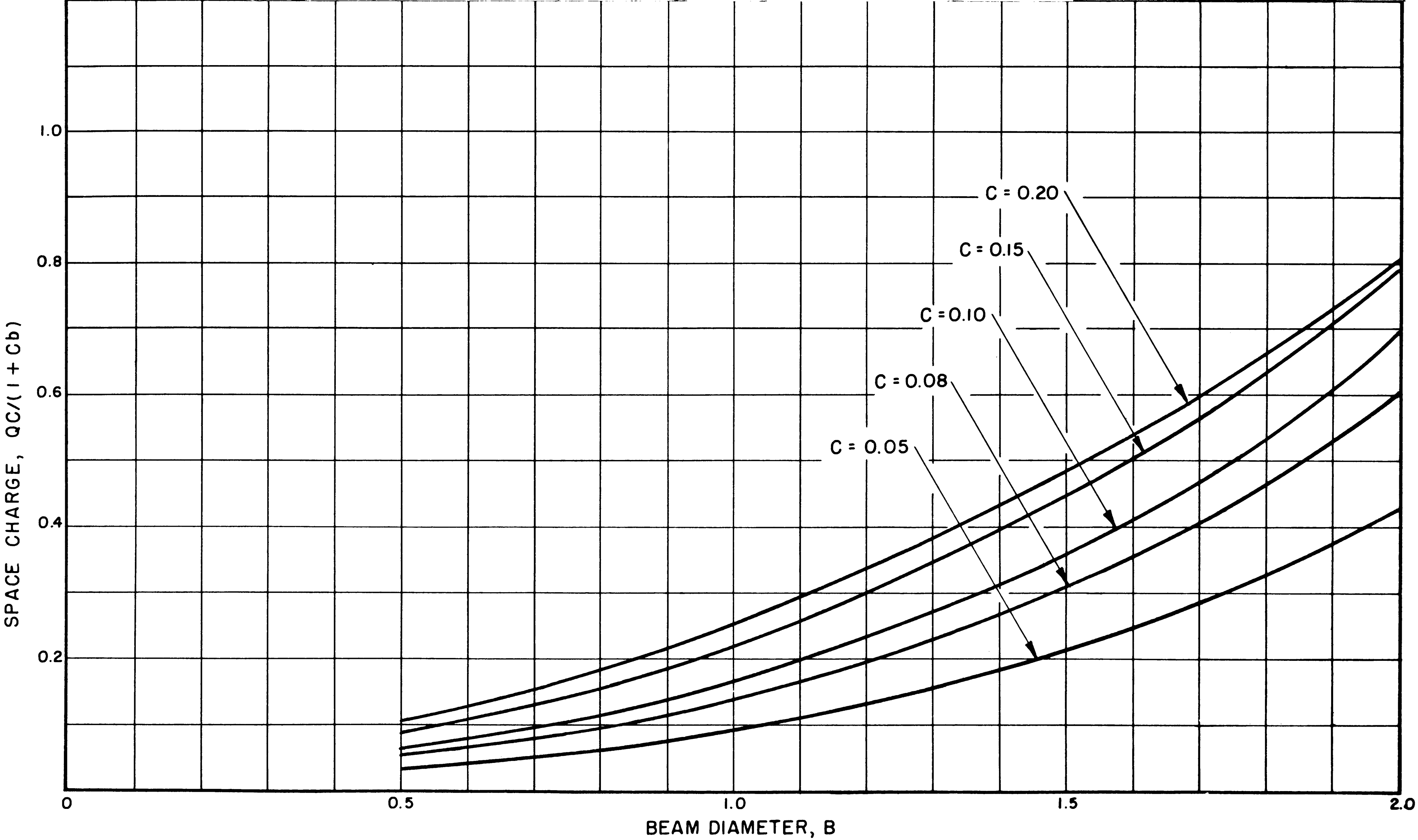


FIG. C.69 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER. ($a'/b' = 1.2$, $V_0 = 9$ KV, DLF = 80 %)

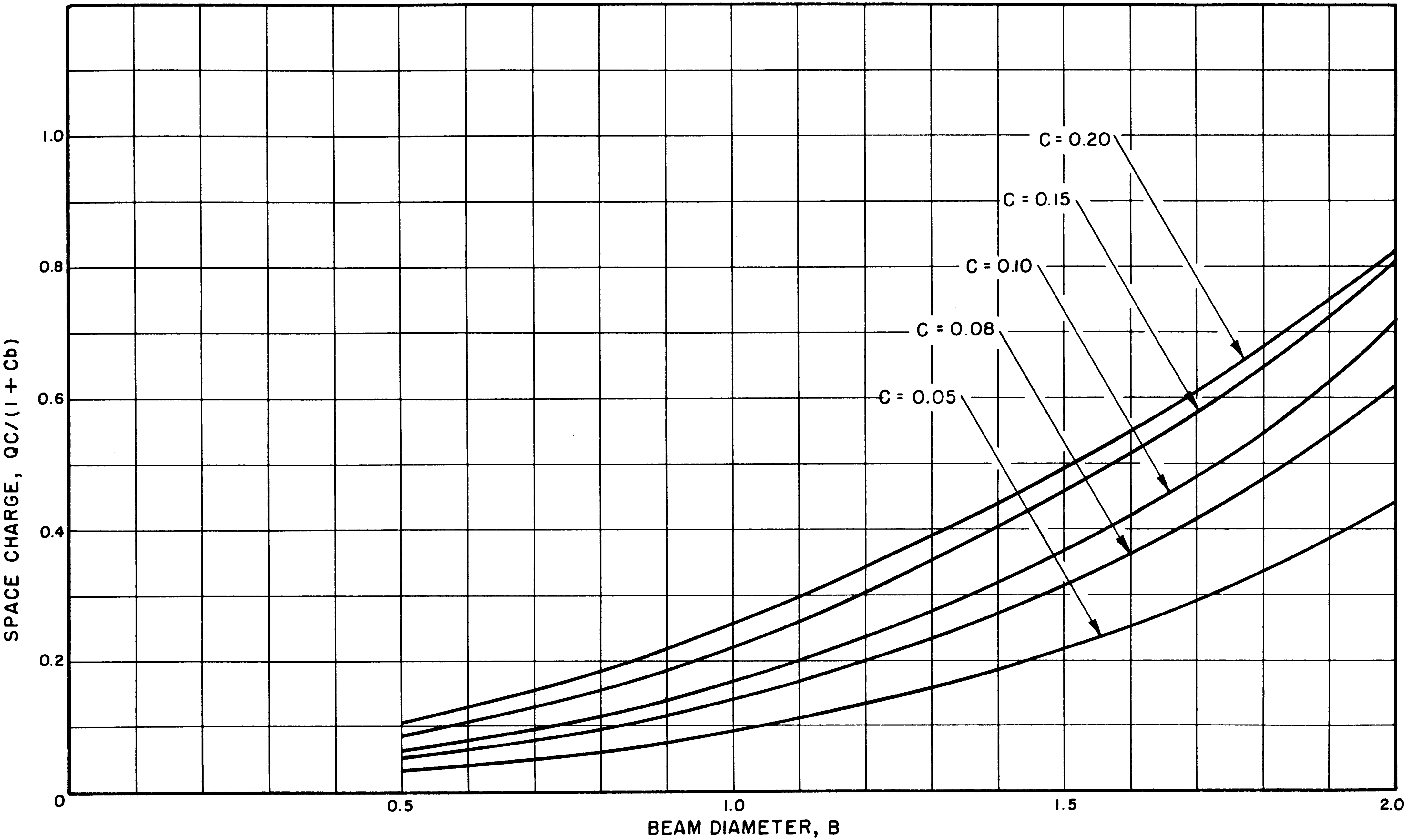


FIG. C.70 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.2$, $V_0 = 10$ KV, DLF = 80%)

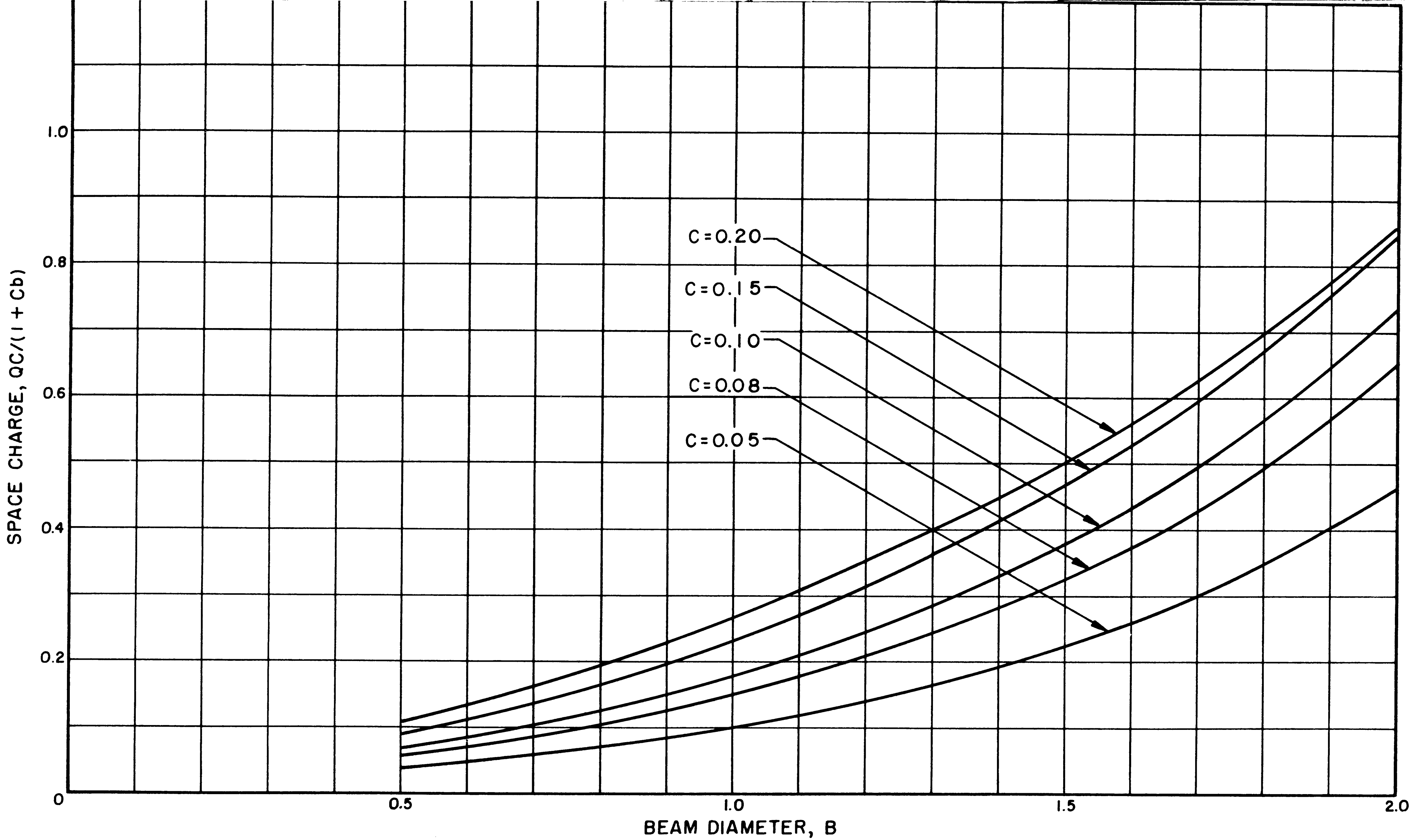


FIG. C.71 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.2$, $V_0 = 12$ KV, DLF = 80%)

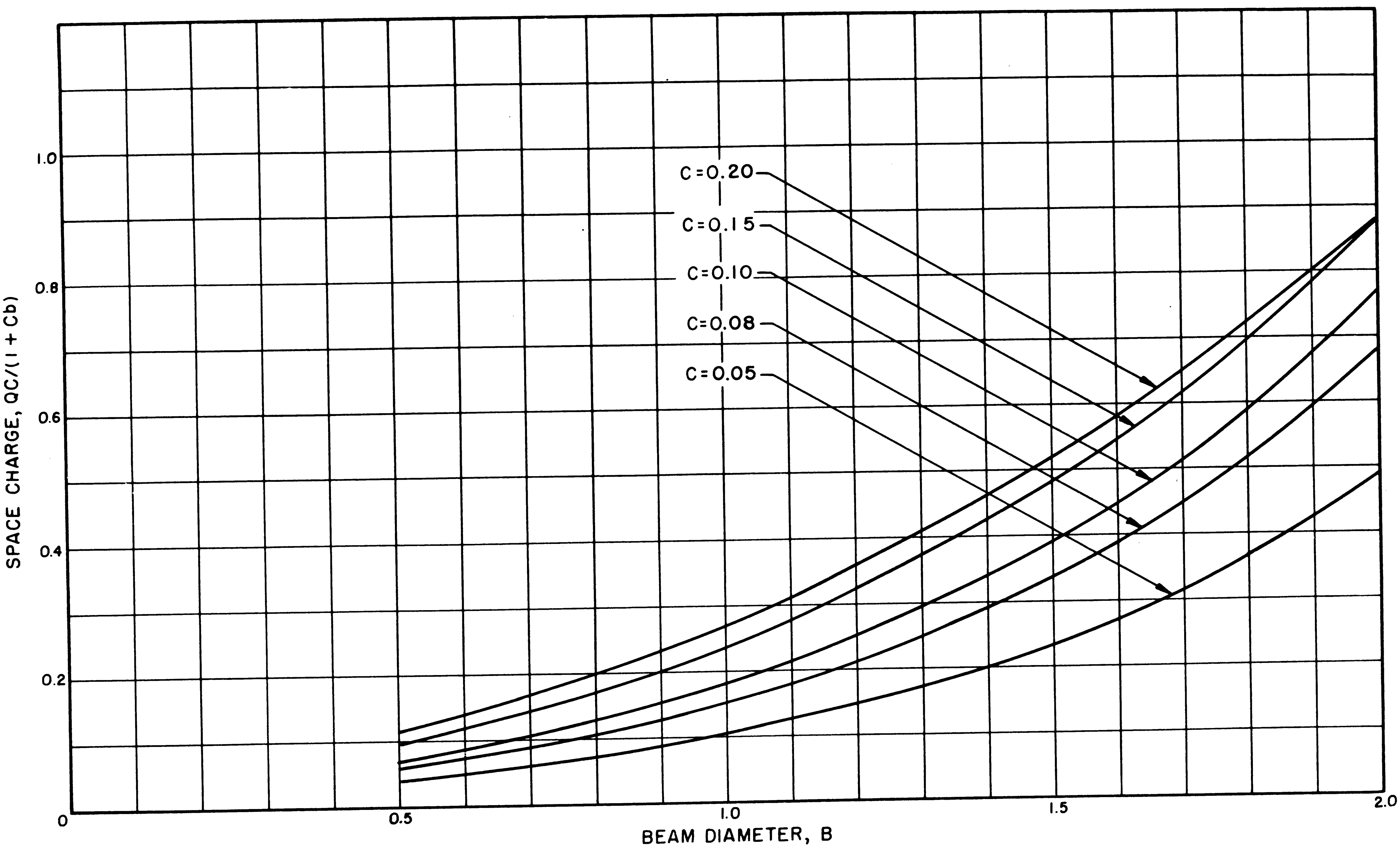


FIG. C.72 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER. ($a'/b' = 1.2$, $V_o = 14$ KV, DLF = 80%)

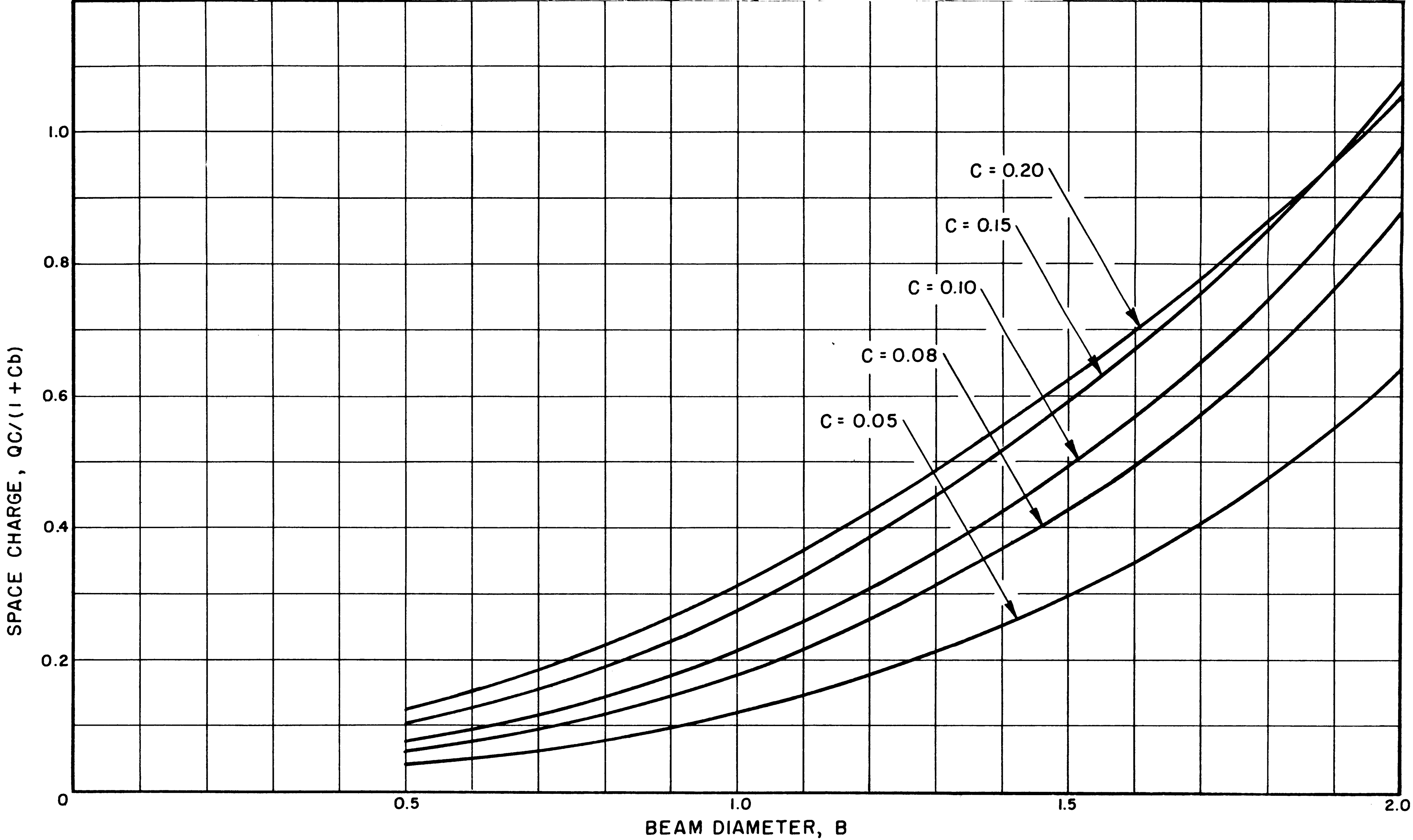


FIG. C.73 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
(a'/b' = 1.4, V_0 = 1 KV, DLF = 80 %)

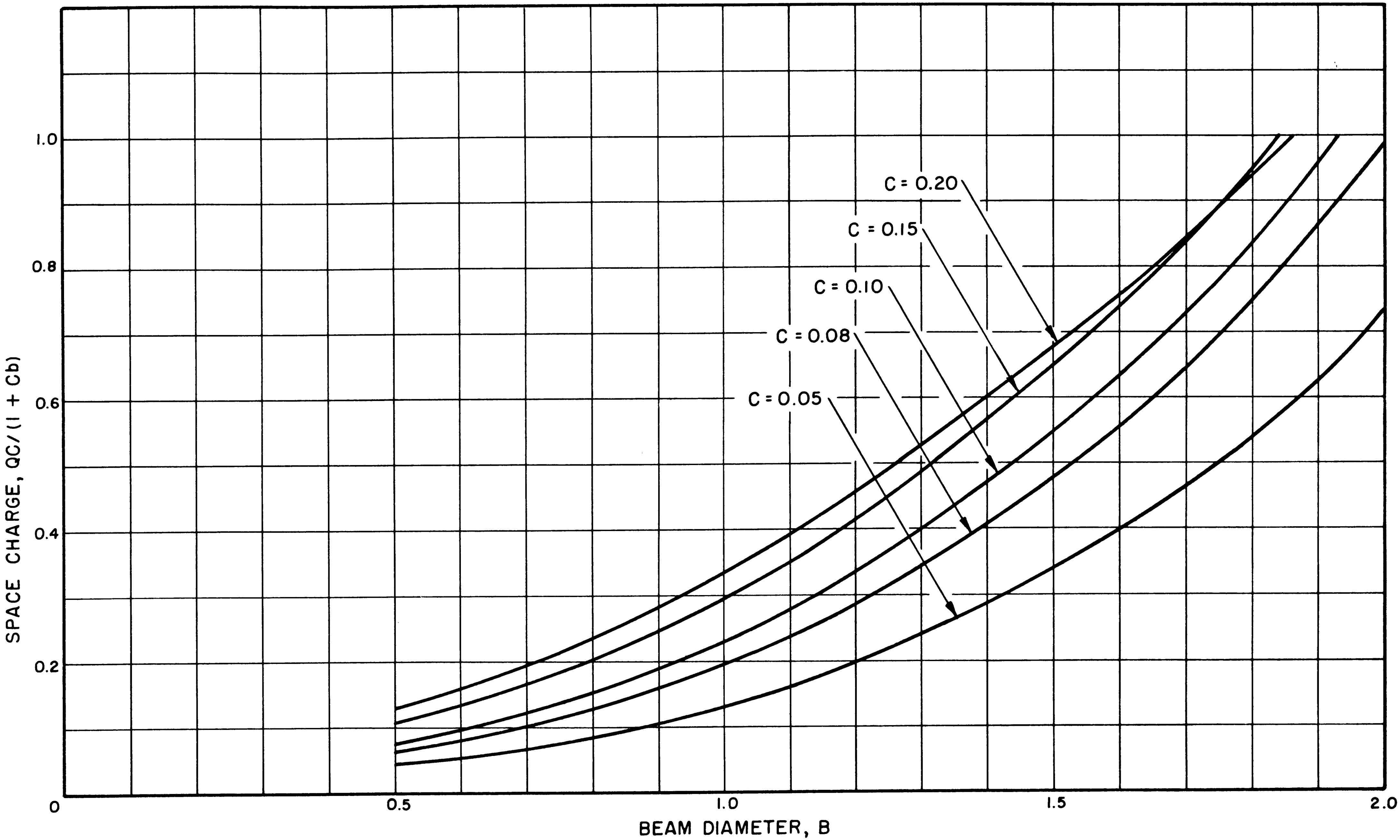


FIG. C.74 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER. (a'/b' = 1.4, V_0 = 2 KV, DLF = 80 %)

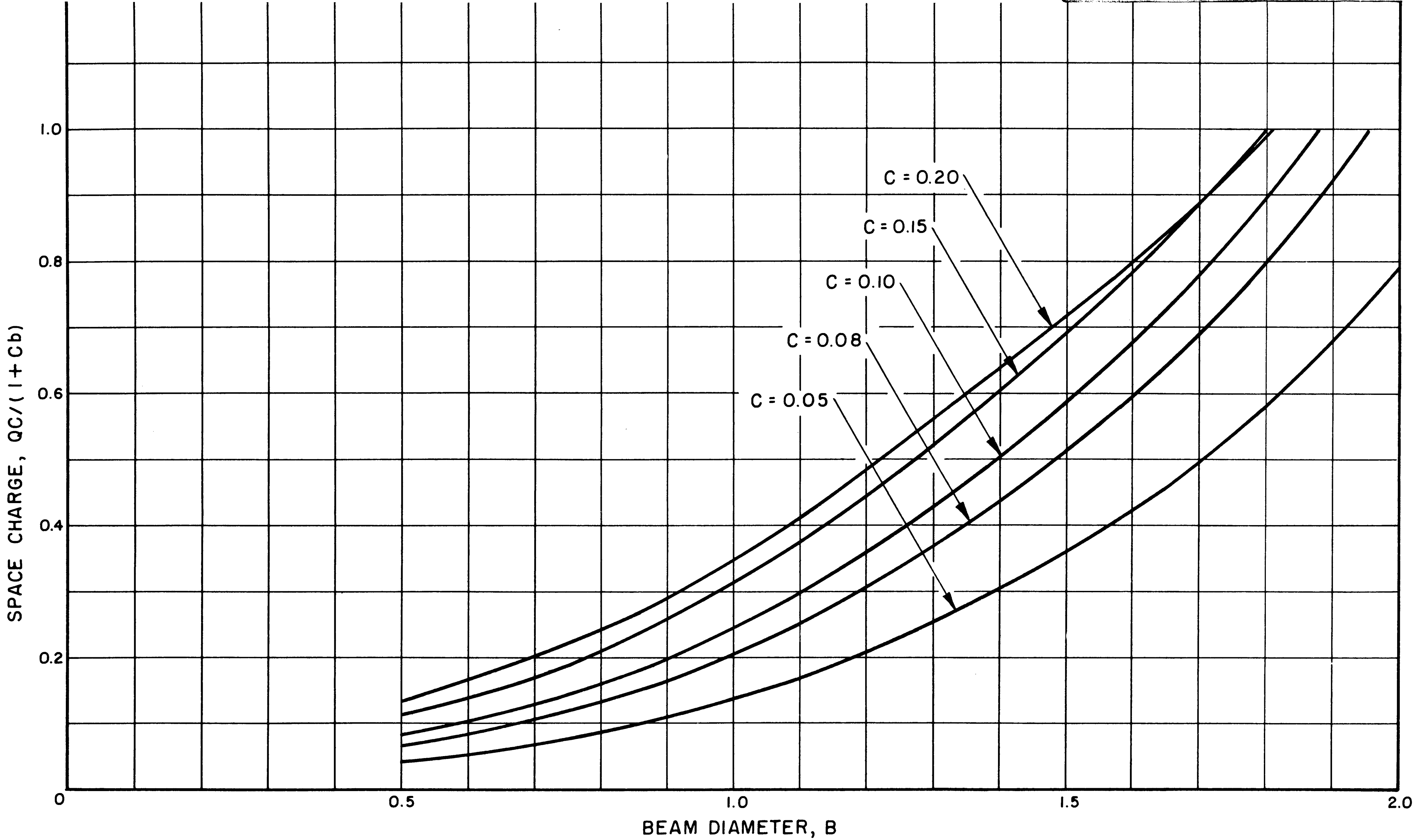


FIG. C.75 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.4$, $V_0 = 3$ KV, DLF = 80 %)

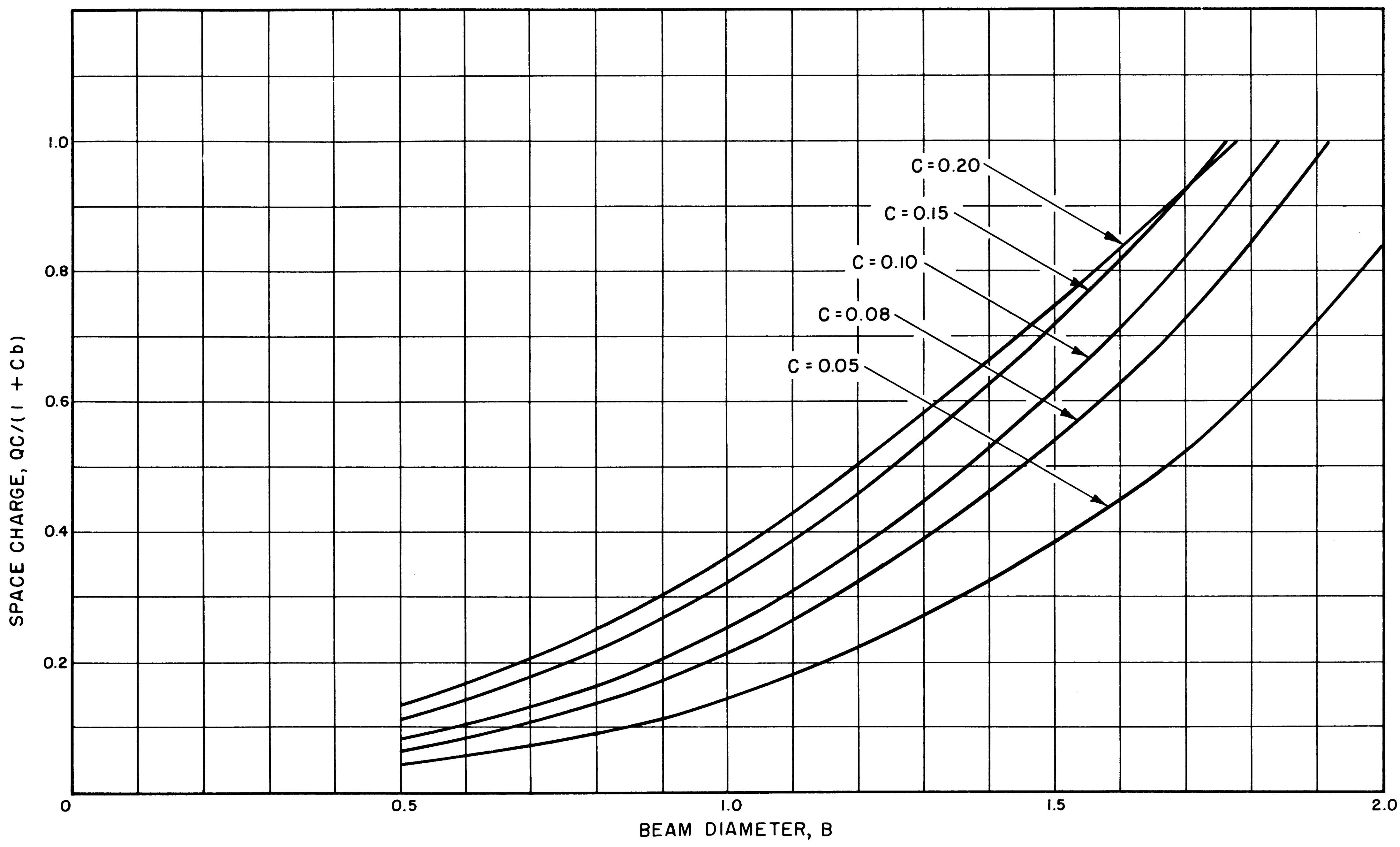


FIG. C.76 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER ($a'/b' = 1.4$, $V_0 = 4$ KV, DLF = 80 %)

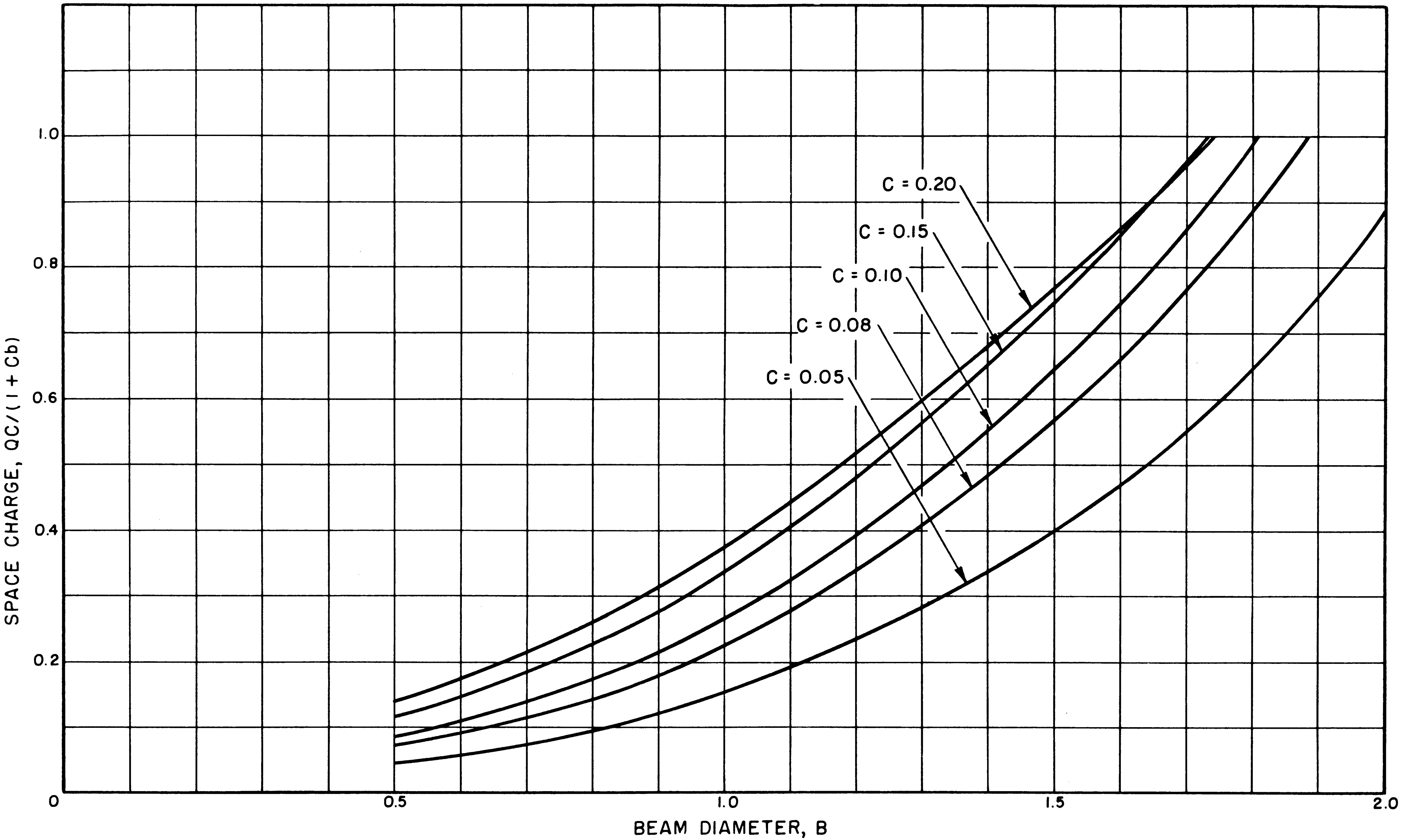


FIG. C.77 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.4$, $V_0 = 5$ KV, DLF = 80 %)

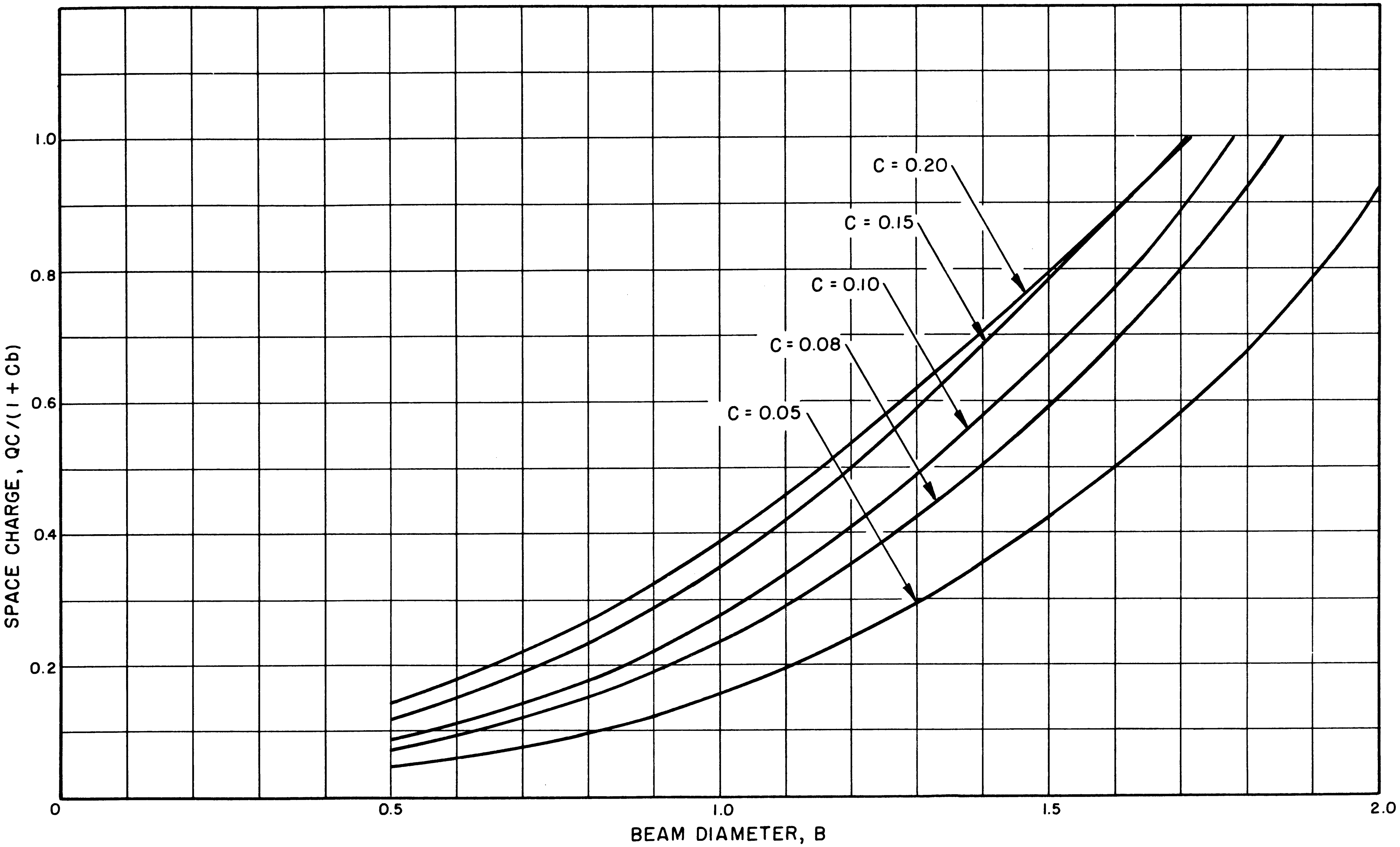


FIG. C.78 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER. ($a'/b' = 1.4$, $V_0 = 6$ KV, DLF = 80%)

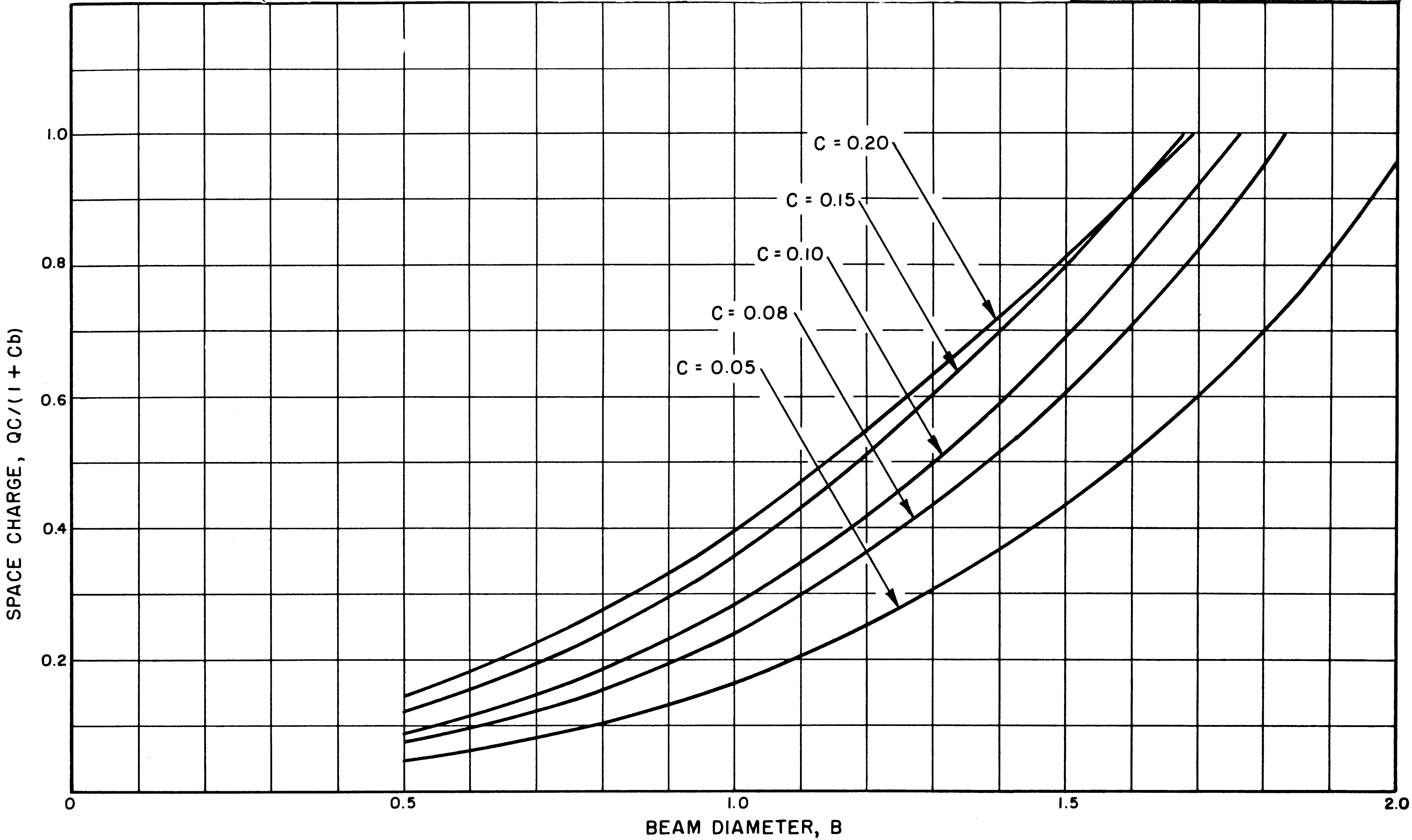


FIG. C.79 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER ($a'/b' = 1.4$, $V_0 = 7$ KV, DLF = 80 %)

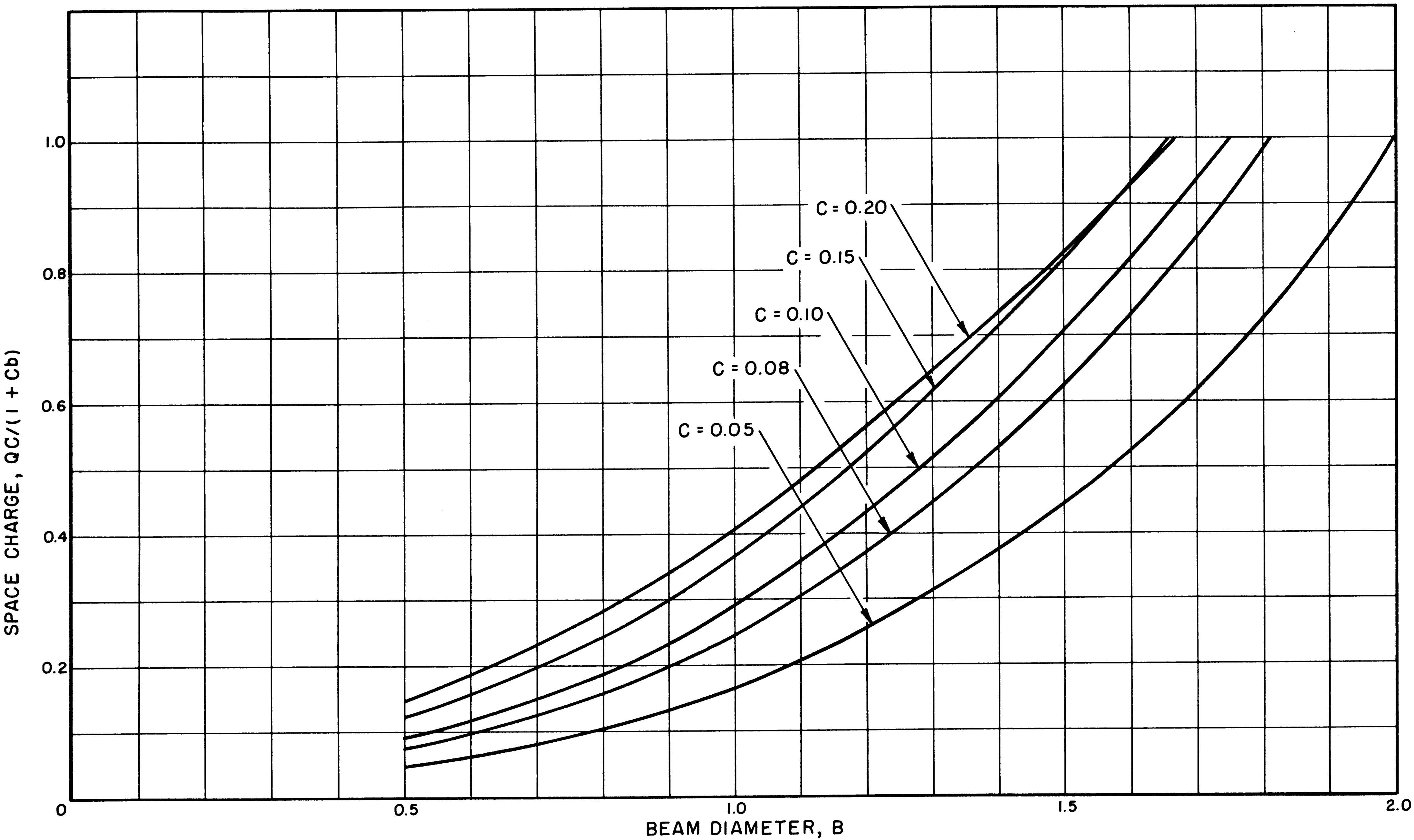


FIG. C.80 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER. ($a'/b' = 1.4$, $V_0 = 8$ KV, DLF = 80 %)

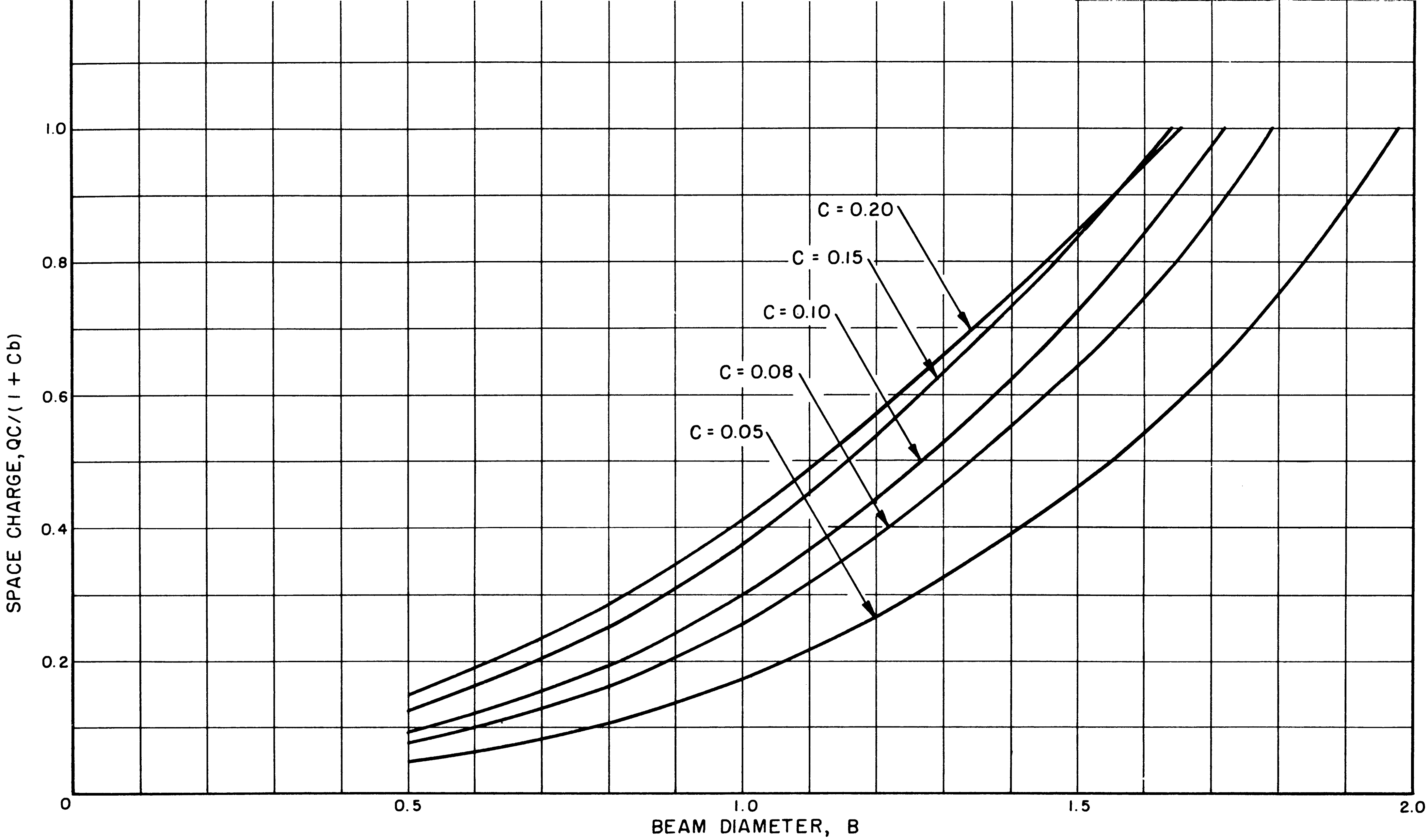


FIG. C.81 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER. (a'/b' = 1.4, V_o = 9 KV, DLF = 80 %)

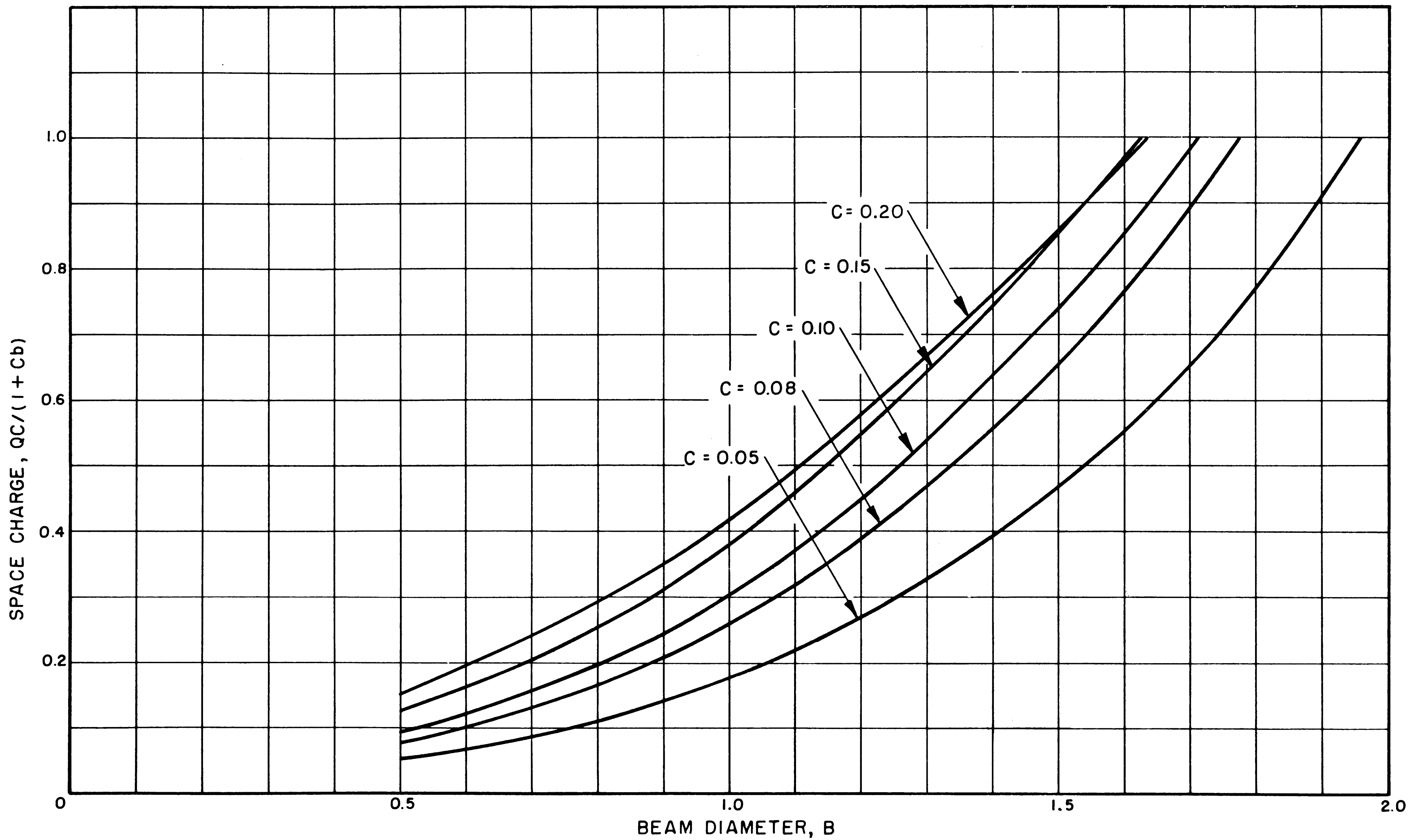


FIG. C.82 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.4$, $V_0 = 10$ KV, DLF = 80 %)

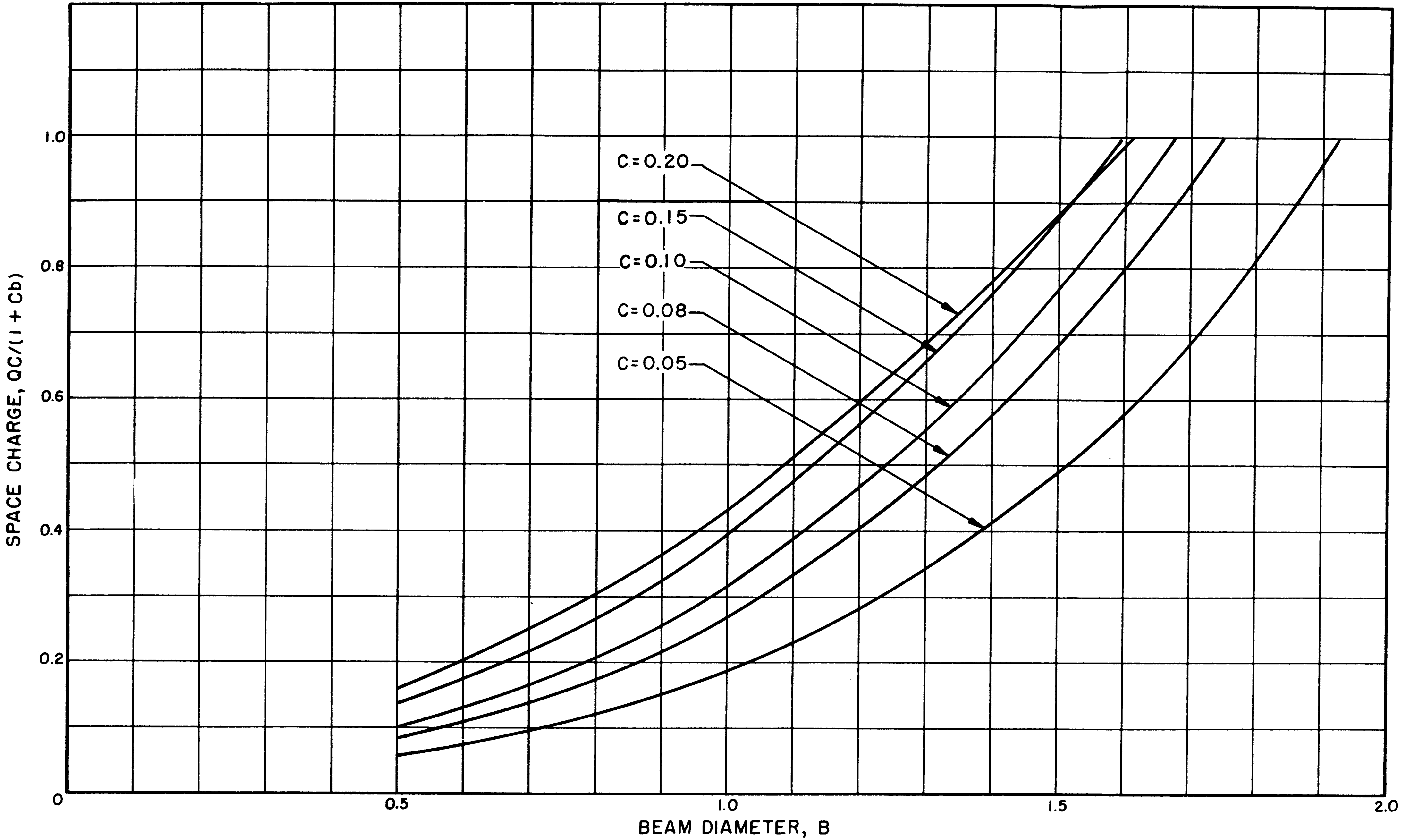


FIG. C.83 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER. ($a'/b' = 1.4$, $V_0 = 12$ KV, DLF = 80%)

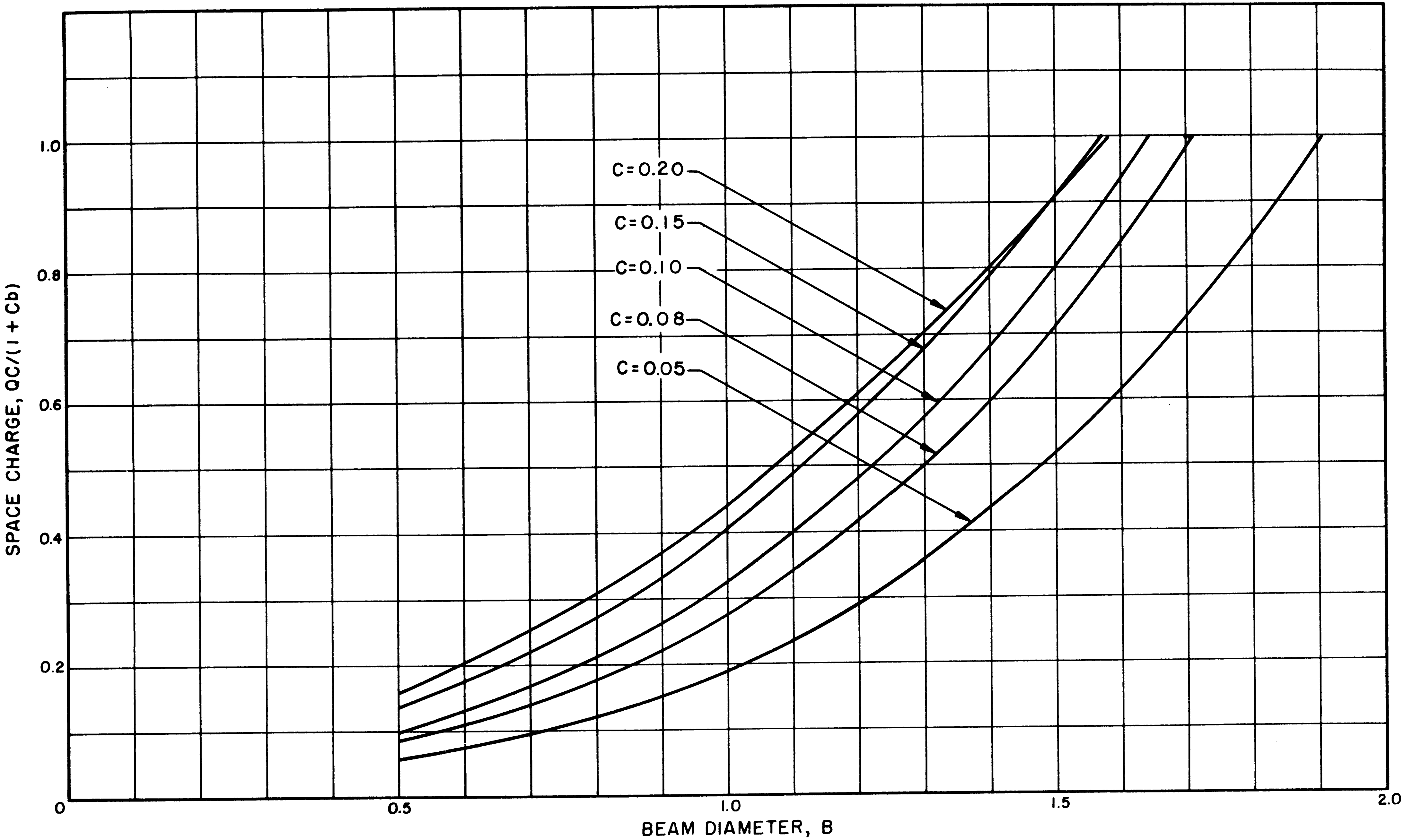


FIG. C.84 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.4$, $V_0 = 14$ KV, DLF = 80%)

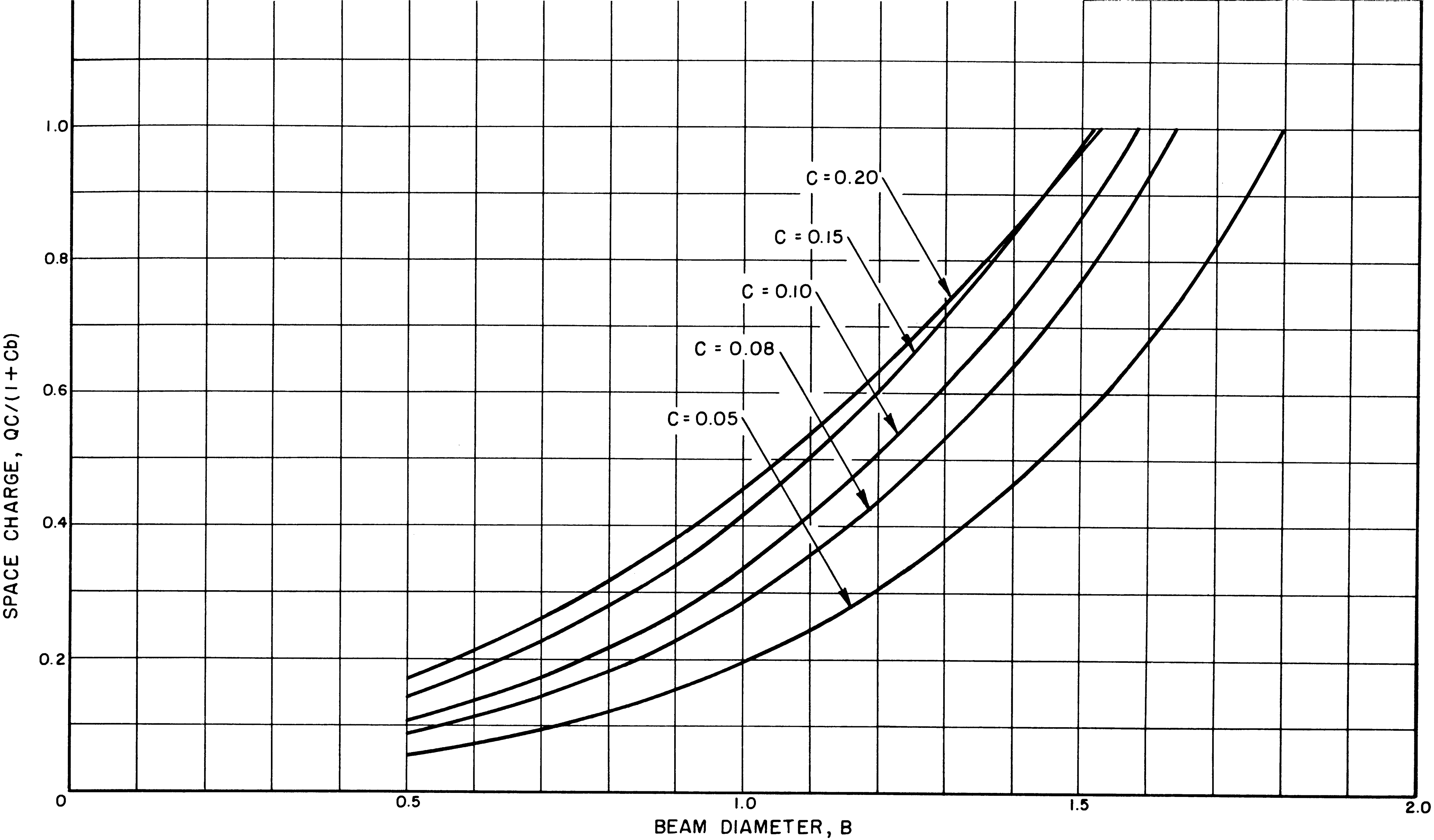


FIG. C.85 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER. ($a'/b' = 1.6$, $V_0 = 1$ KV, DLF = 80 %)

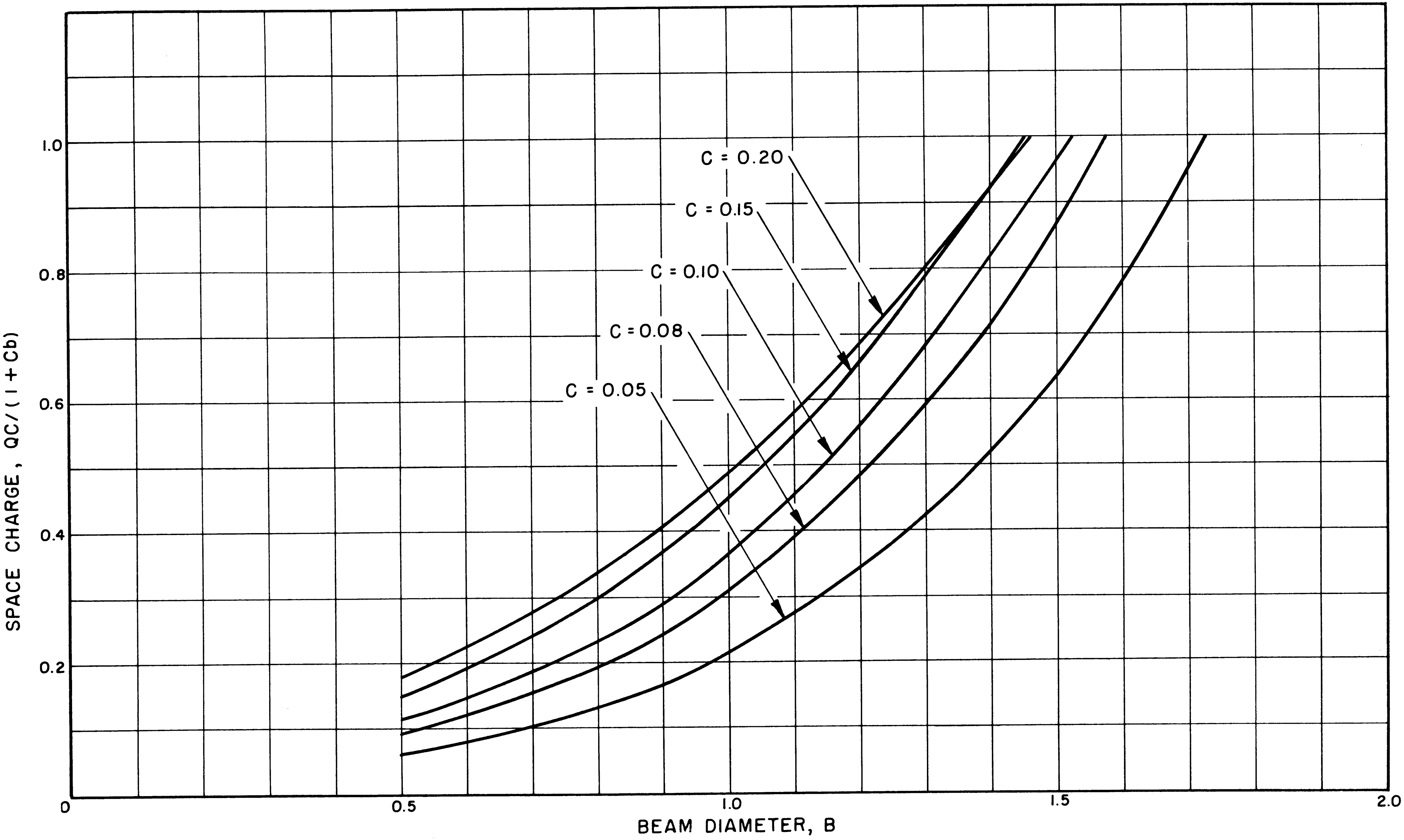


FIG. C.86 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER
(a'/b' = 1.6, V_0 = 2 KV, DLF = 80 %)

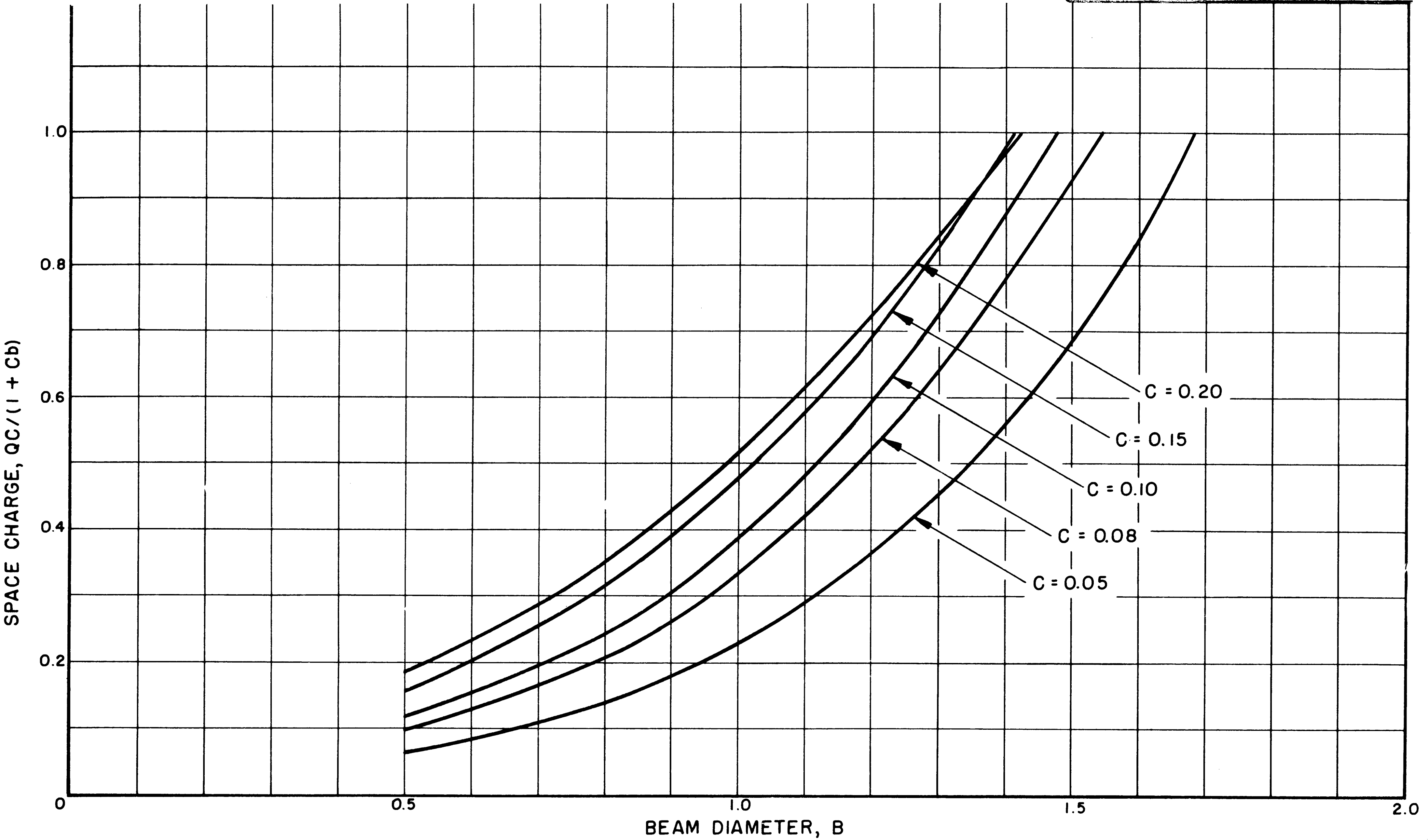


FIG. C.87 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER. ($a'/b' = 1.6$, $V_0 = 3$ KV, DLF = 80 %)

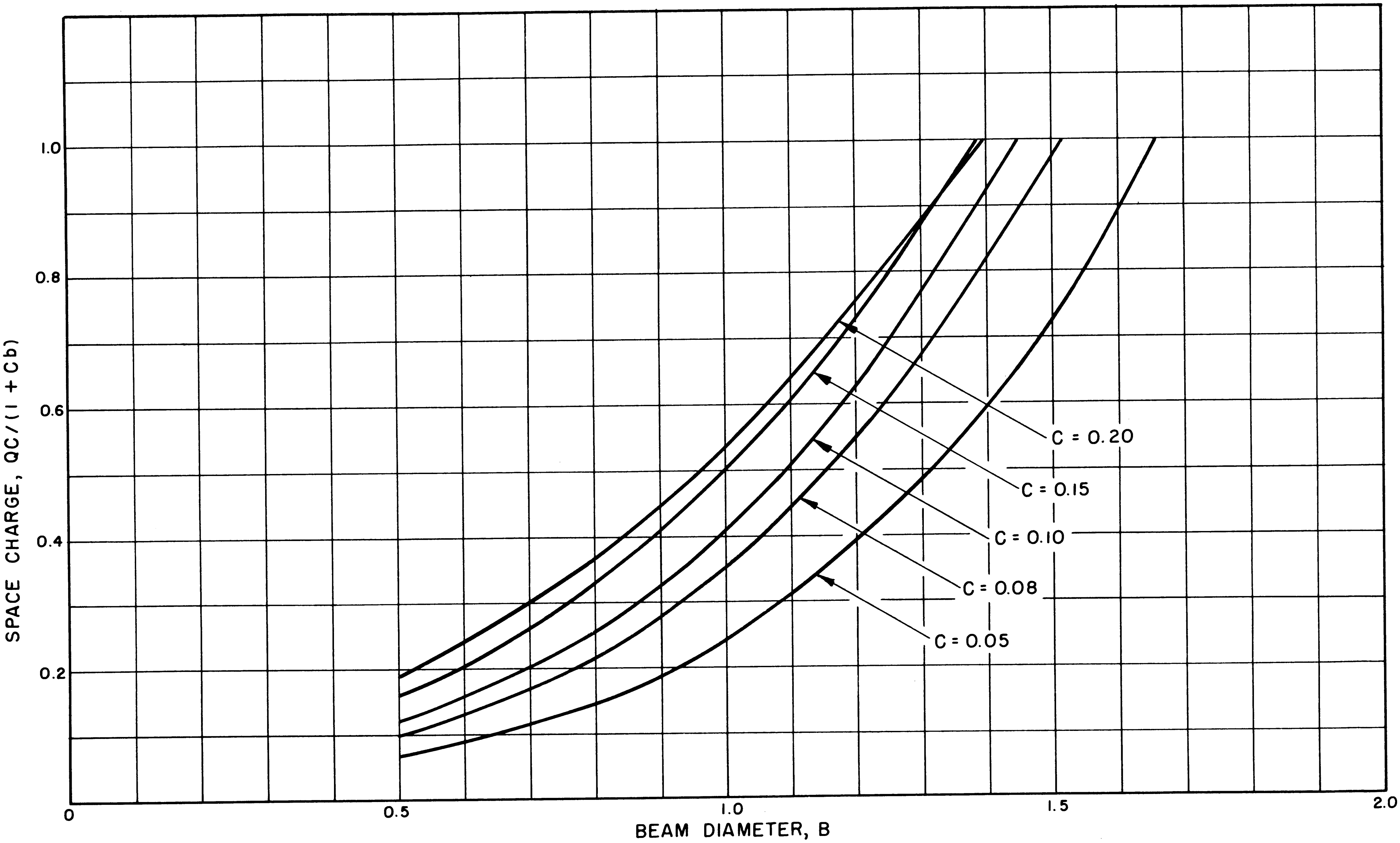


FIG. C.88 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.6$, $V_0 = 4$ KV, DLF = 80 %)

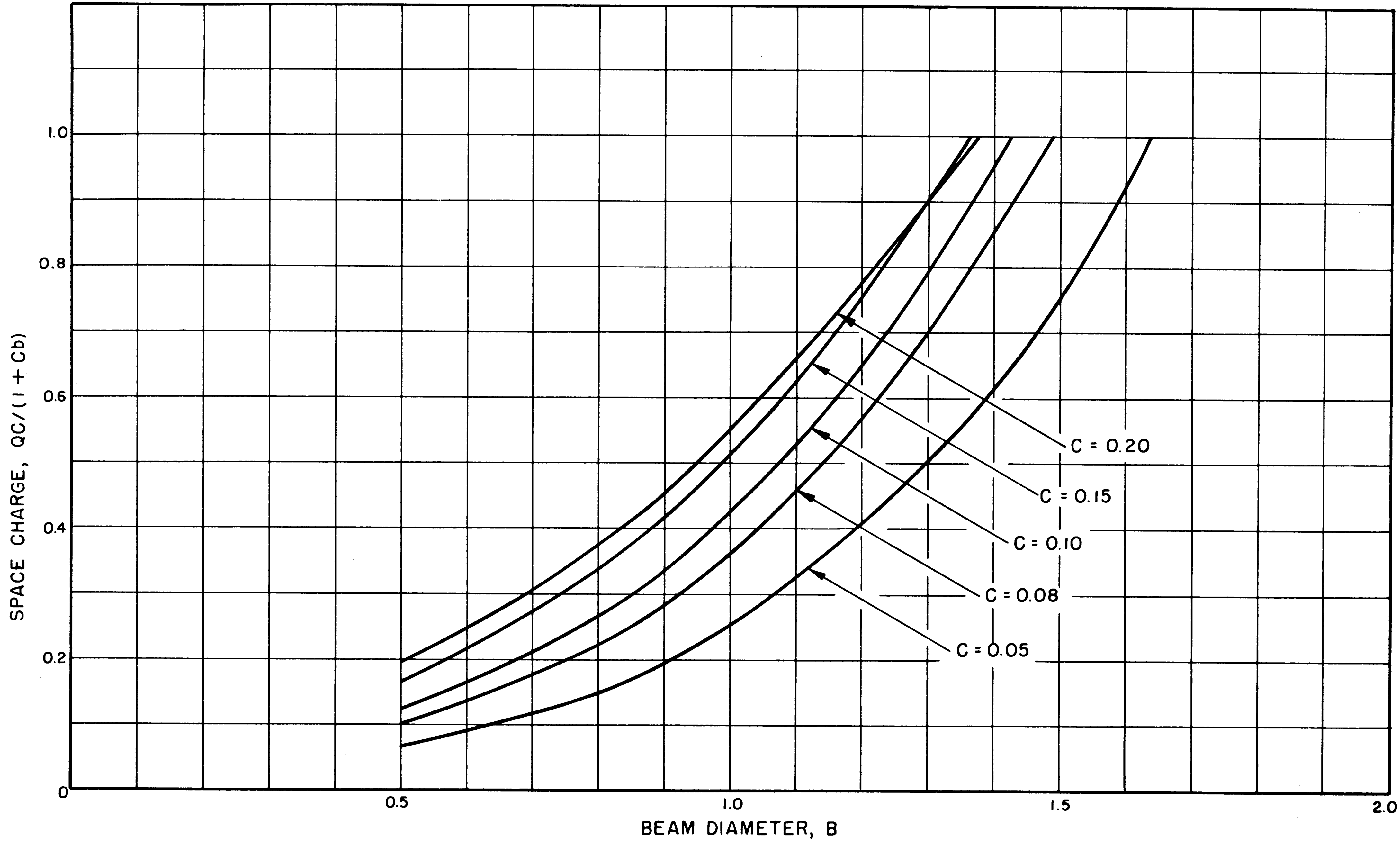


FIG. C.89 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER. ($a'/b' = 1.6$, $V_0 = 5$ KV, DLF = 80 %)

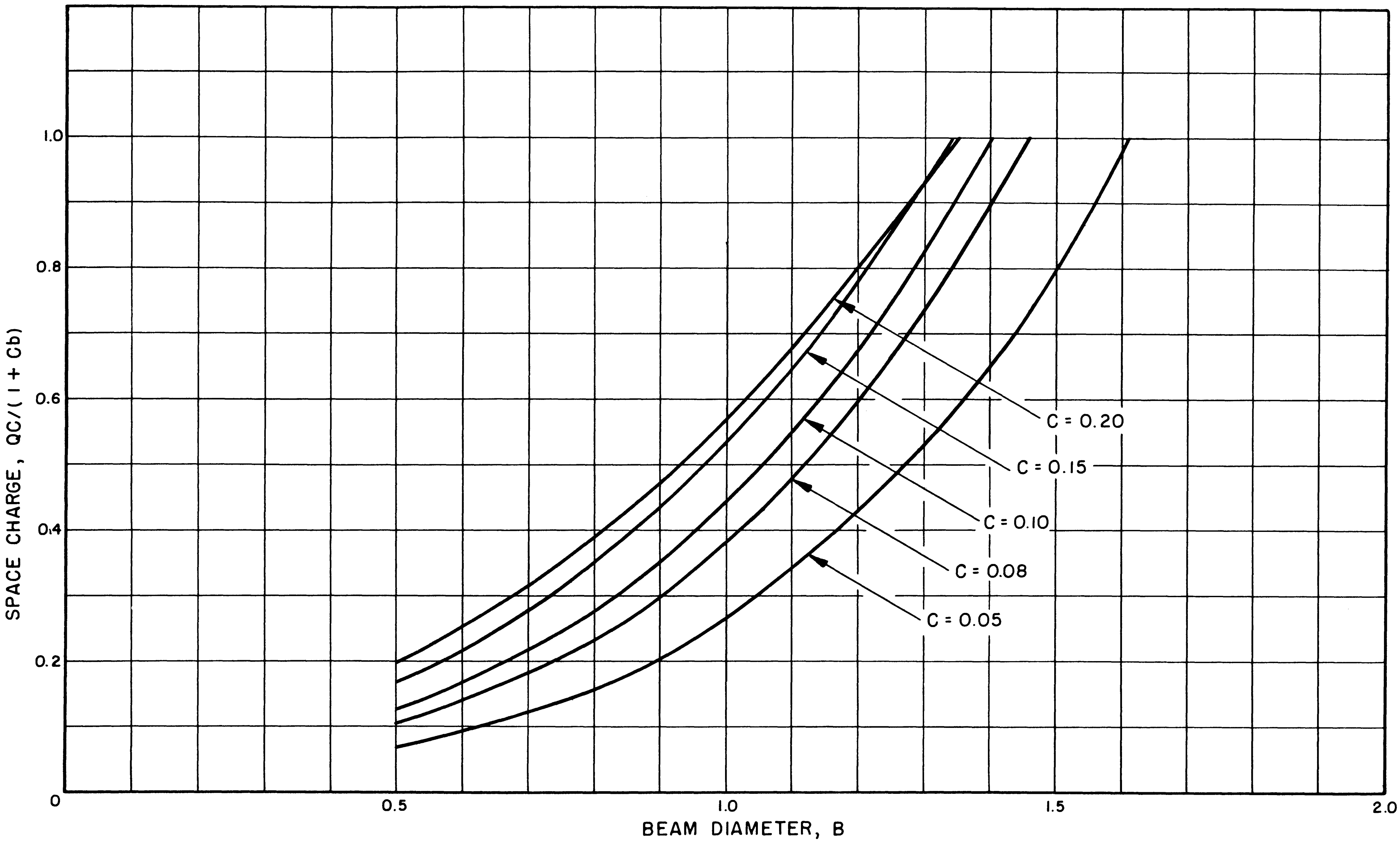


FIG. C.90 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.6$, $V_0 = 6$ KV, DLF = 80 %)

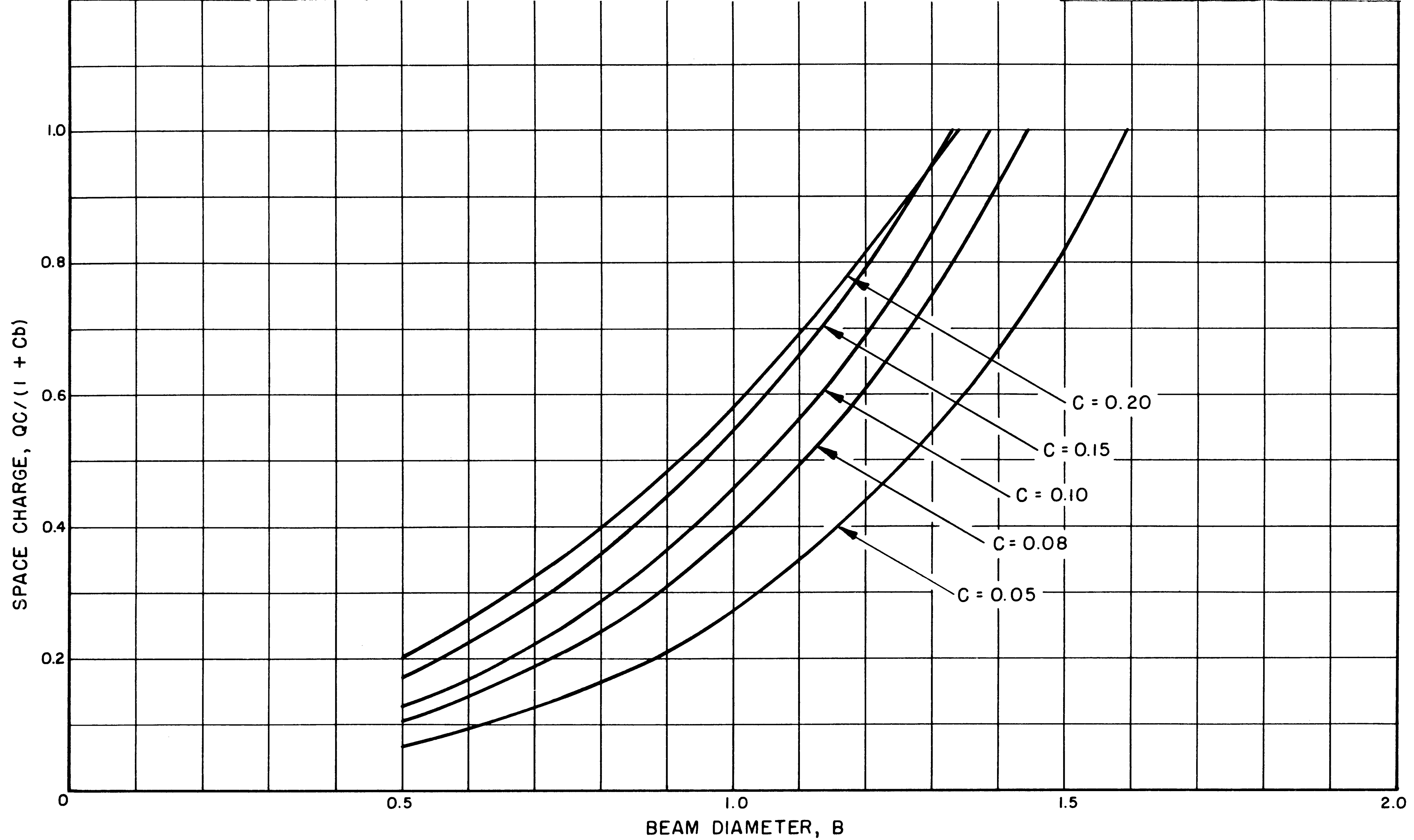


FIG. C.91 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.6$, $V_0 = 7$ KV, DLF = 80 %)

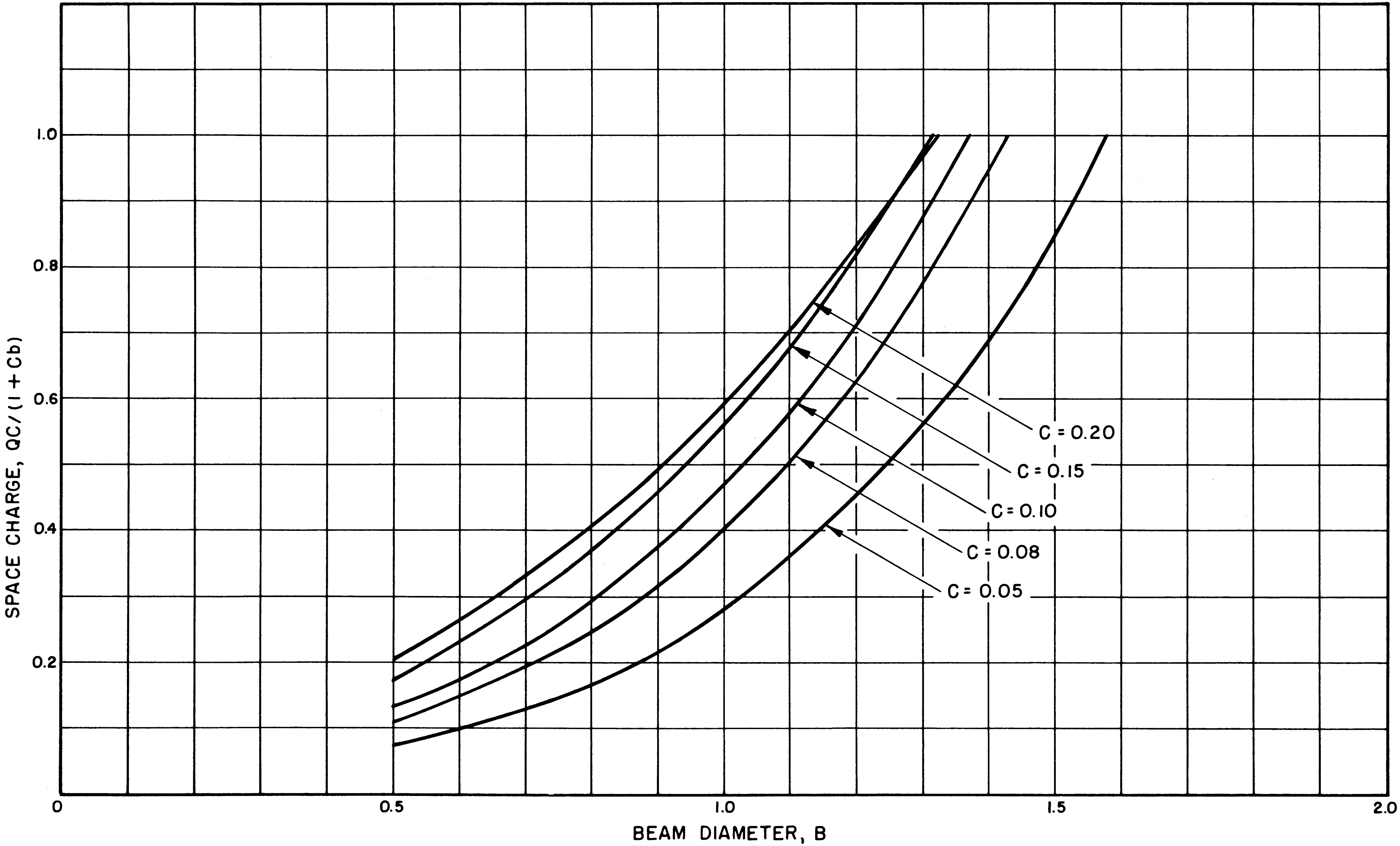


FIG. C.92 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.6$, $V_0 = 8$ KV, DLF = 80 %)

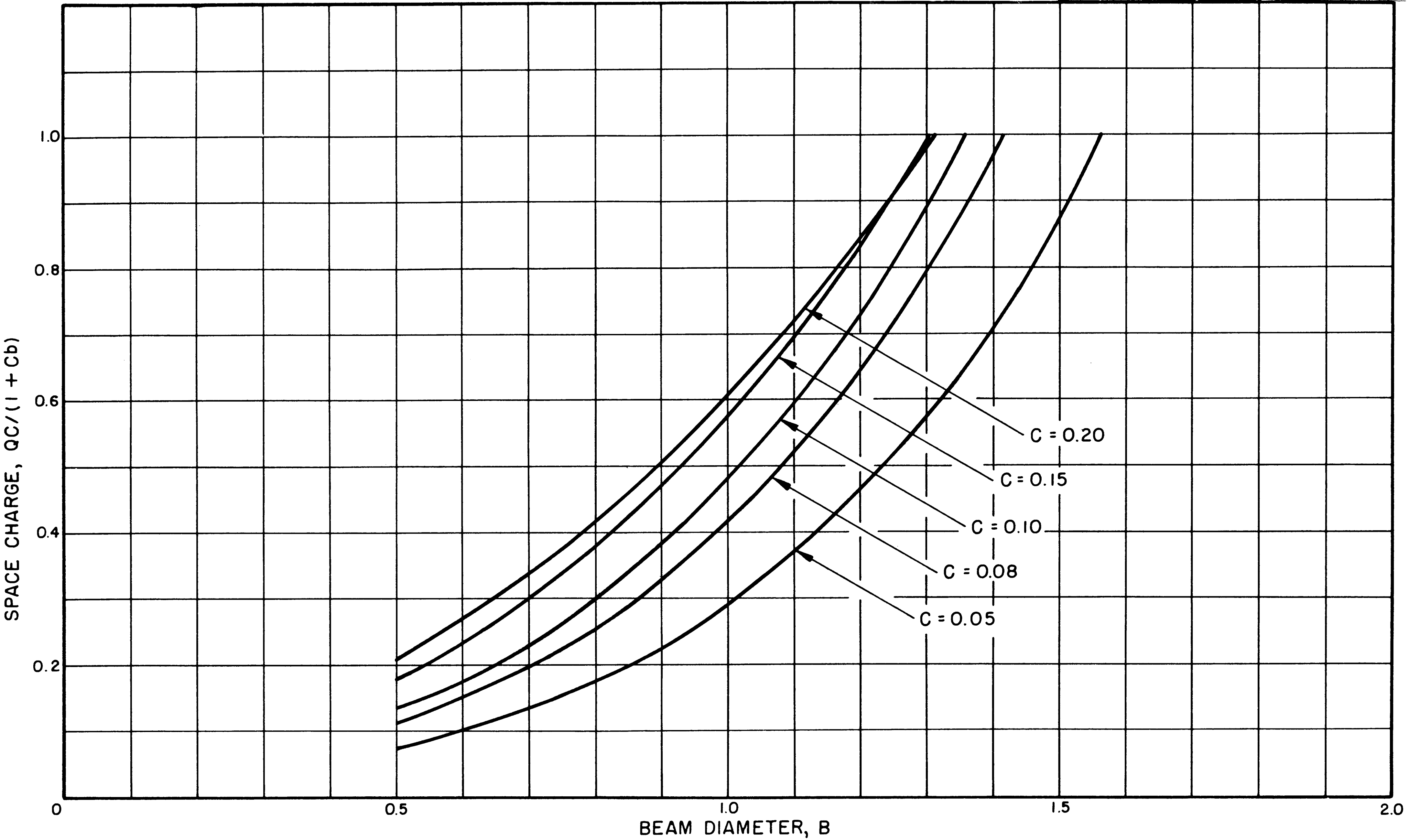


FIG. C.93 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.6$, $V_0 = 9$ KV, DLF = 80 %)

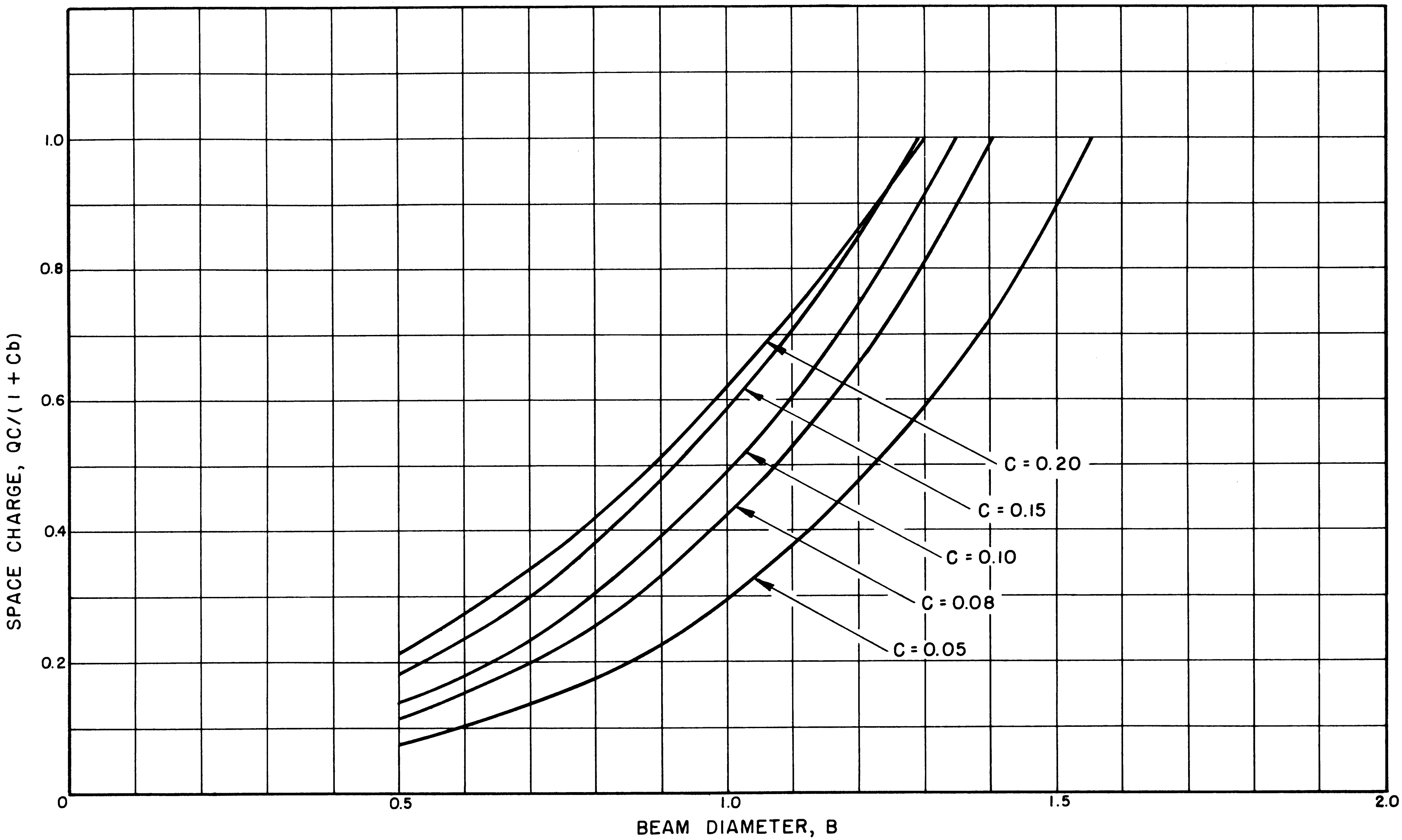


FIG. C.94 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER
($a'/b' = 1.6$, $V_0 = 10$ KV, DLF = 80 %)

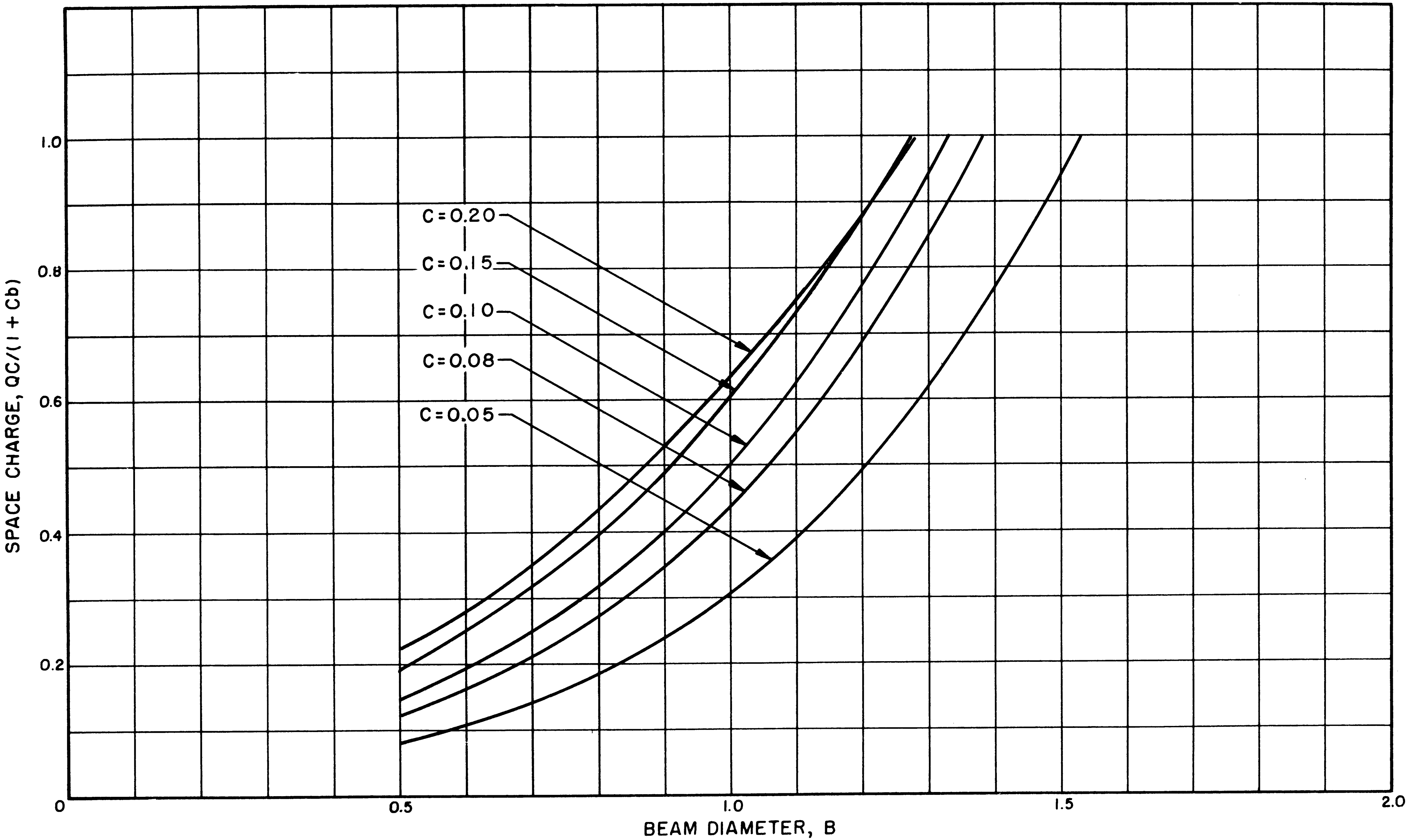


FIG. C.95 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER. ($a'/b' = 1.6$, $V_0 = 12$ KV, DLF = 80%)

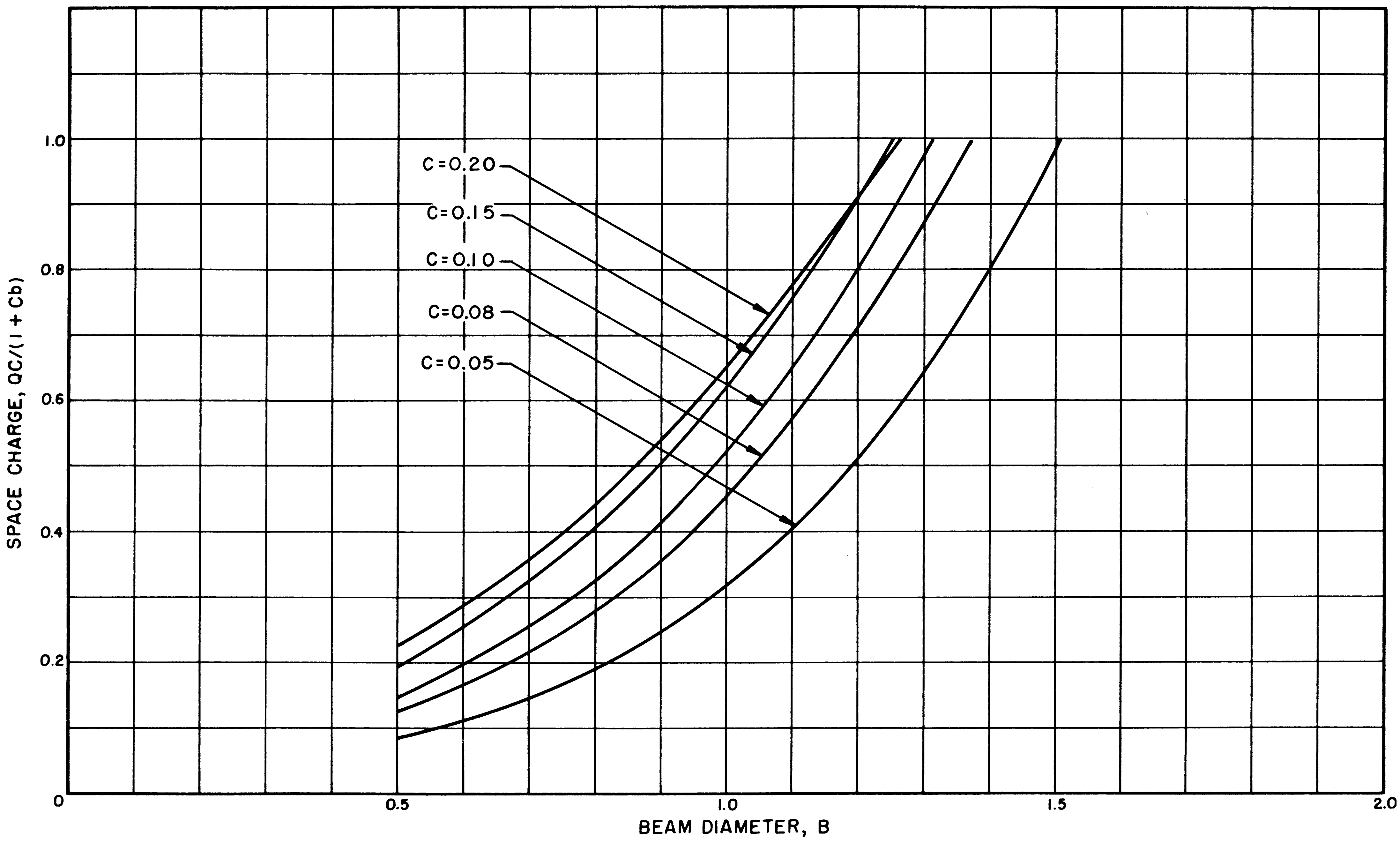


FIG. C.96 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.6$, $V_0 = 14$ KV, DLF = 80%)

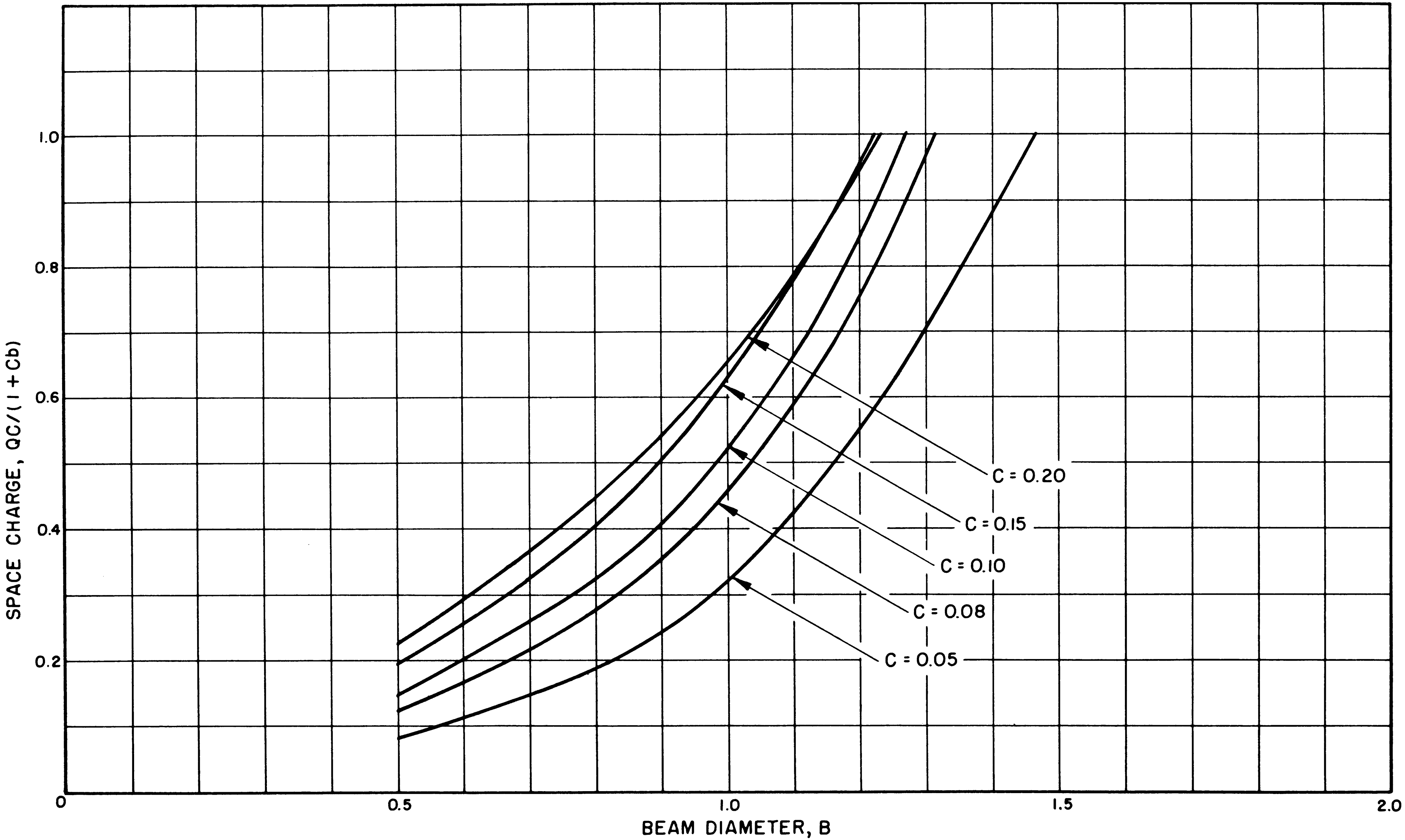


FIG. C.97 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.8$, $V_0 = 1$ KV, DLF = 80 %)

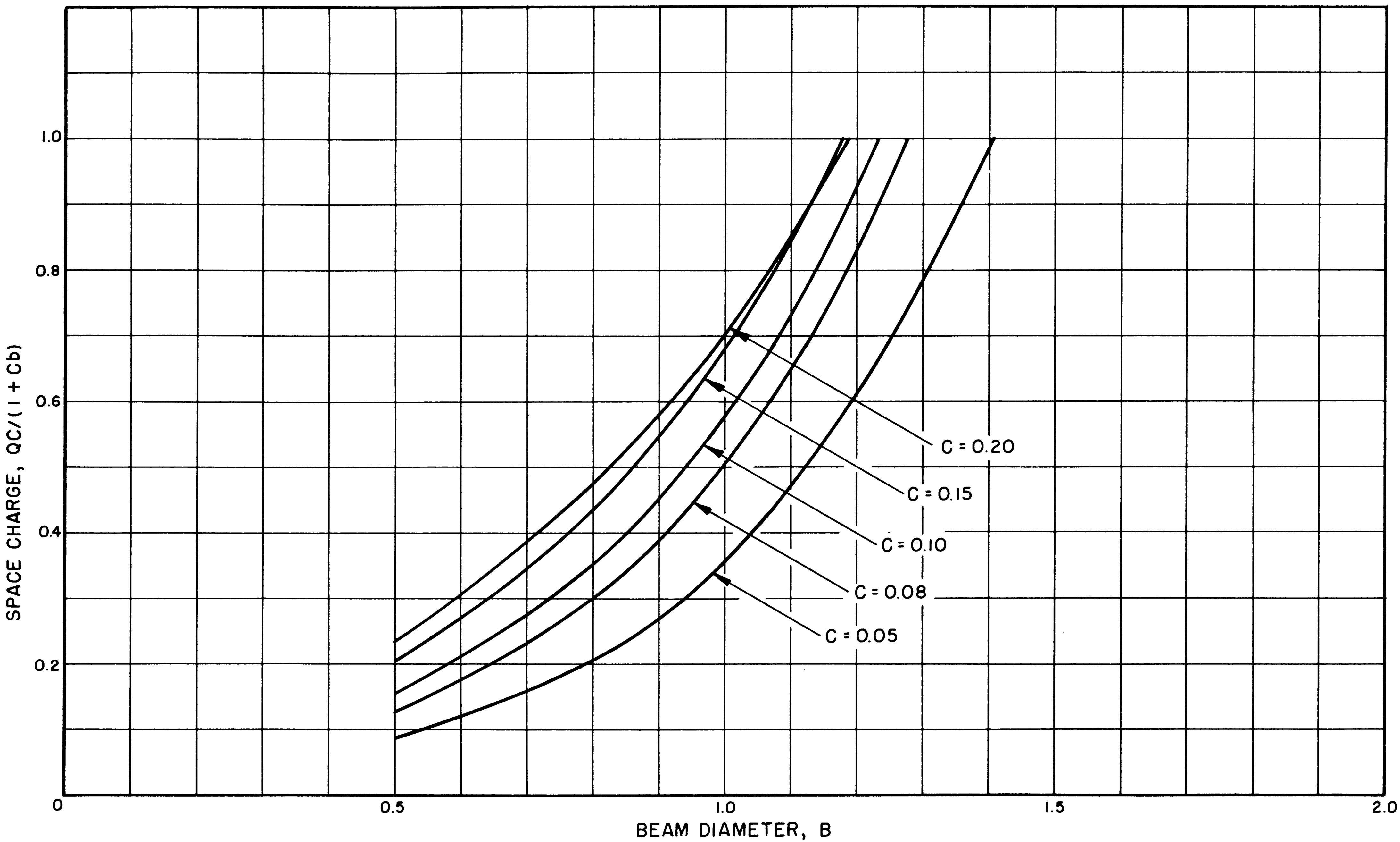


FIG. C.98 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER
($a'/b' = 1.8$, $V_0 = 2$ KV, DLF = 80 %)

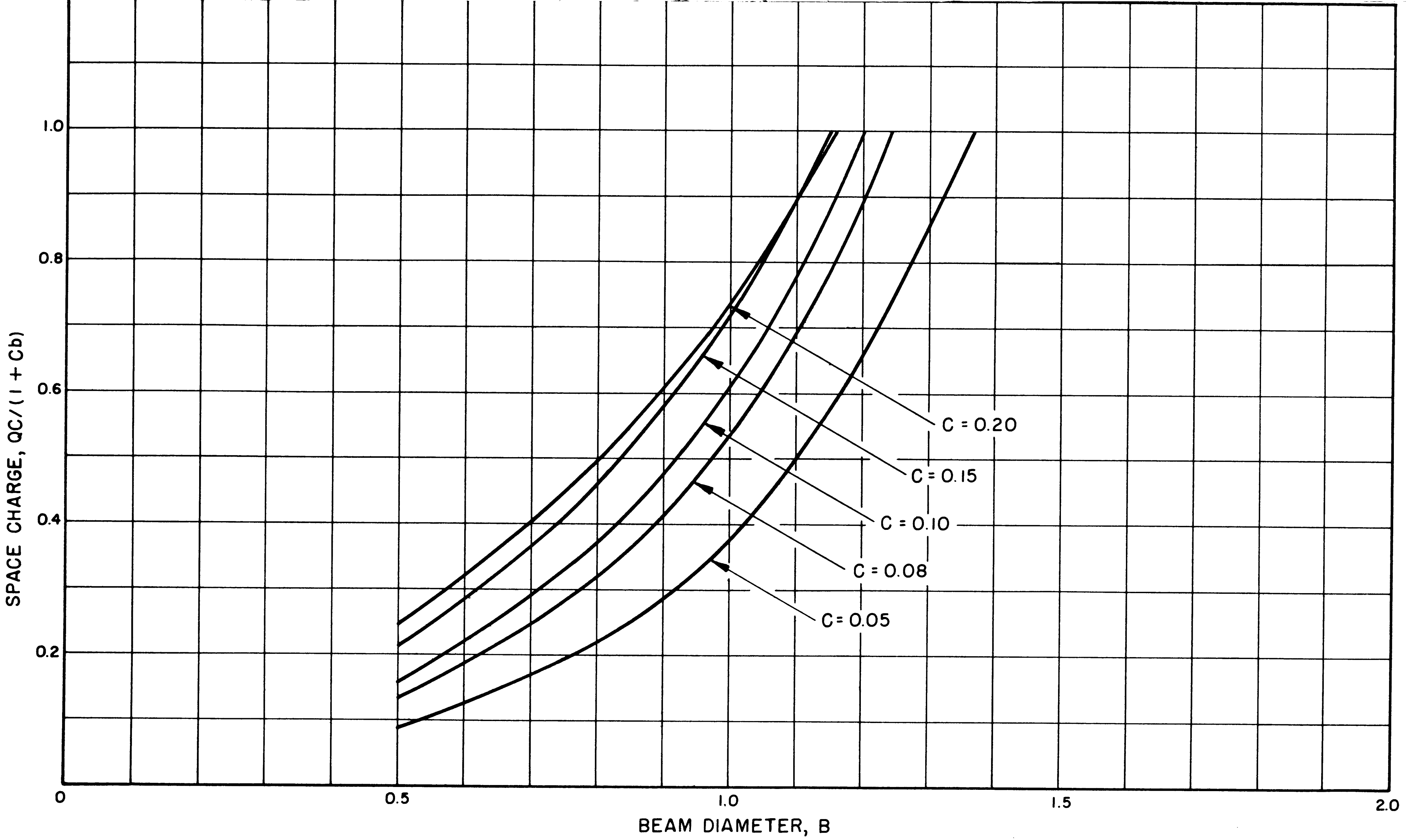


FIG. C.99 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.8$, $V_0 = 3$ KV, DLF = 80 %)

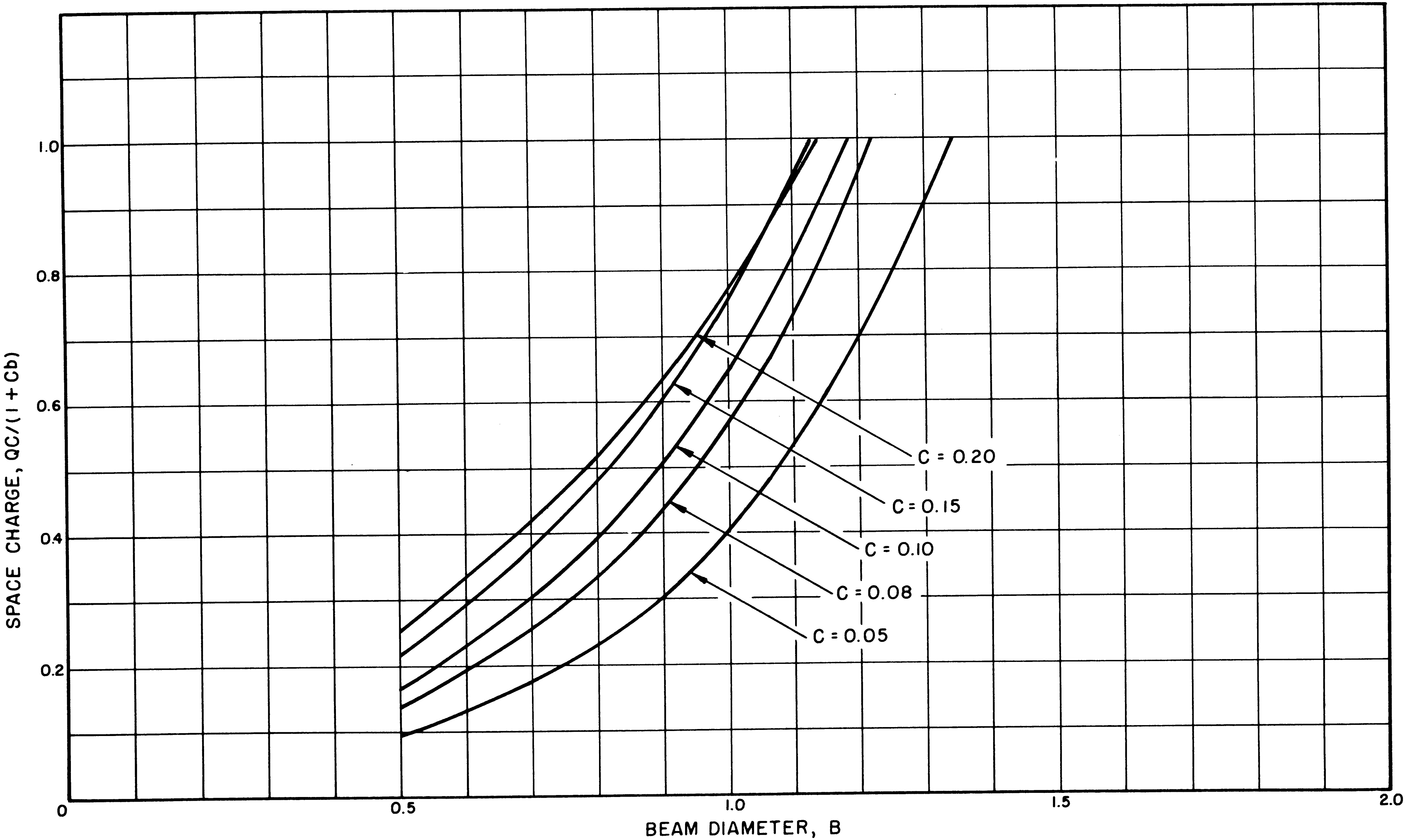


FIG. C.100 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF GAIN PARAMETER.
($a'/b' = 1.8$, $V_0 = 4$ KV, DLF = 80 %)

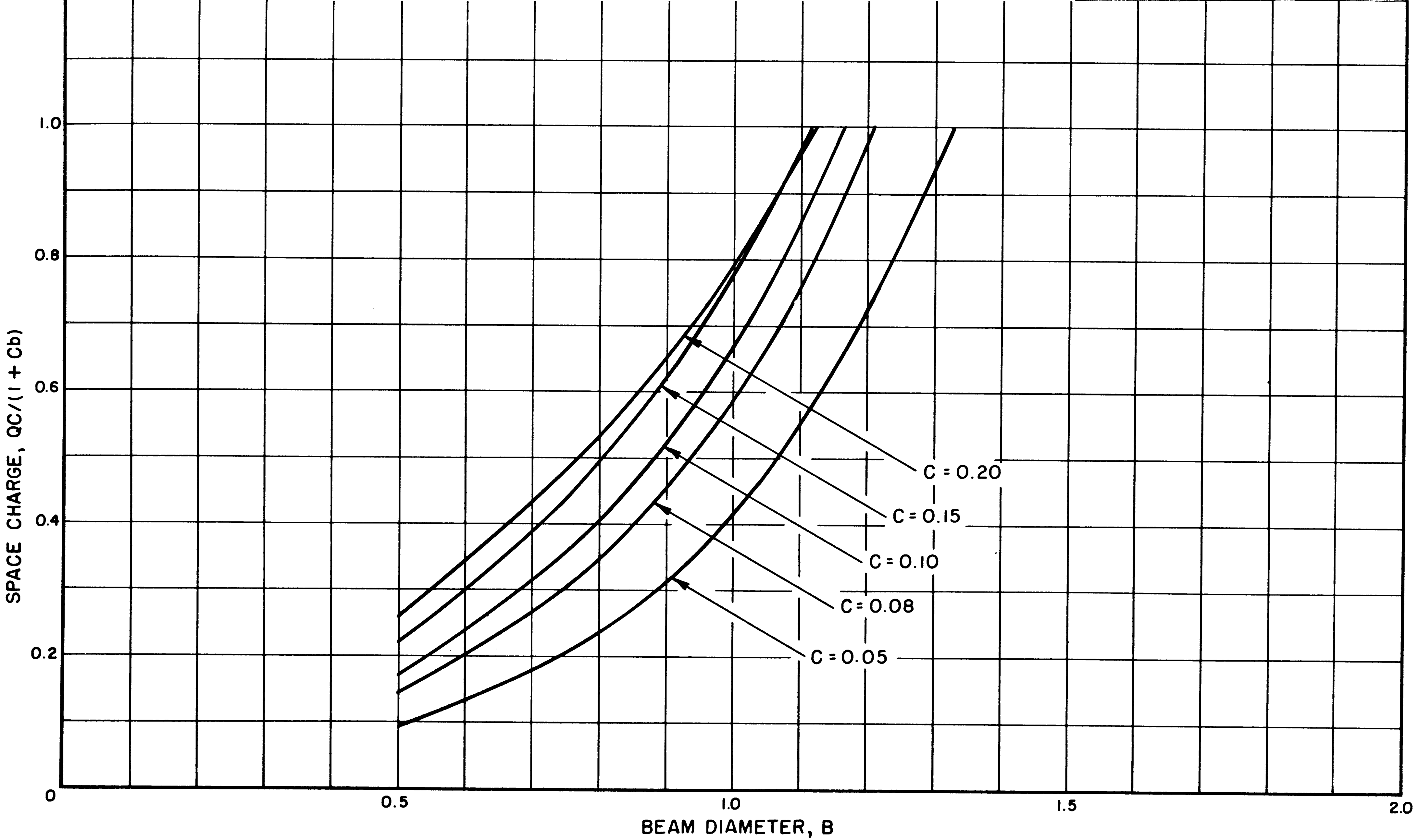


FIG. C.101 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER. ($a'/b' = 1.8$, $V_0 = 5$ KV, DLF = 80%)

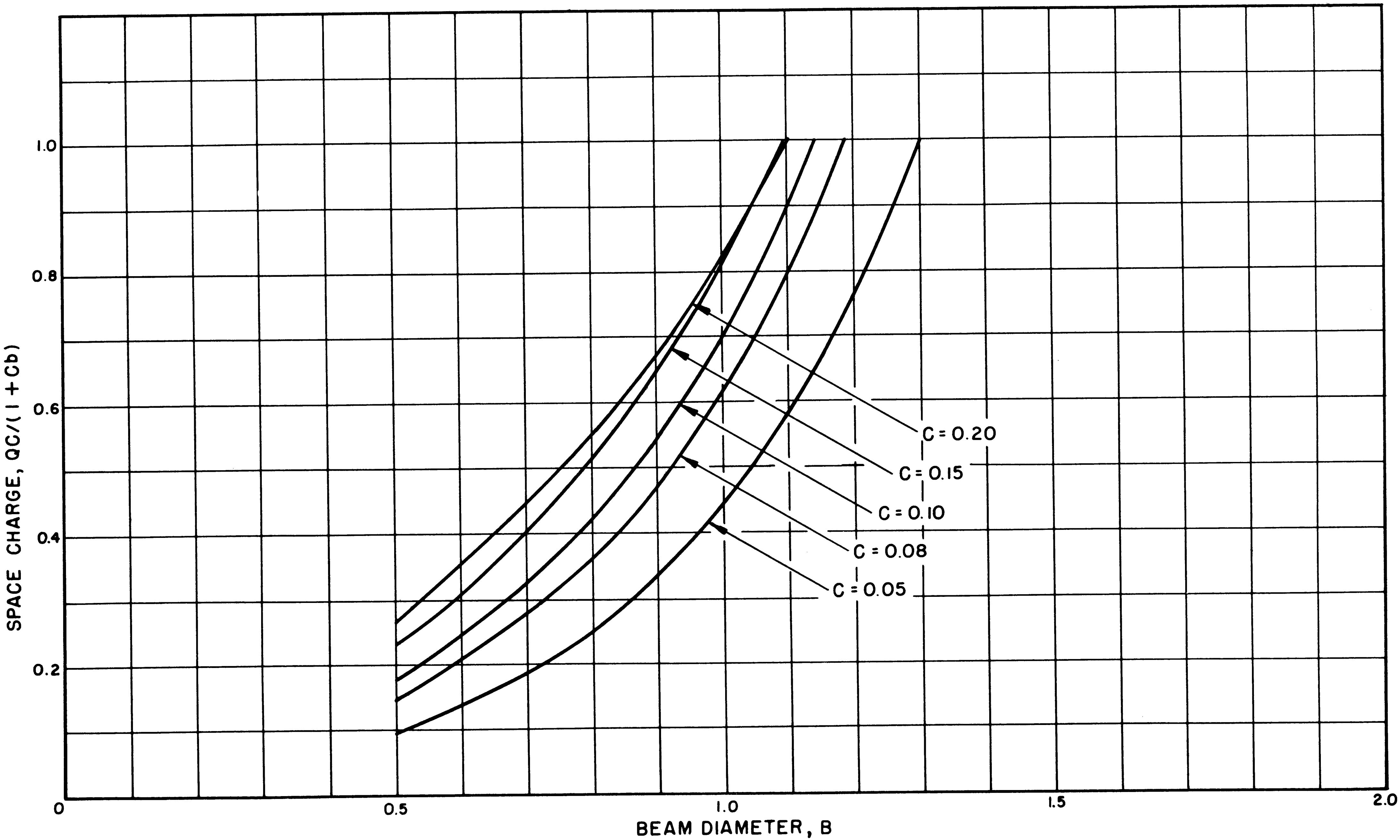


FIG. C.102 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER ($a'/b' = 1.8$, $V_o = 6$ KV, DLF = 80 %)

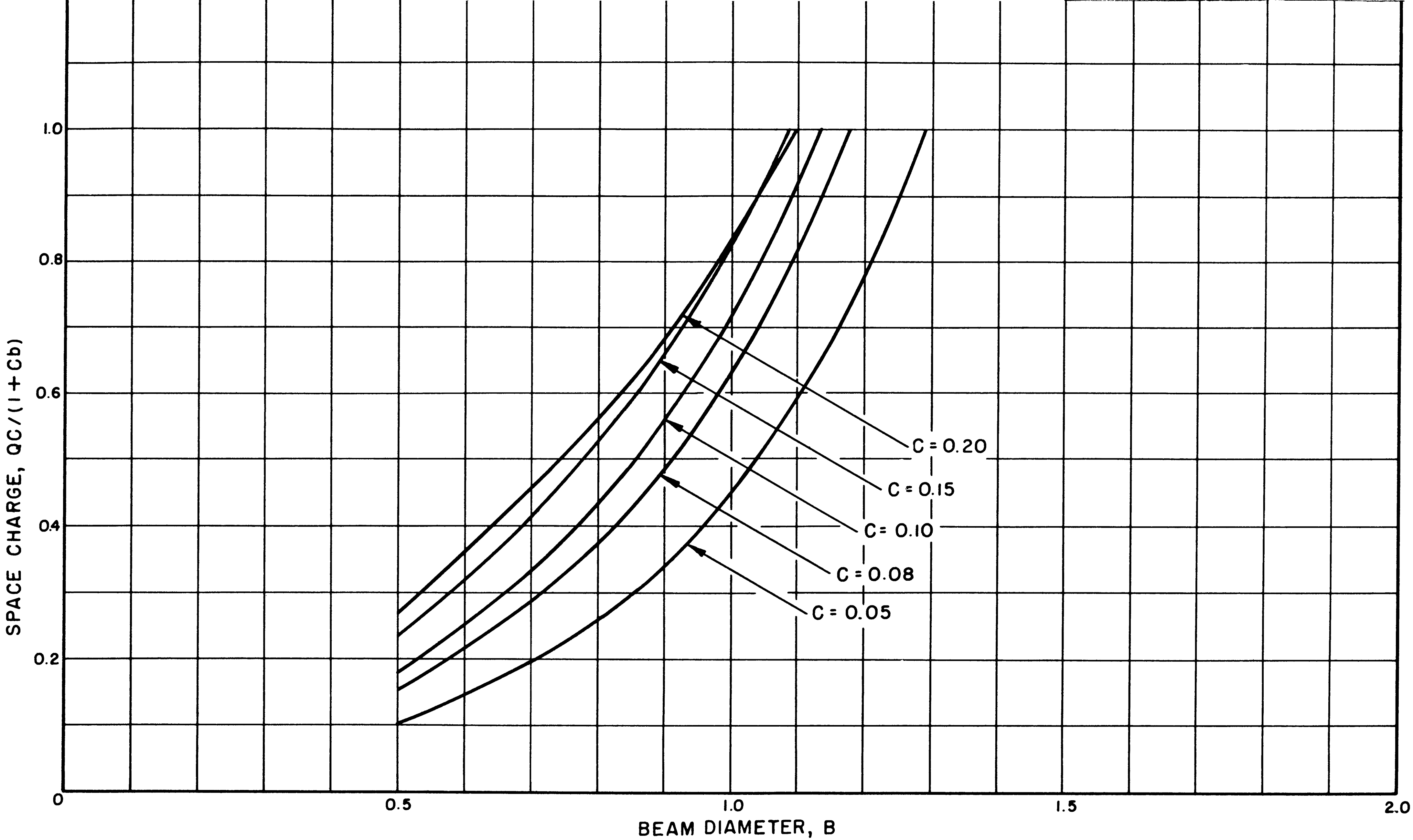


FIG. C.103 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.8$, $V_0 = 7$ KV, DLF = 80 %)

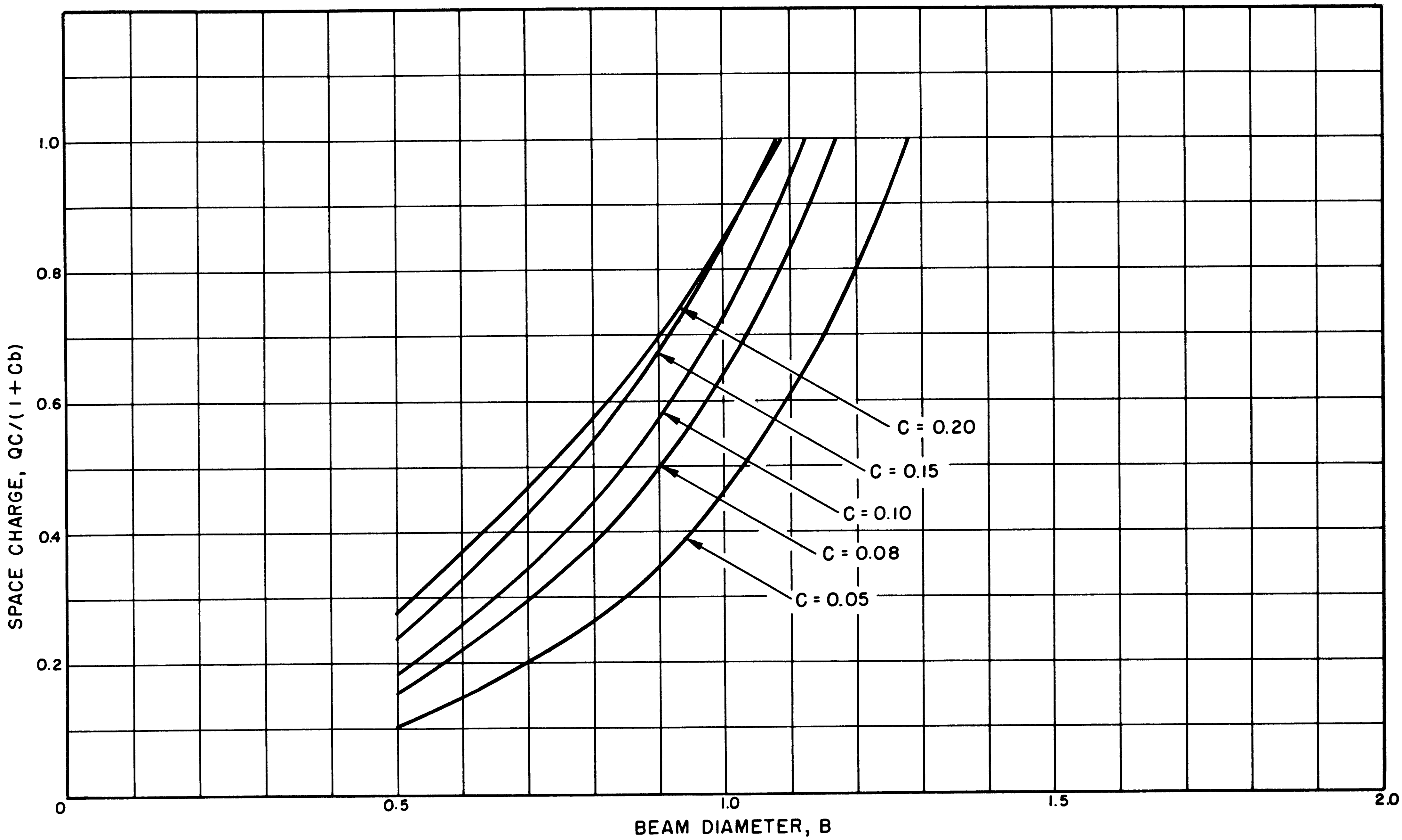


FIG. C.104 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.8$, V_0 = 8 KV, DLF = 80%)

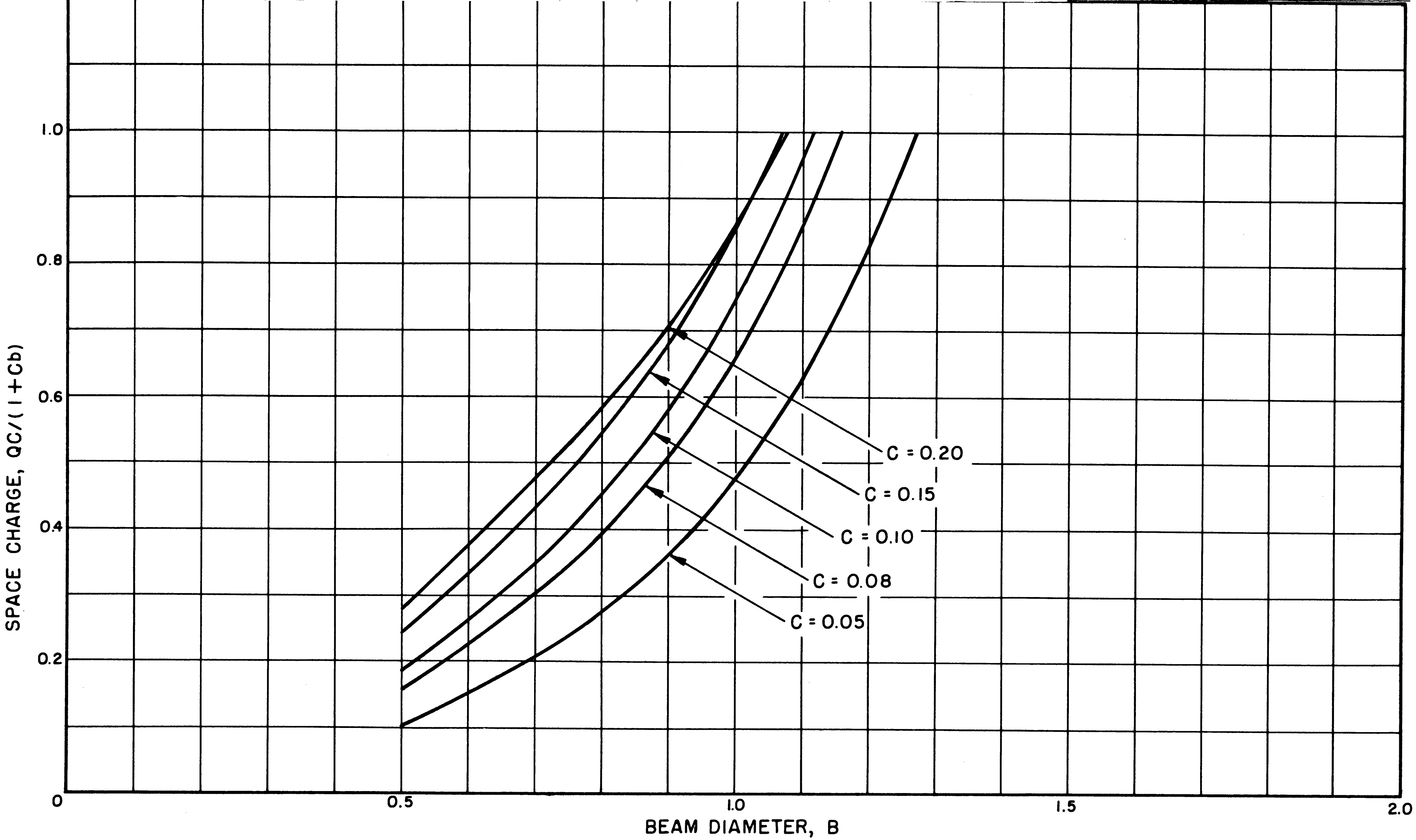


FIG. C.105 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER. ($a'/b' = 1.8$, $V_0 = 9$ KV, DLF = 80%)

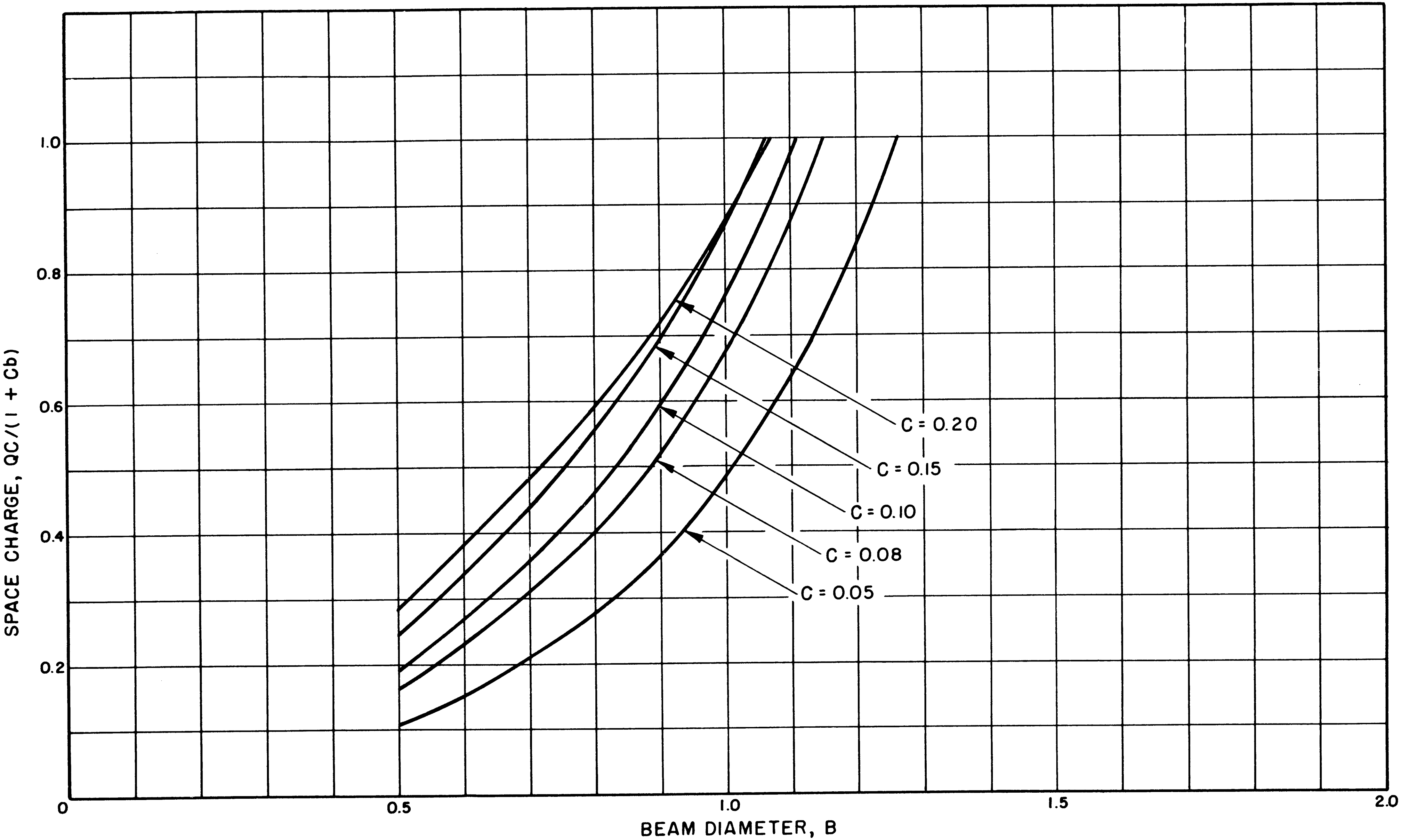


FIG. C.106 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER. ($a'/b' = 1.8$, $V_0 = 10$ KV, DLF = 80 %)

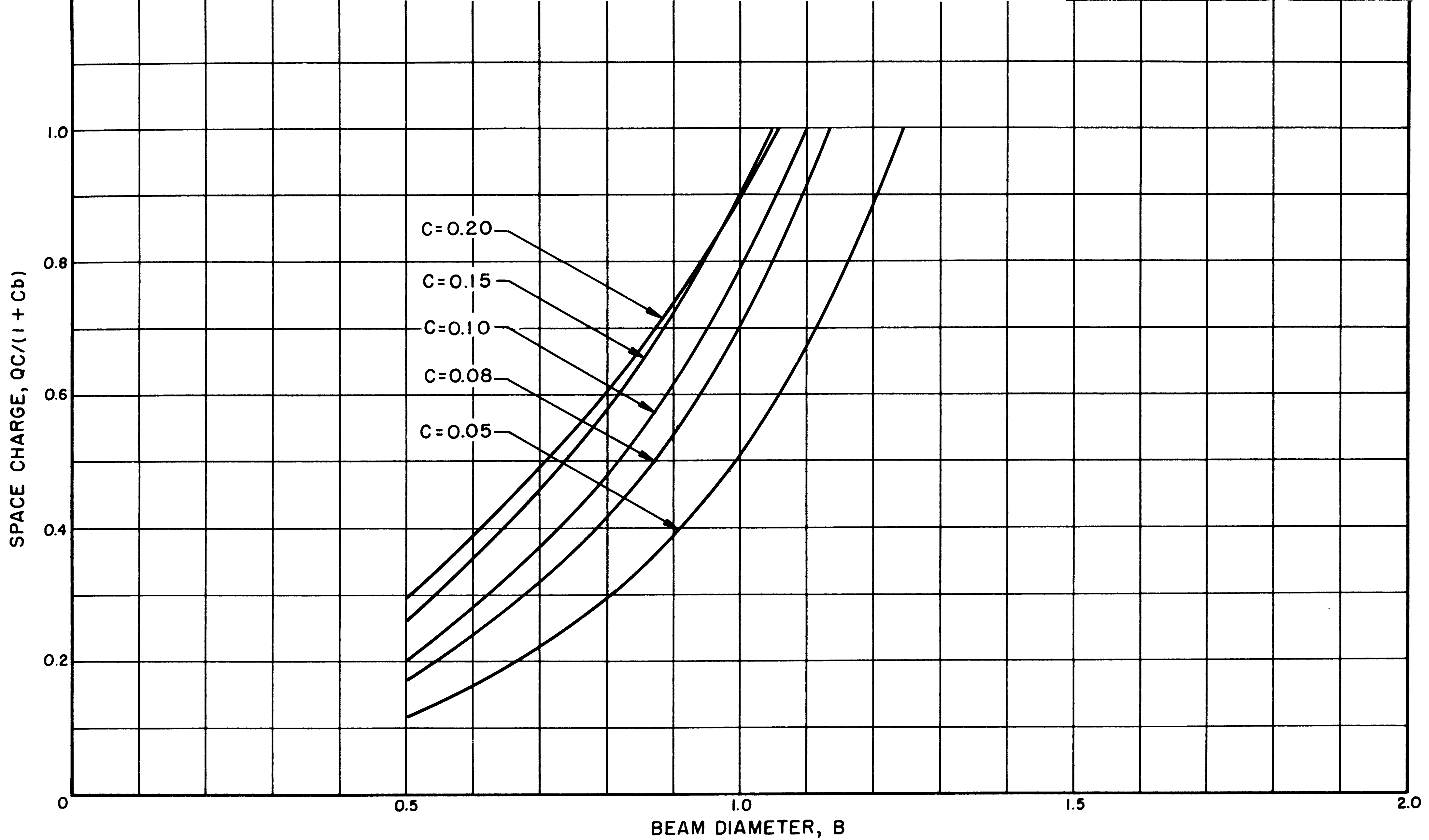


FIG. C.107 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.8$, $V_0 = 12$ KV, DLF = 80%)

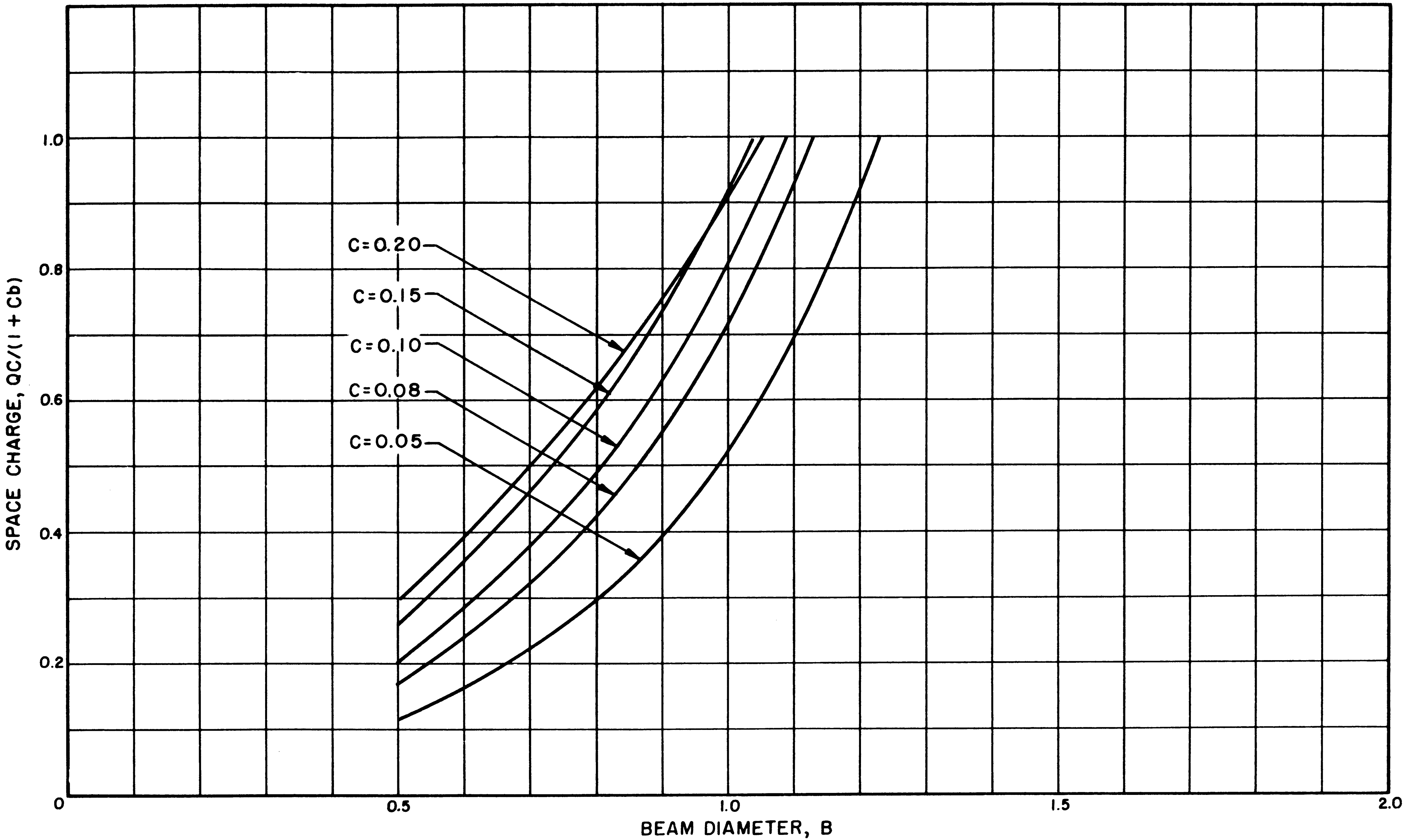


FIG. C.108 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER. ($a'/b' = 1.8$, $V_o = 14$ KV, DLF = 80%)

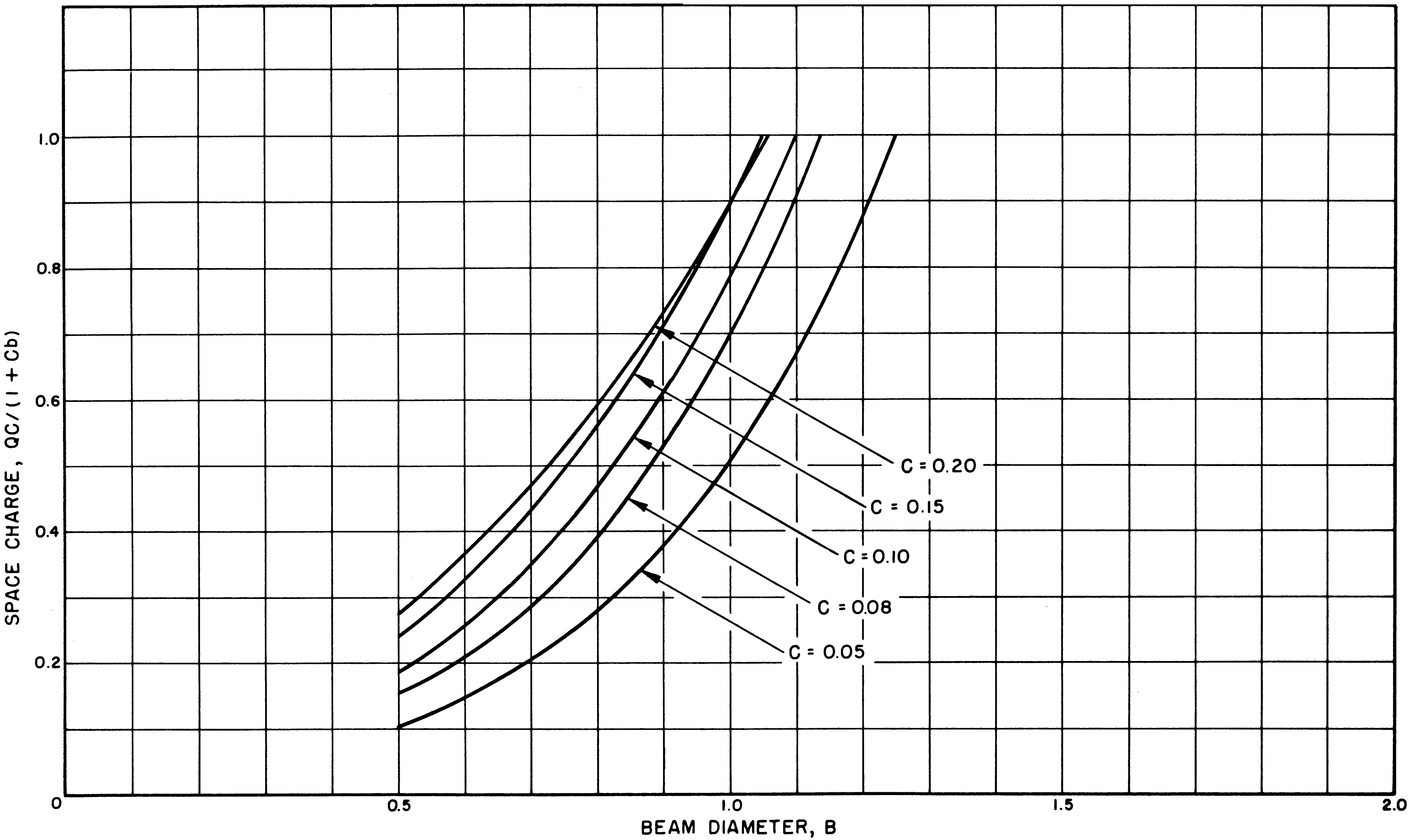


FIG. C.109 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
(a'/b' = 2.0, V_0 = 1 KV, DLF = 80 %)

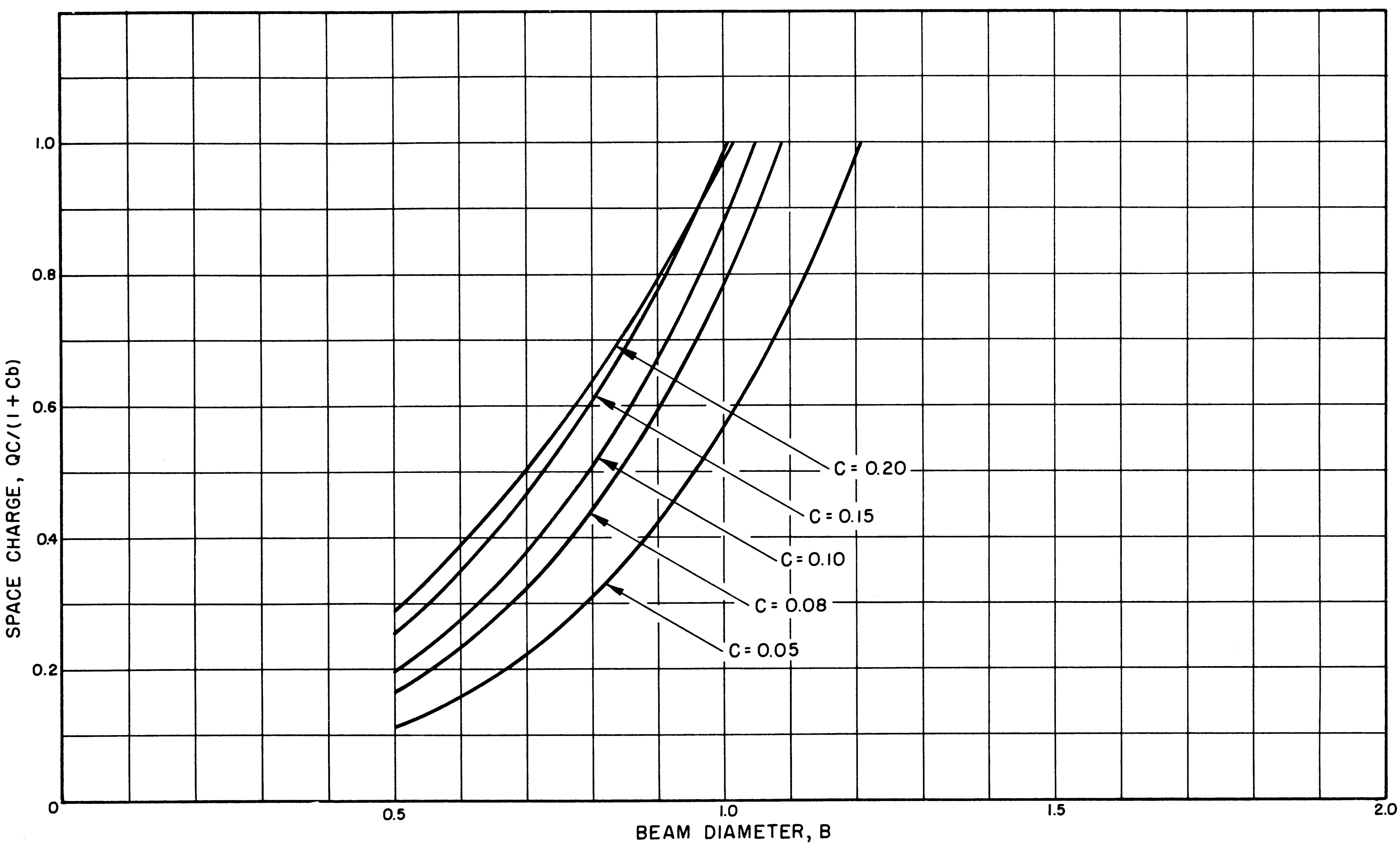


FIG. C.110 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 2.0$, $V_0 = 2$ KV, DLF = 80 %)

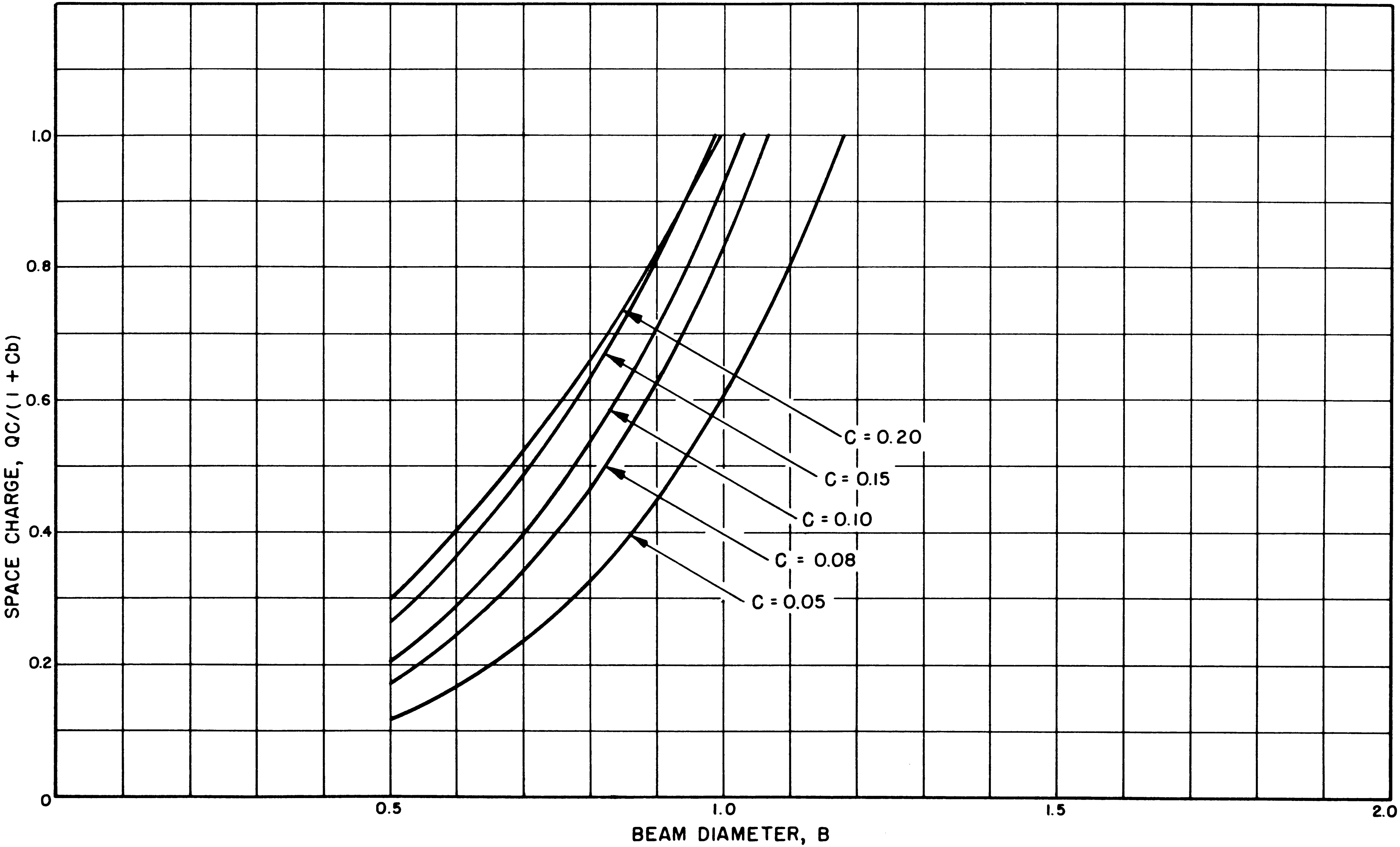


FIG. C.III SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 2.0$, $V_0 = 3$ KV, DLF = 80 %)

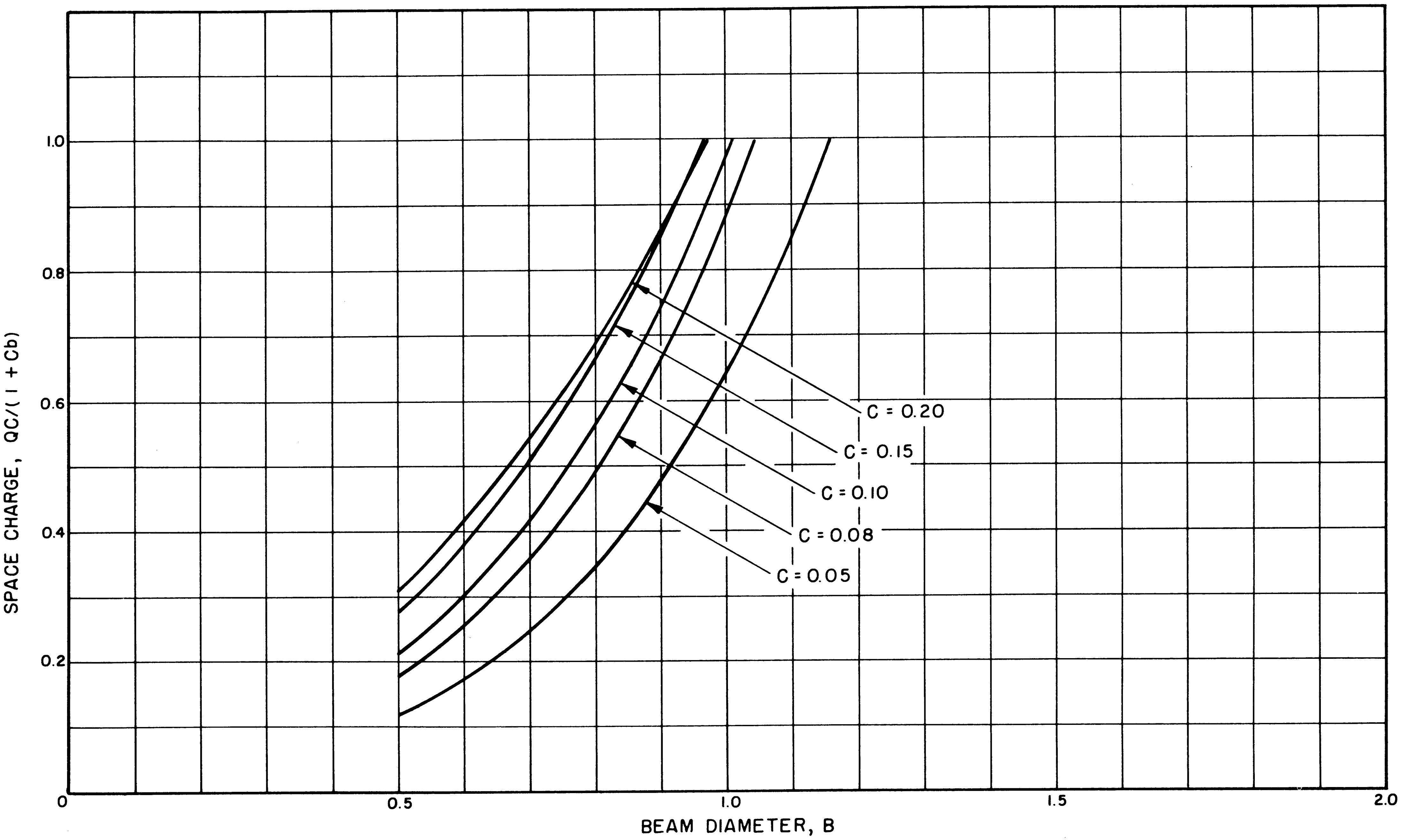


FIG. C.112 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER. ($a'/b' = 2.0$, $V_0 = 4$ KV, DLF = 80 %)

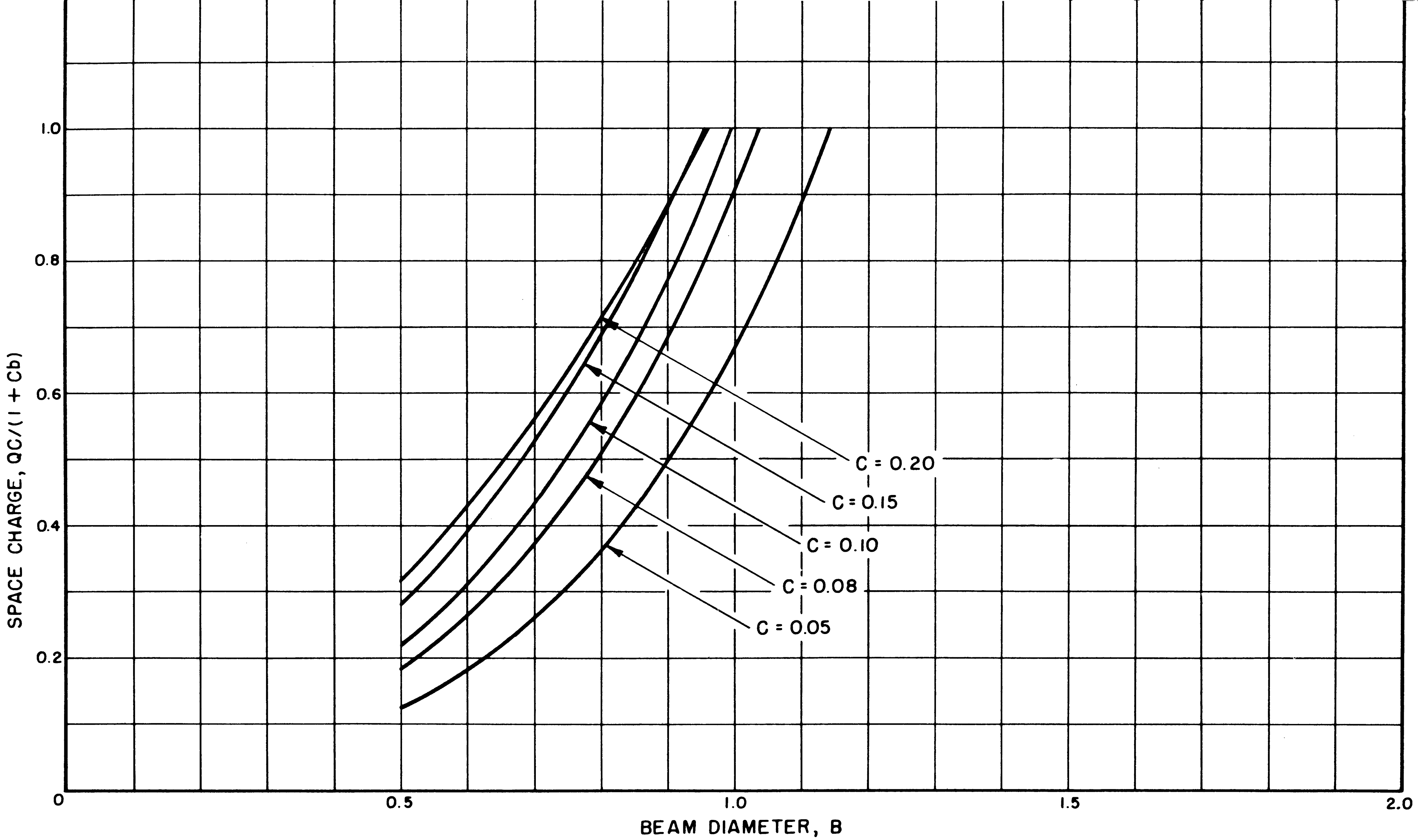


FIG. C.113 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 2.0$, $V_0 = 5$ KV, DLF = 80 %)

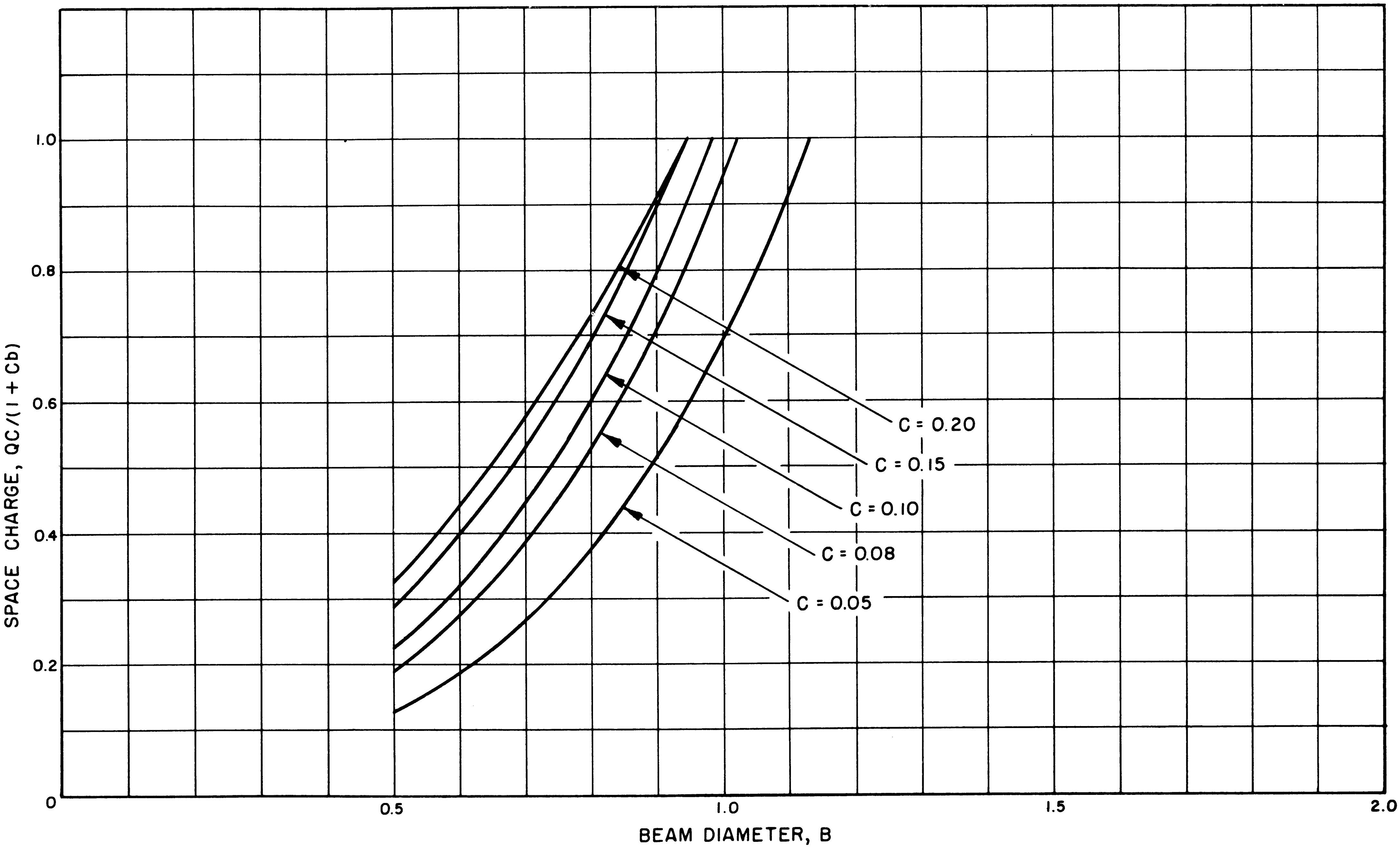


FIG. C.114 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 2.0$, $V_0 = 6$ KV, DLF = 80 %)

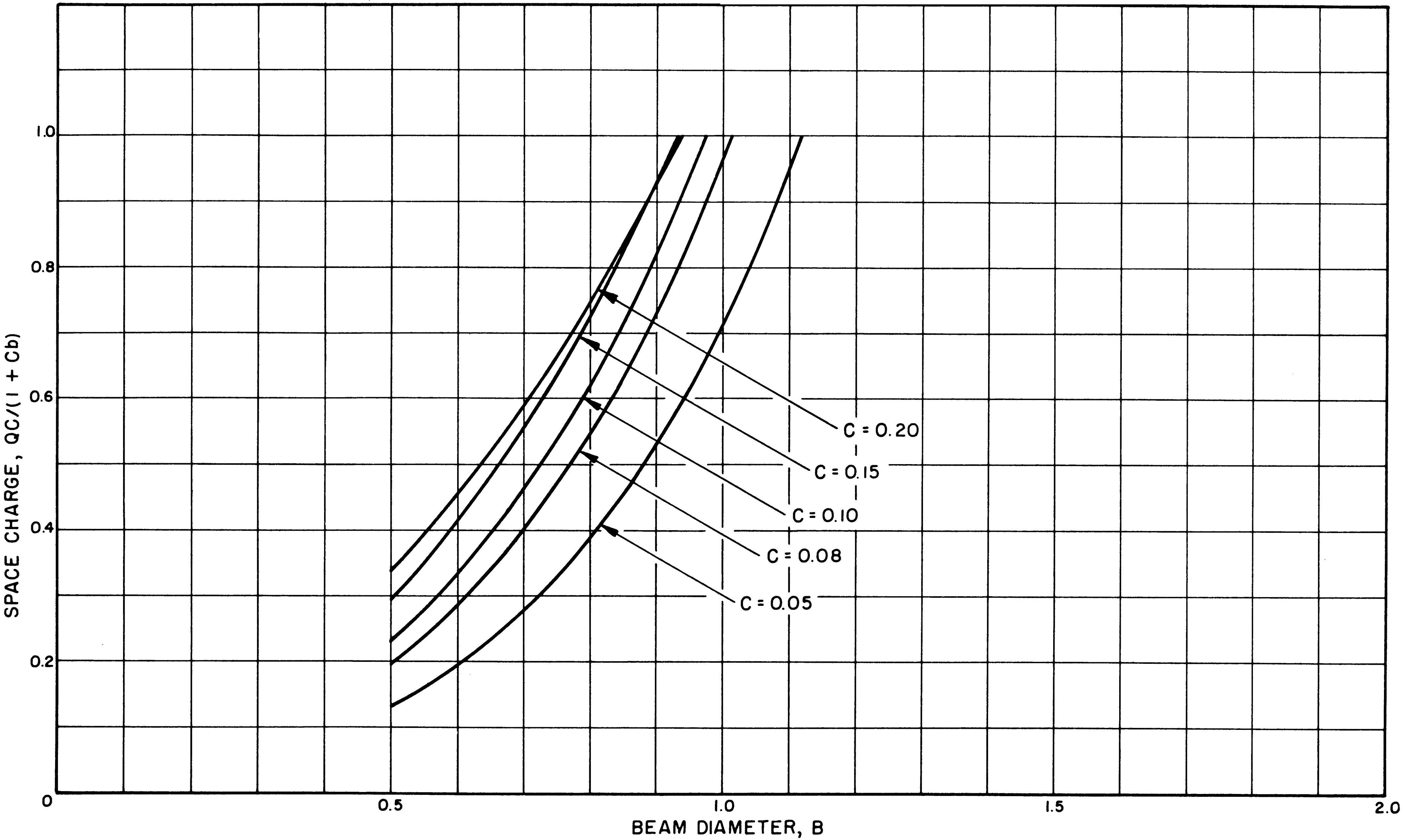


FIG. C.115 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER. ($a'/b' = 2.0$, $V_0 = 7$ KV, DLF = 80 %)

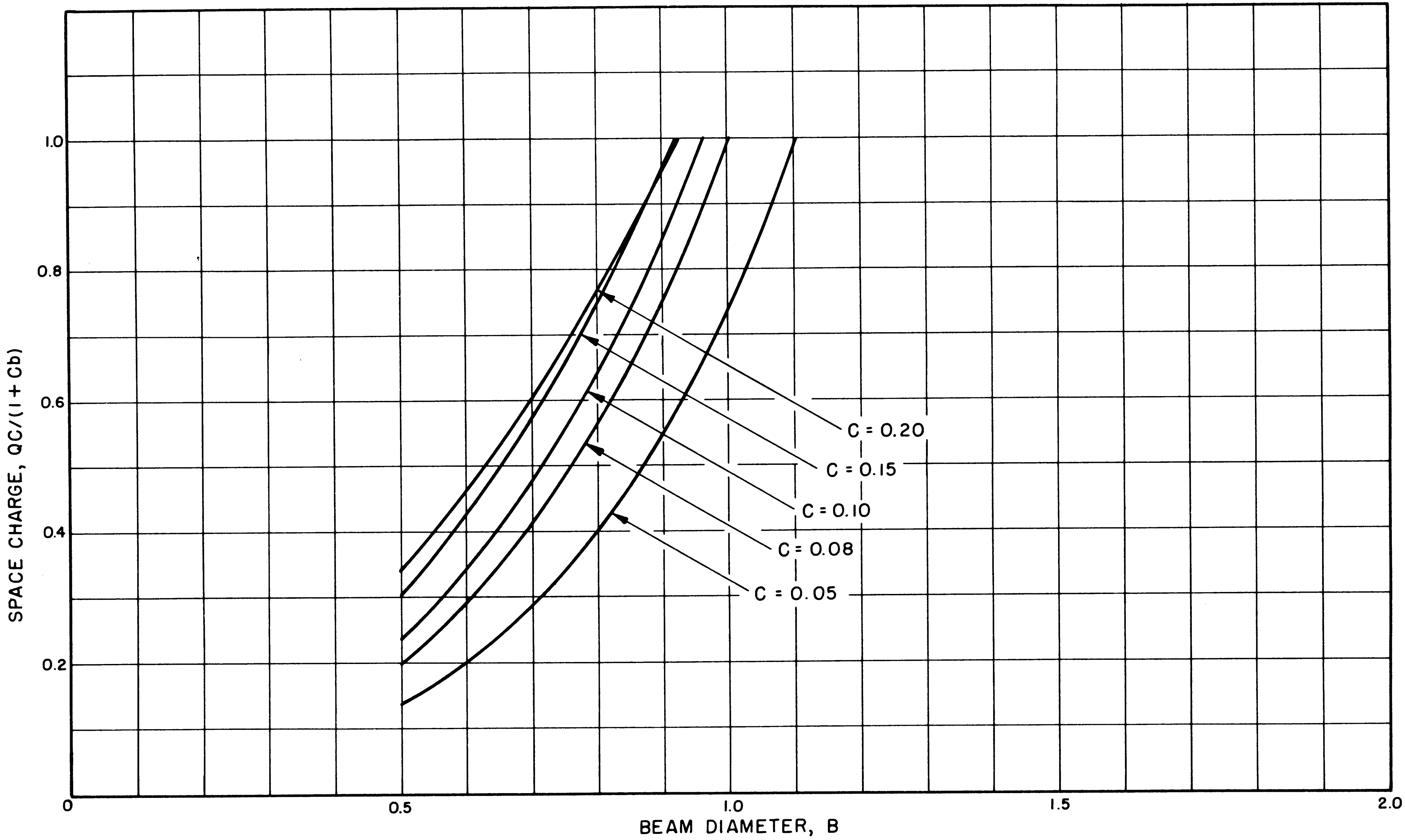


FIG. C.116 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 2.0$, $V_0 = 8$ KV, DLF = 80 %)

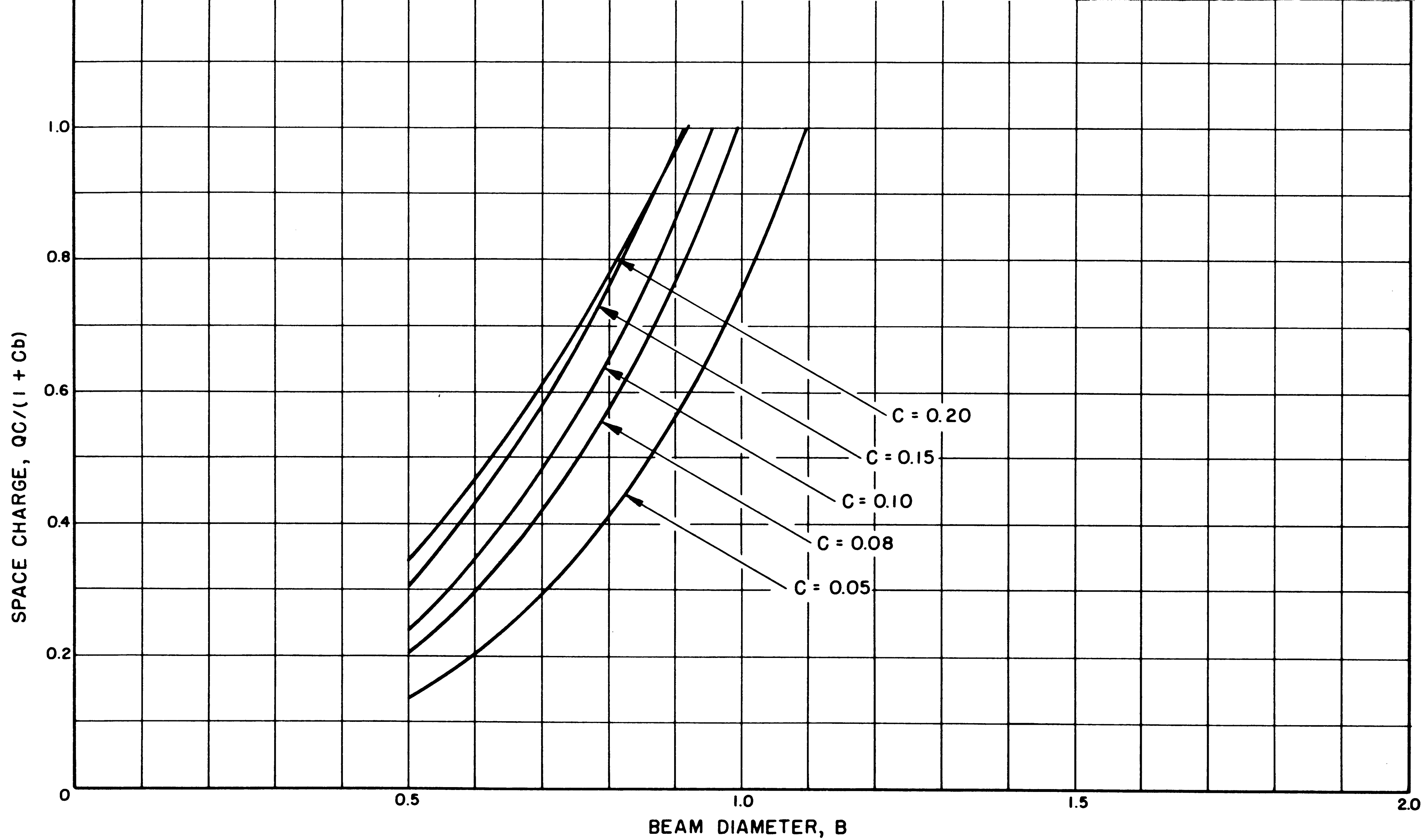


FIG. C.117 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER. ($a'/b' = 2.0$, $V_0 = 9$ KV, DLF = 80 %)

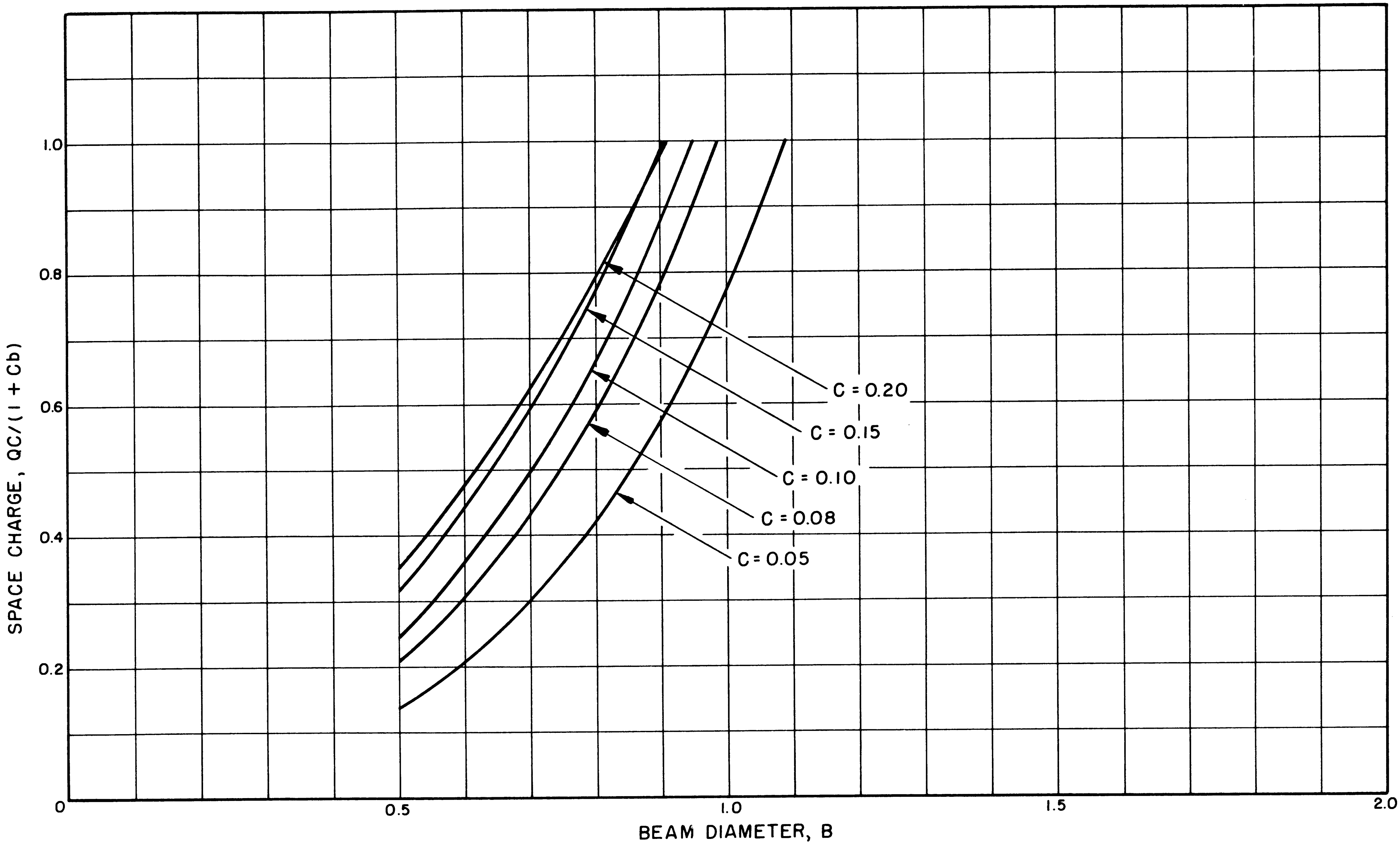


FIG. C.118 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER. ($a'/b' = 2.0$, $V_0 = 10$ KV, DLF = 80 %)

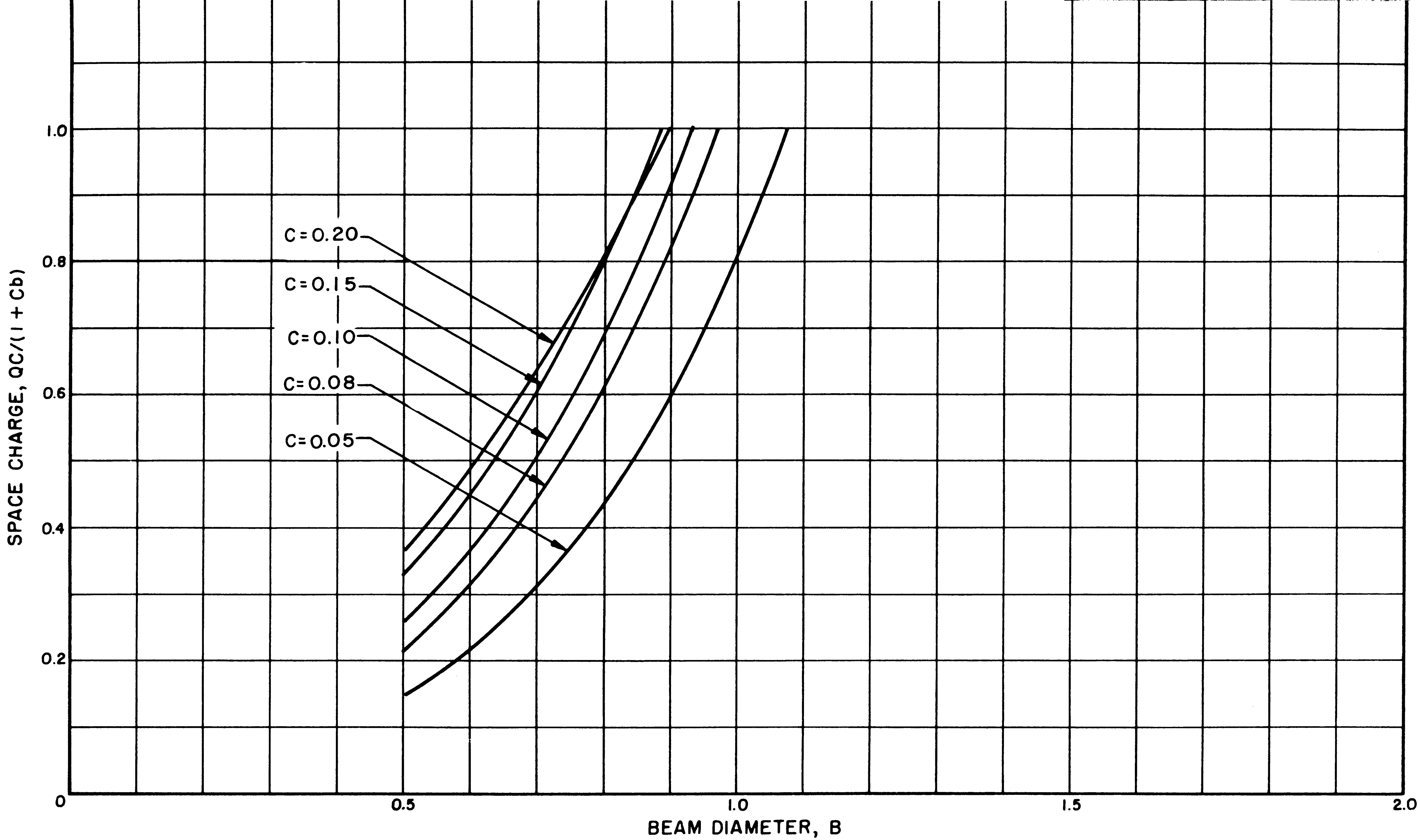


FIG. C.119 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER. ($a'/b' = 2.0$, $V_0 = 12$ KV, DLF = 80%)

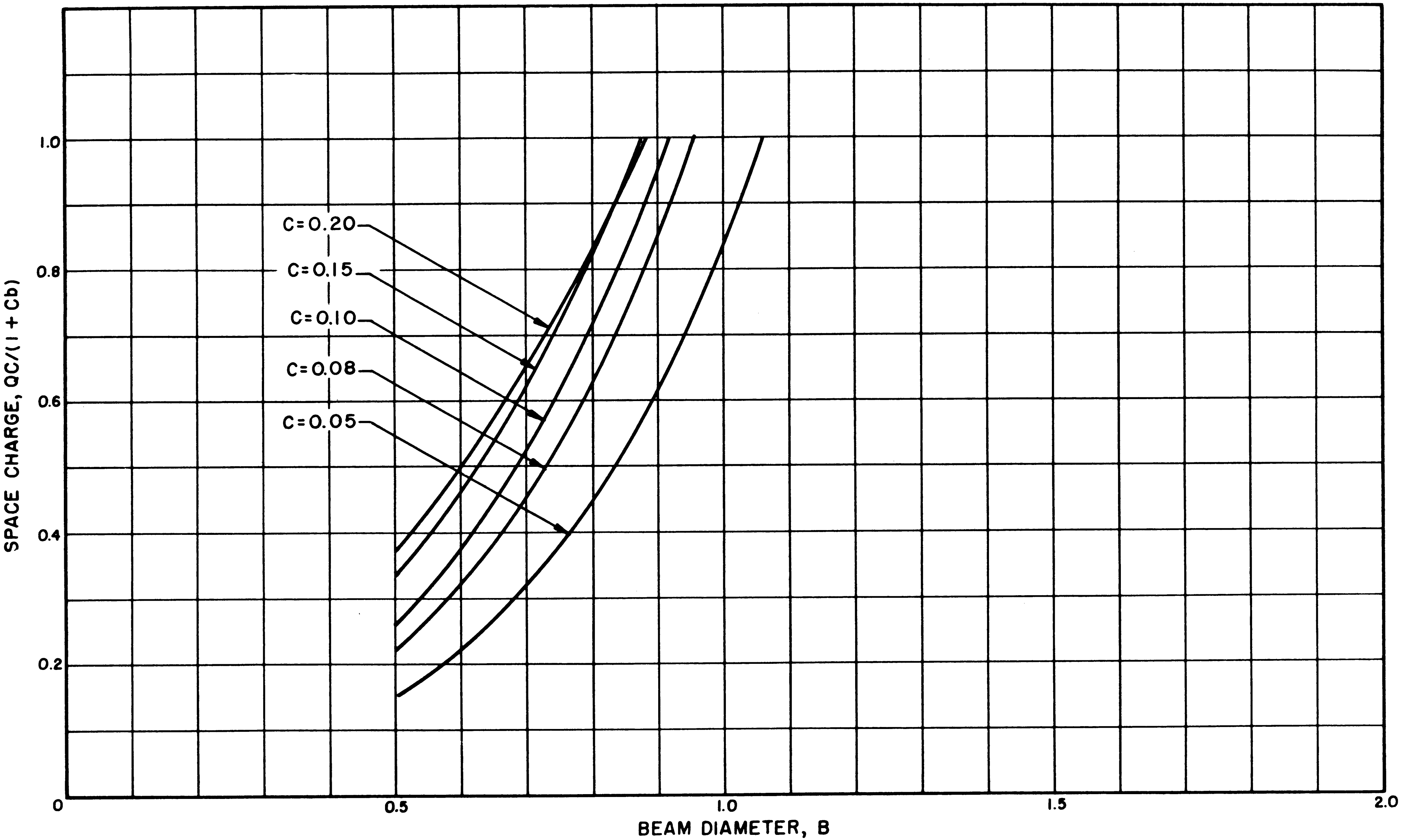


FIG. C.120 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 2.0$, $V_0 = 14$ KV, DLF = 80%)

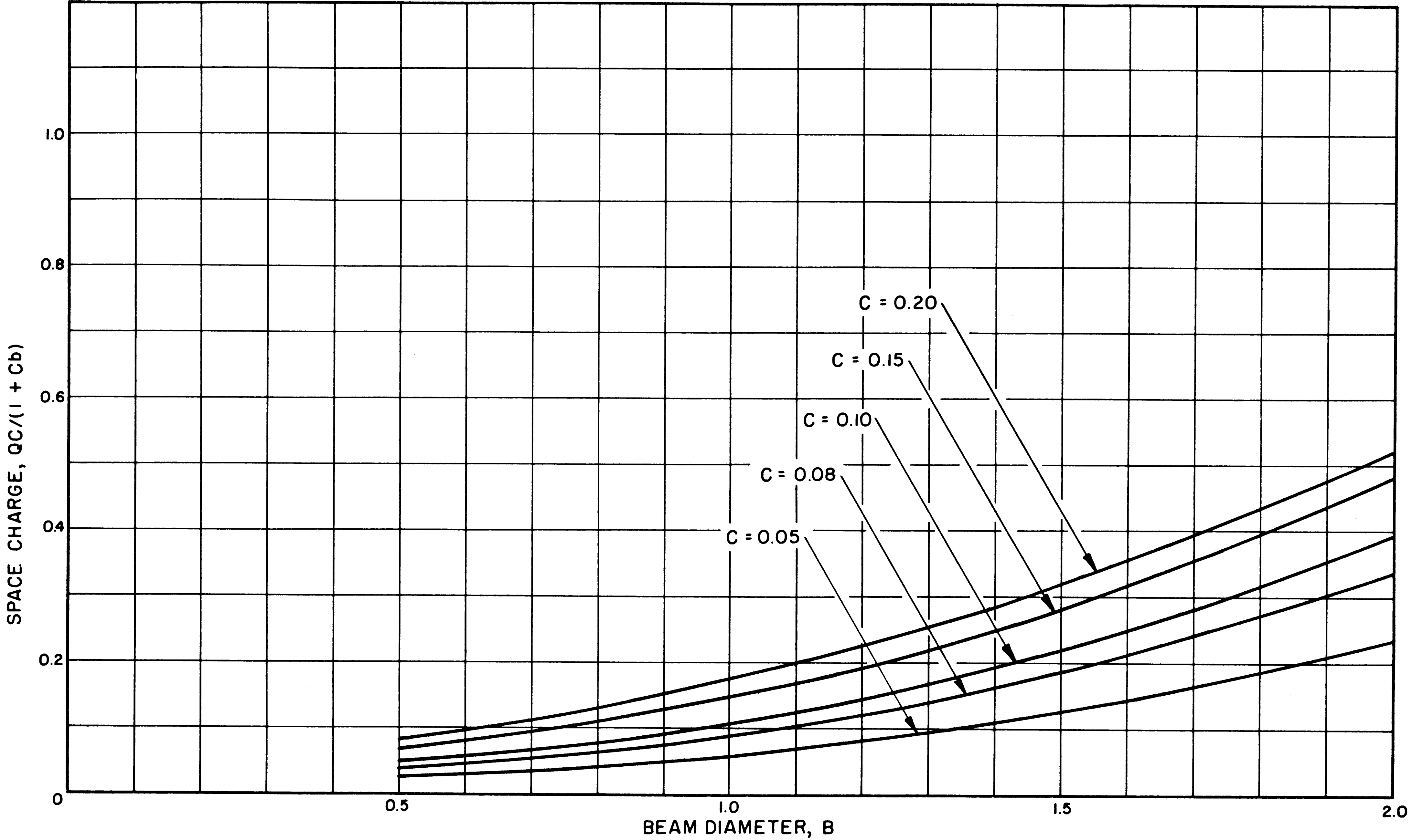


FIG. C.121 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER. ($a'/b' = 1.2$, $V_0 = 1$ KV, DLF = 85 %)

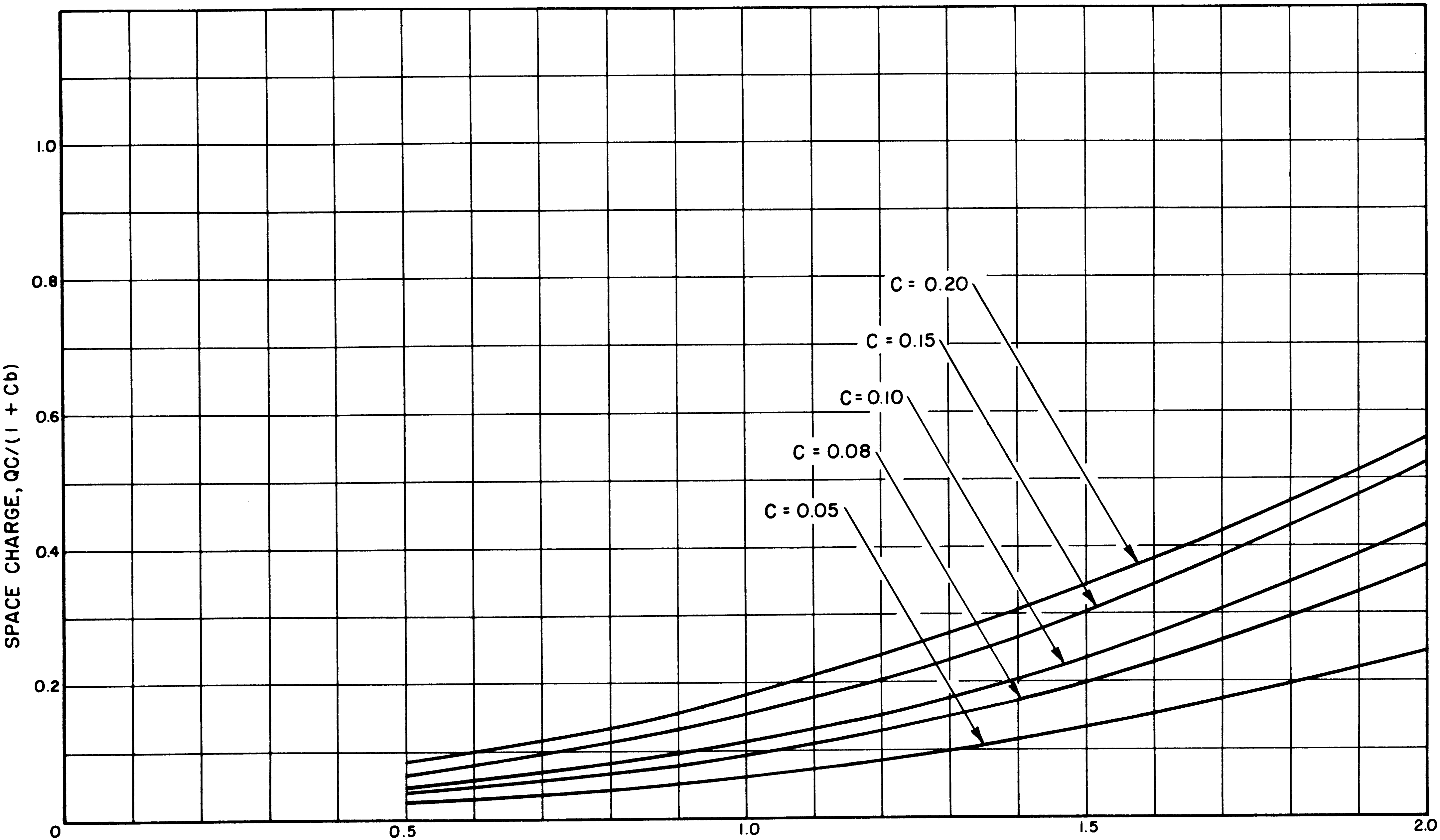


FIG. C.122 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.2$, $V_0 = 2$ KV, DLF = 85 %)

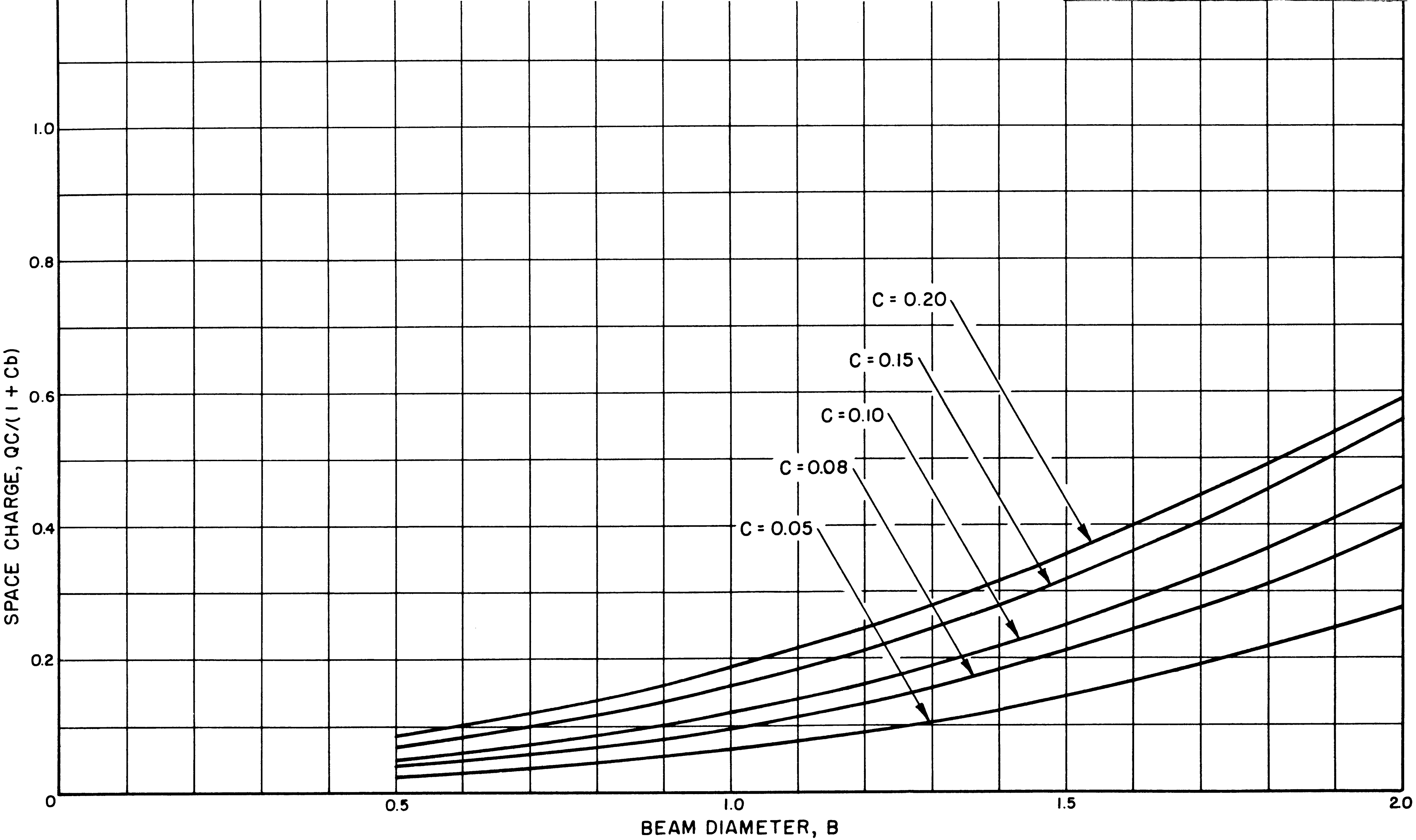


FIG. C.123 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.2$, $V_0 = 3$ KV, DLF = 85 %)

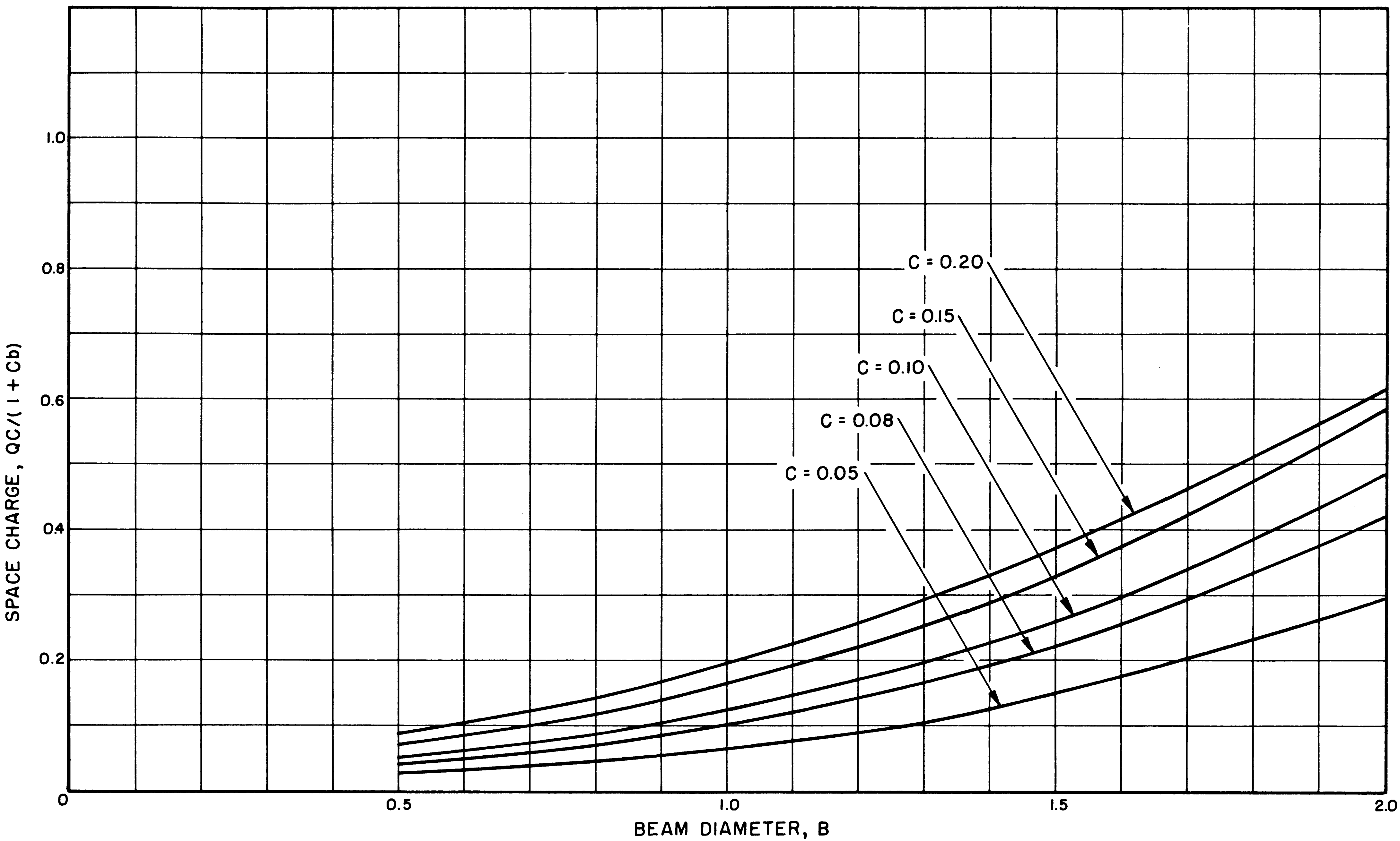


FIG. C.124 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER. ($a'/b' = 1.2$, $V_0 = 4$ KV, DLF = 85 %)

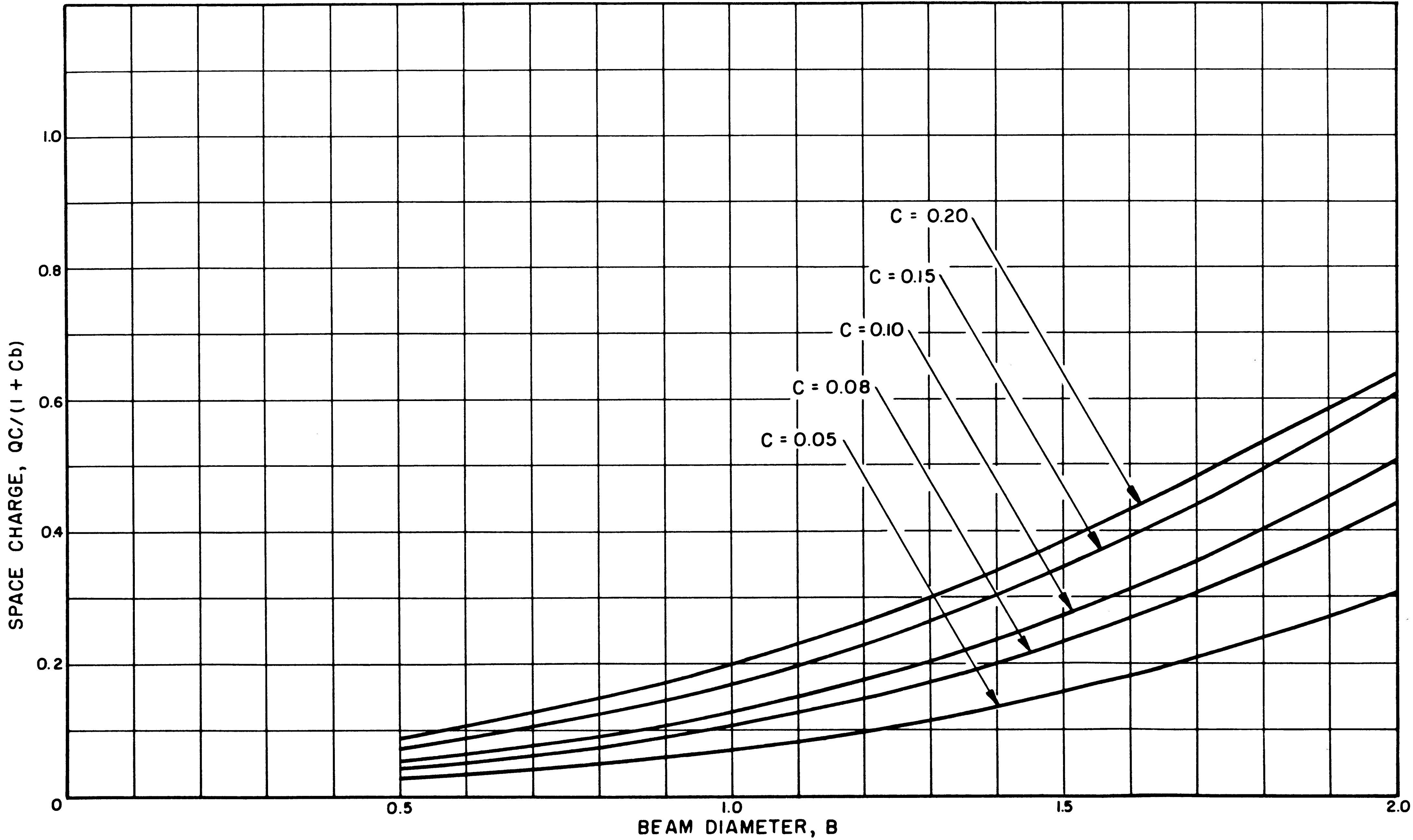


FIG. C.125 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.2$, $V_0 = 5$ KV, DLF = 85 %)

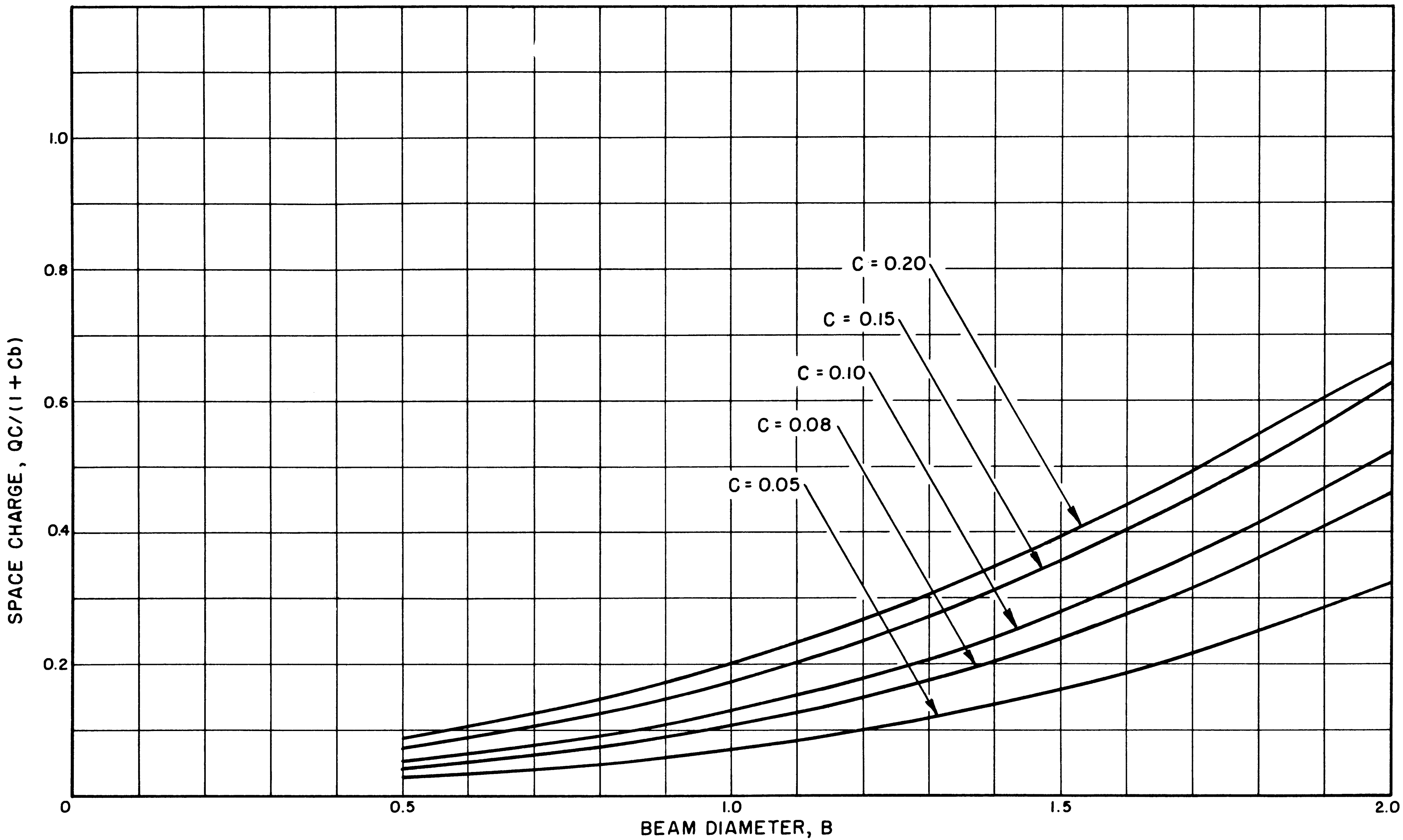


FIG. C.126 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER. ($a'/b' = 1.2$, $V_0 = 6$ KV, DLF = 85 %)

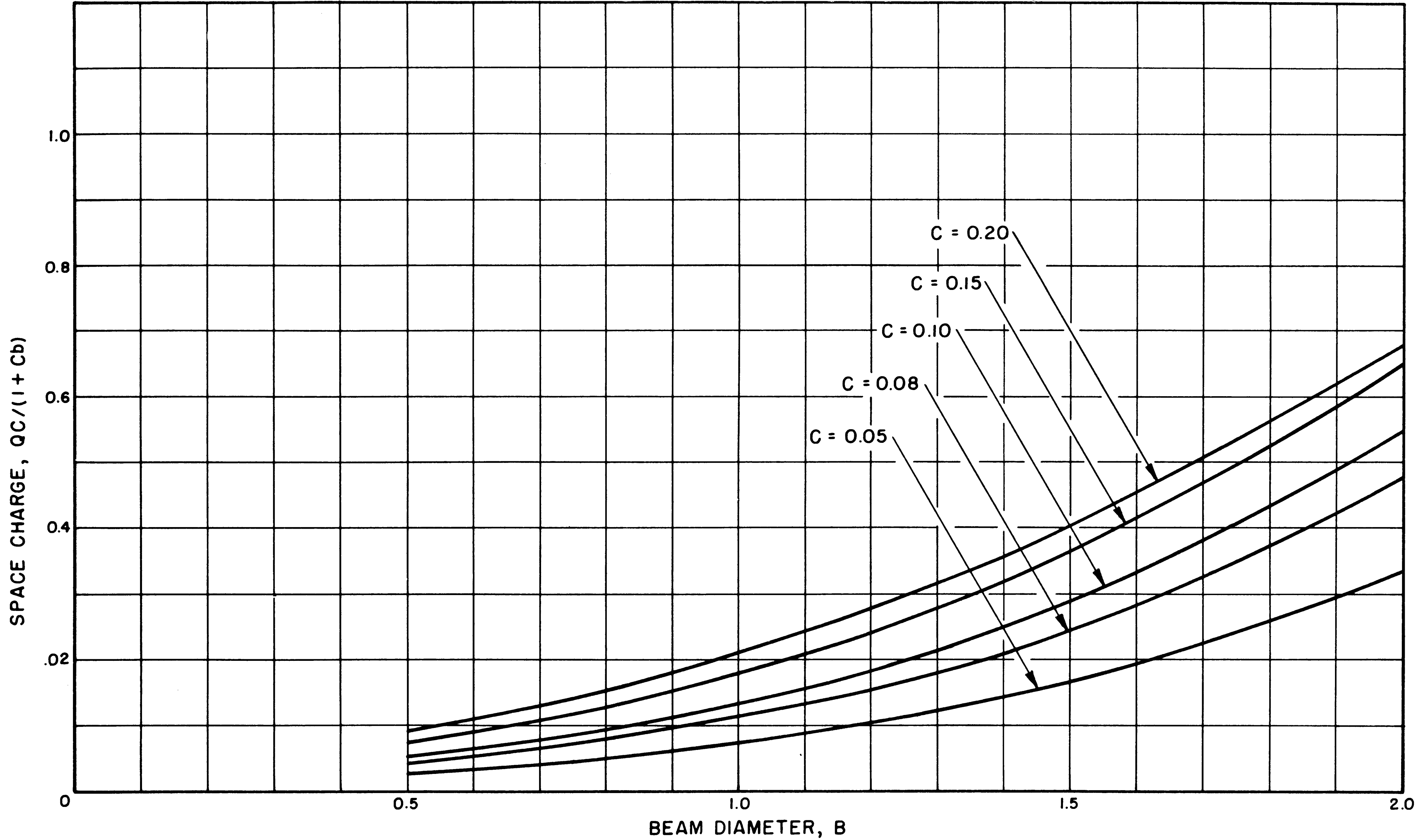


FIG. C.127 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.2$, $V_0 = 7$ KV, DLF = 85 %)

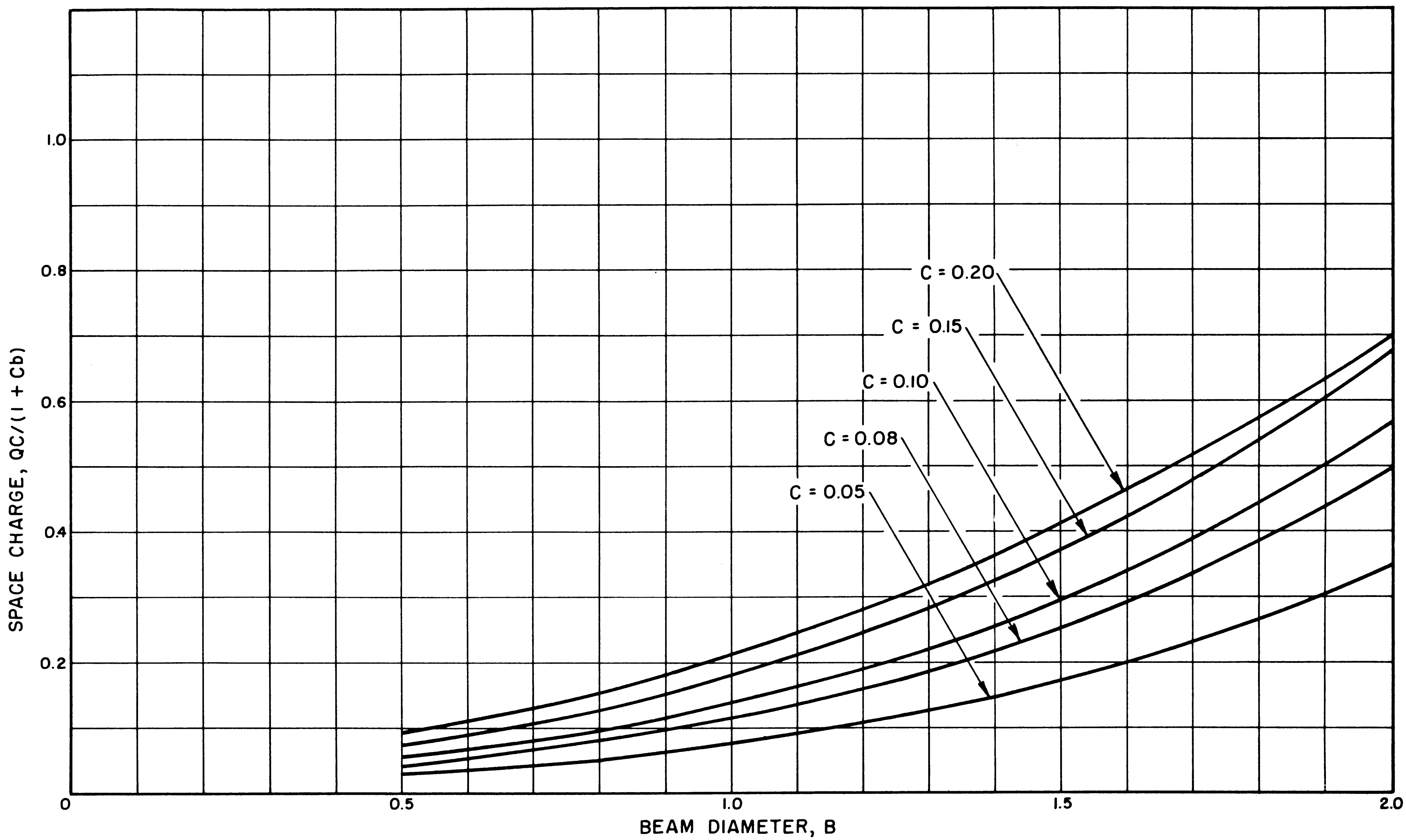


FIG. C.128 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER. ($a'/b' = 1.2$, $V_0 = 8$ KV, DLF = 85 %)

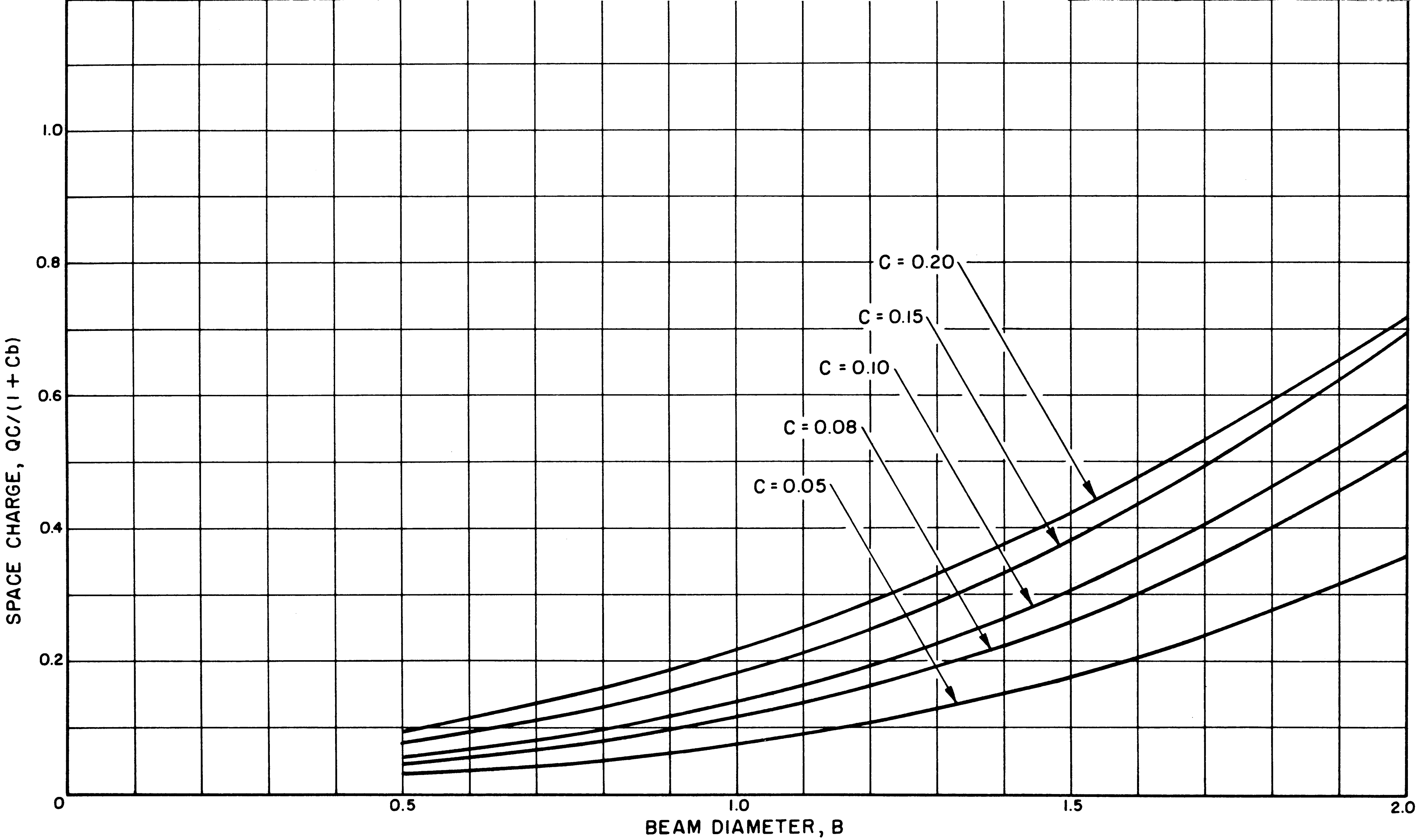


FIG. C.129 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER. ($a'/b' = 1.2$, $V_0 = 9$ KV, DLF = 85 %)

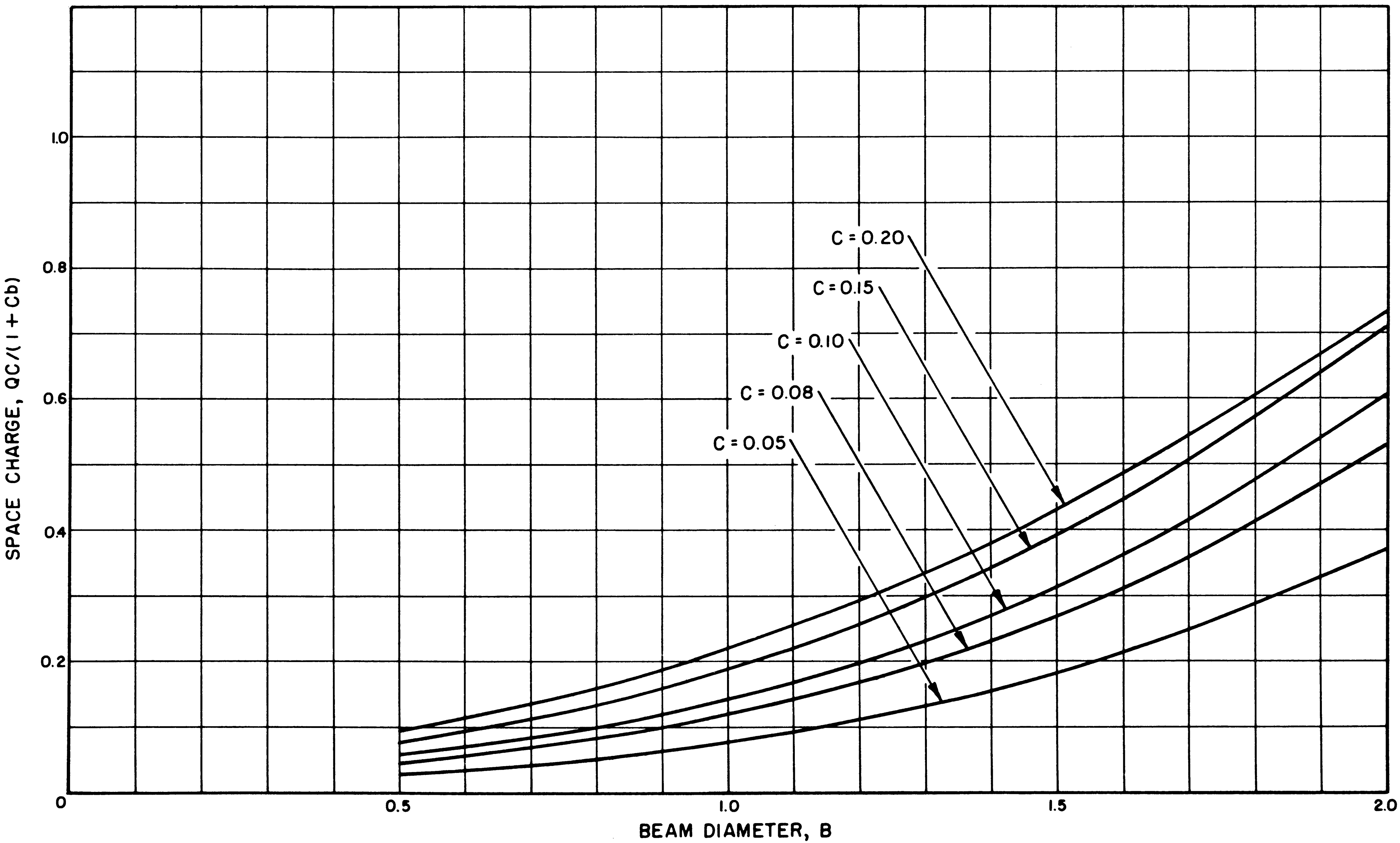


FIG. C.130 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER. ($a'/b' = 1.2$, $V_o = 10$ KV, DLF = 85 %)

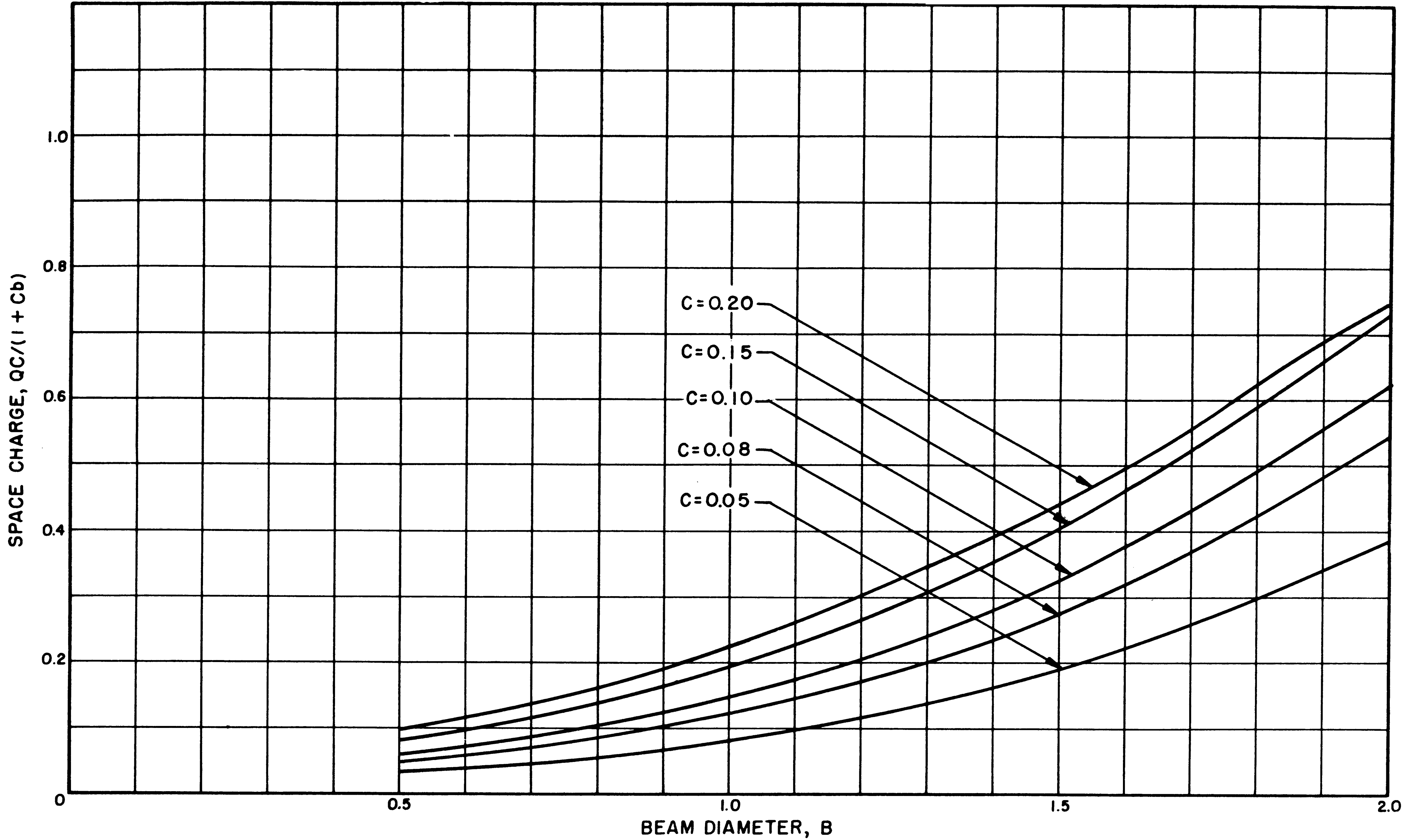


FIG. C.131 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.2$, $V_0 = 12$ KV, DLF = 85%)

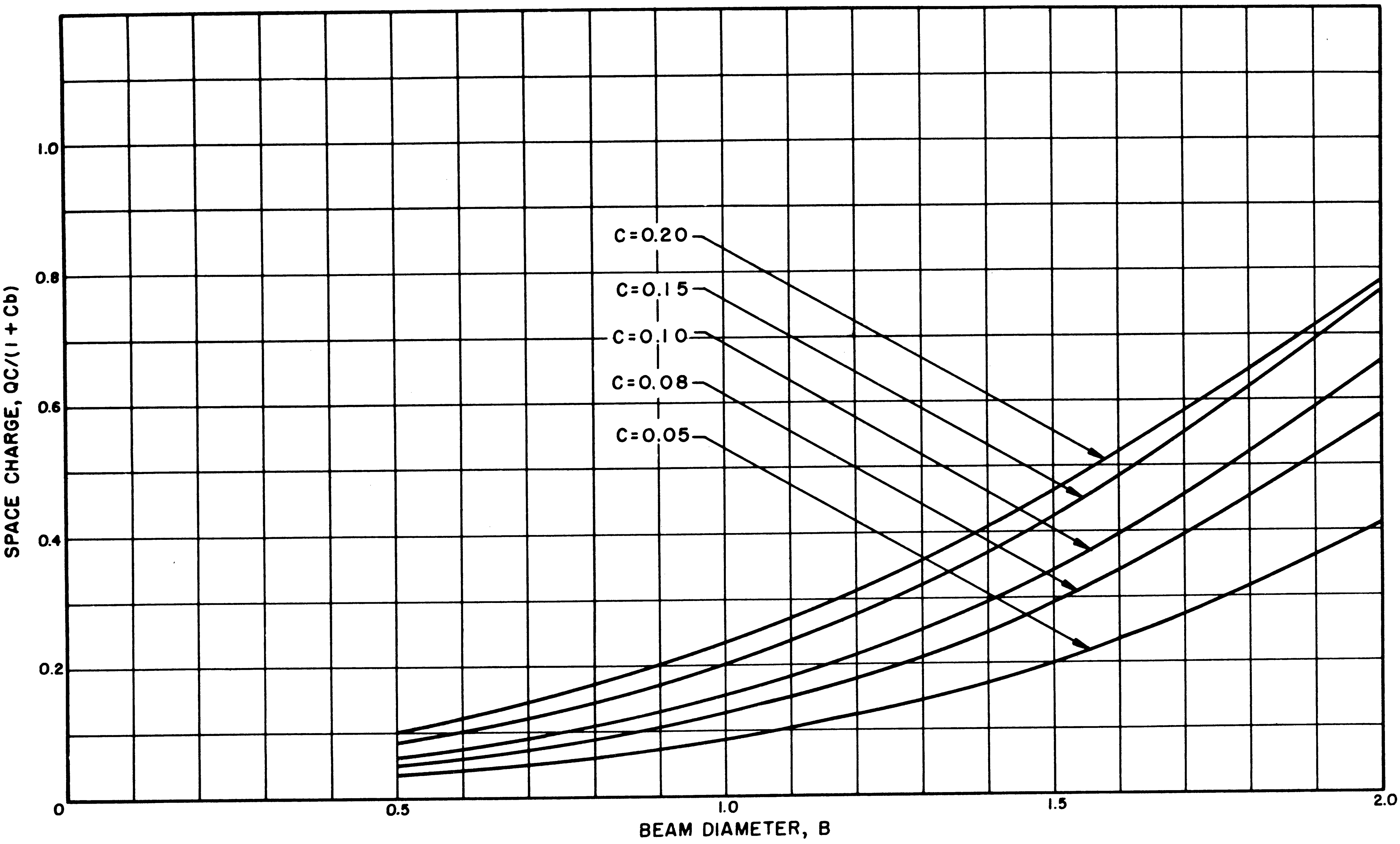


FIG. C.132 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.2$, $V_0 = 14$ KV, DLF = 85 %)

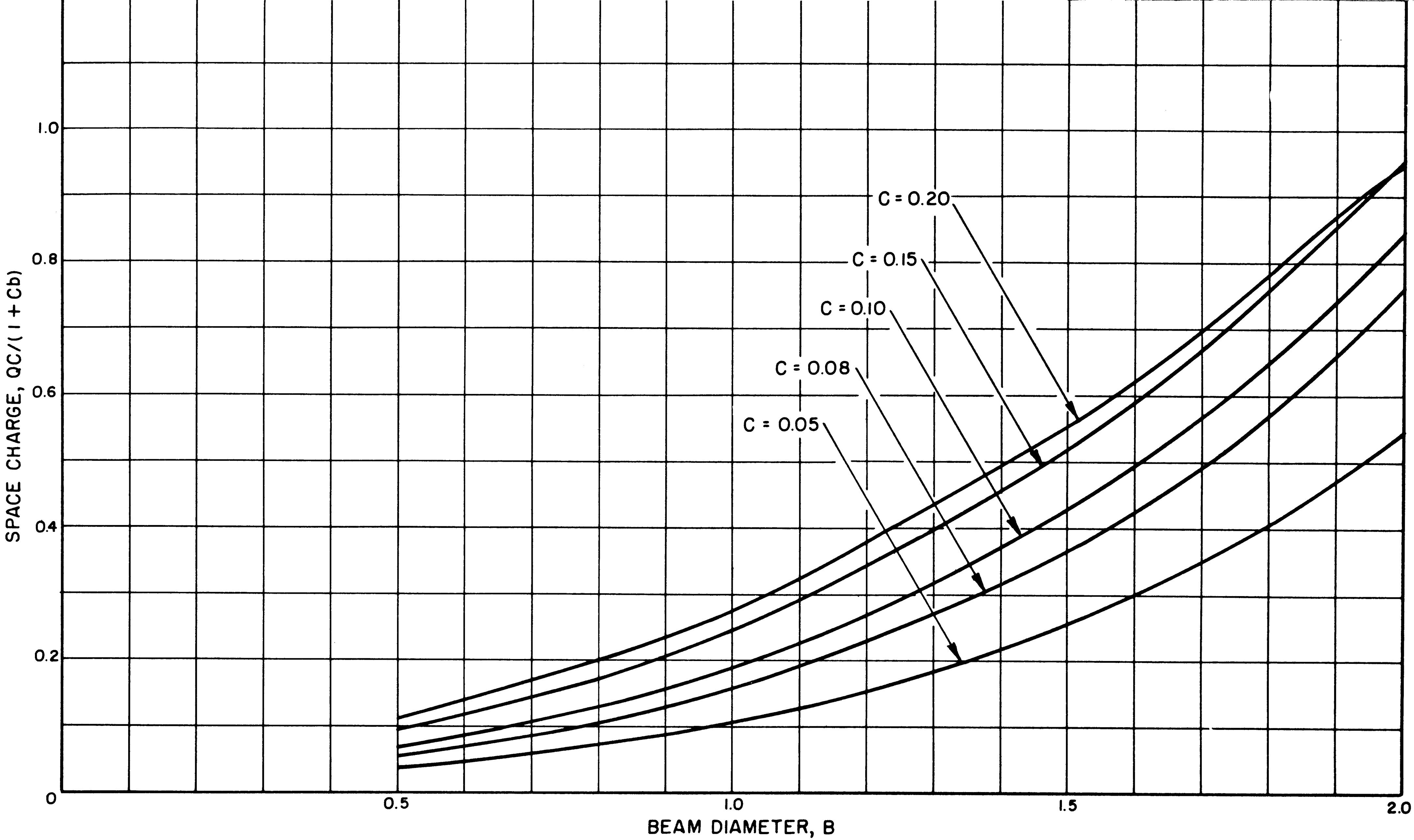


FIG. C.133 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.4$, $V_0 = 1$ KV, DLF = 85 %)

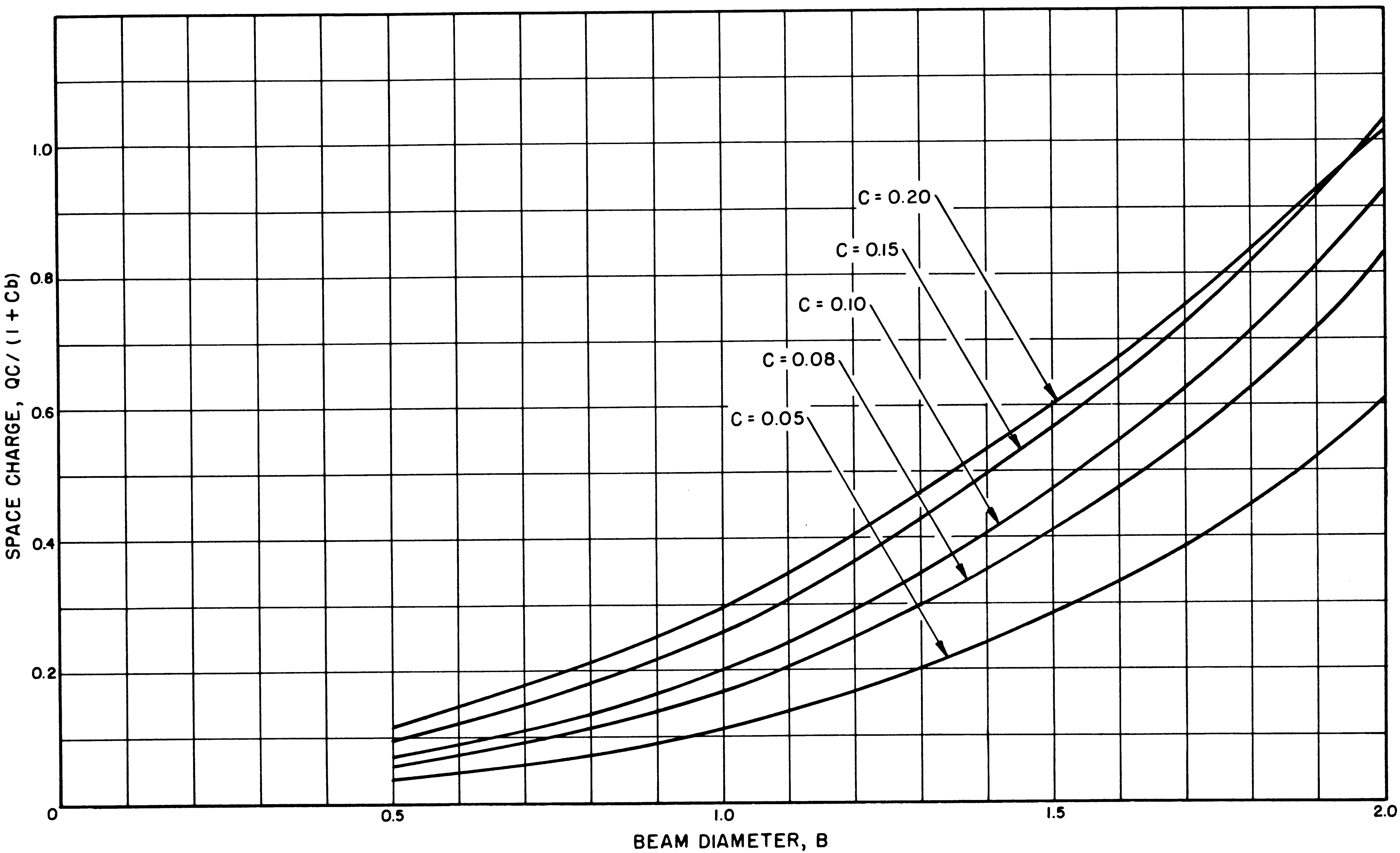


FIG. C.134 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER. ($a'/b' = 1.4$, $V_0 = 2$ KV, DLF = 85 %)

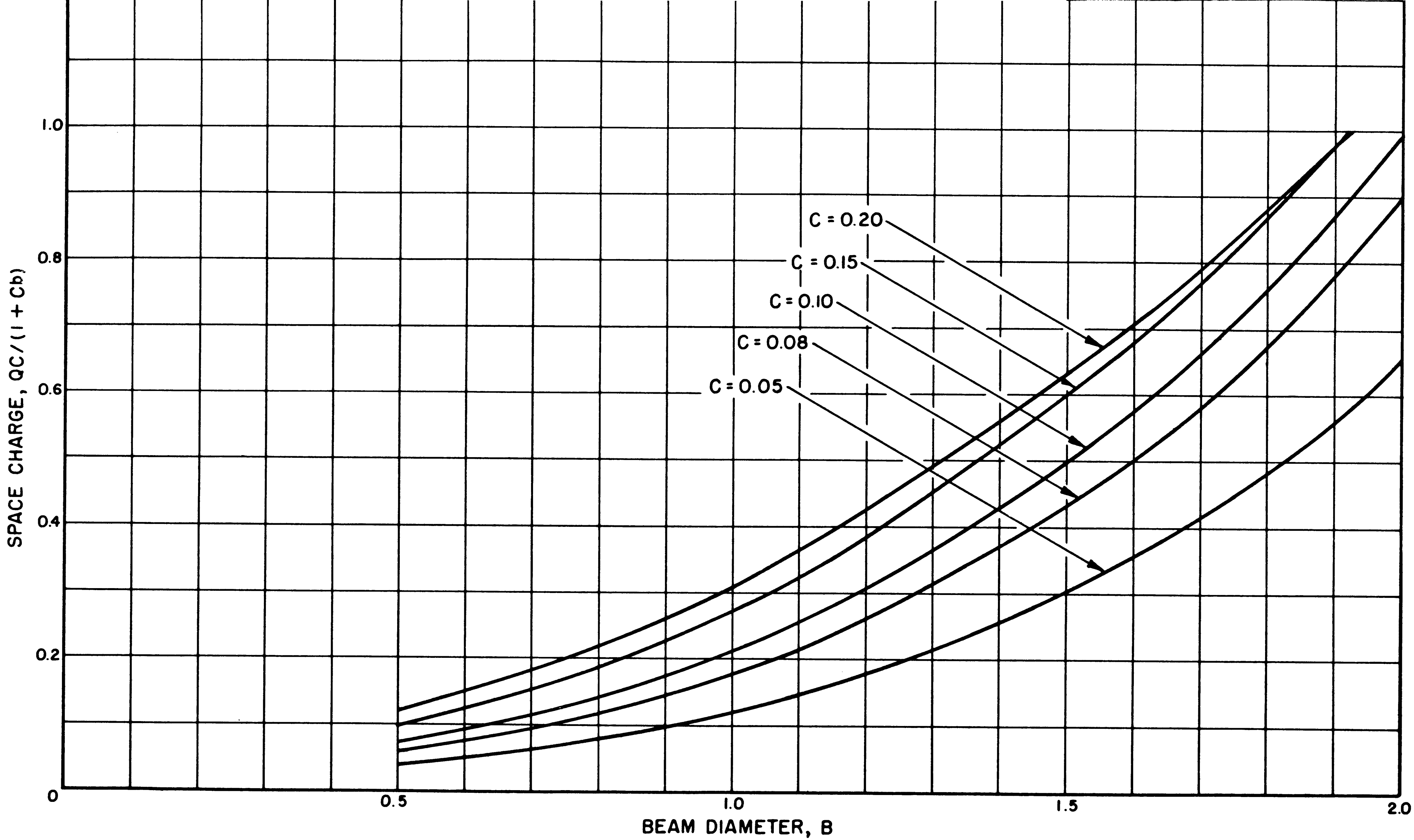


FIG. C.135 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.4$, $V_0 = 3$ KV, DLF = 85 %)

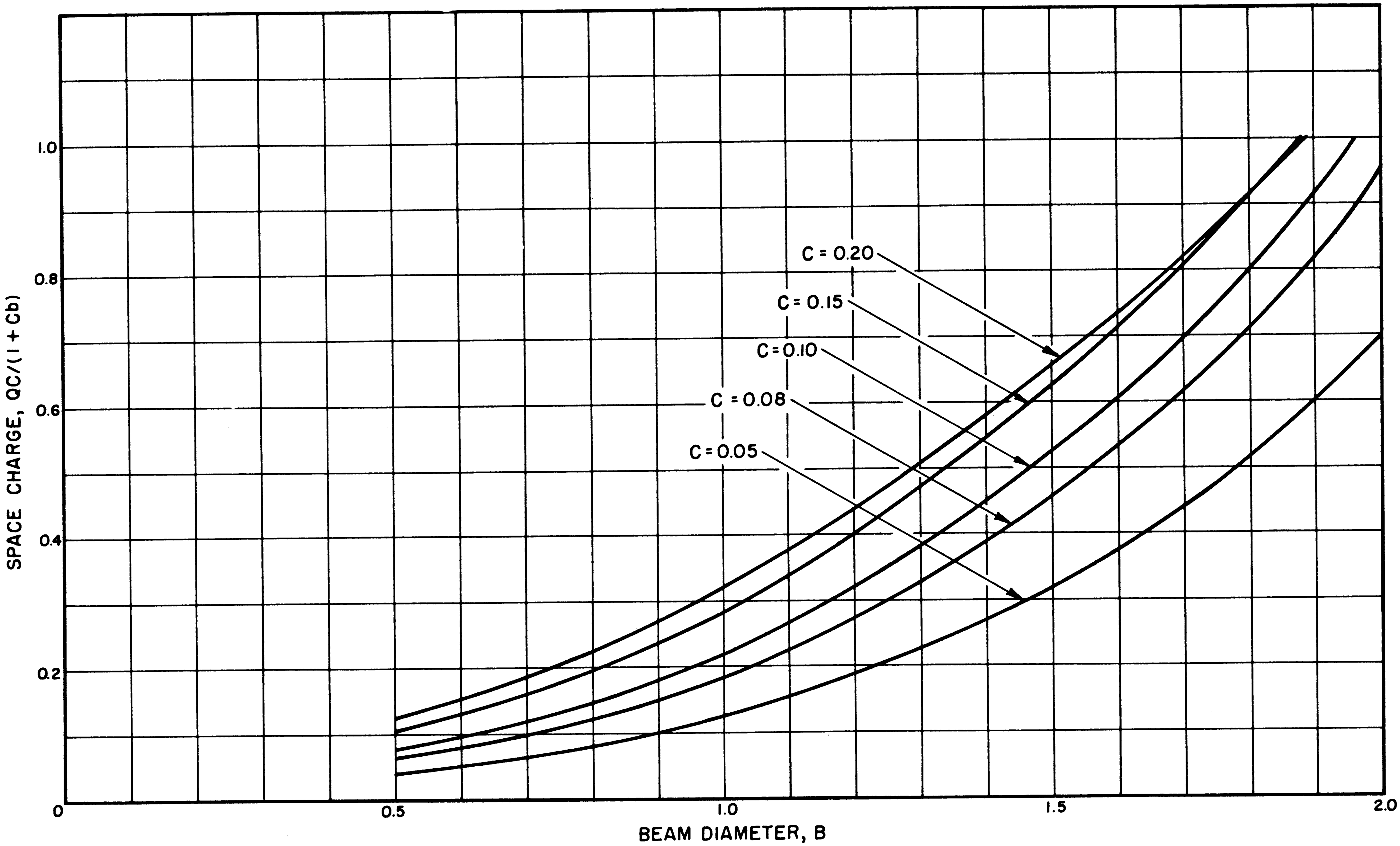


FIG. C.136 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.4$, $V_0 = 4$ KV, DLF = 85 %)

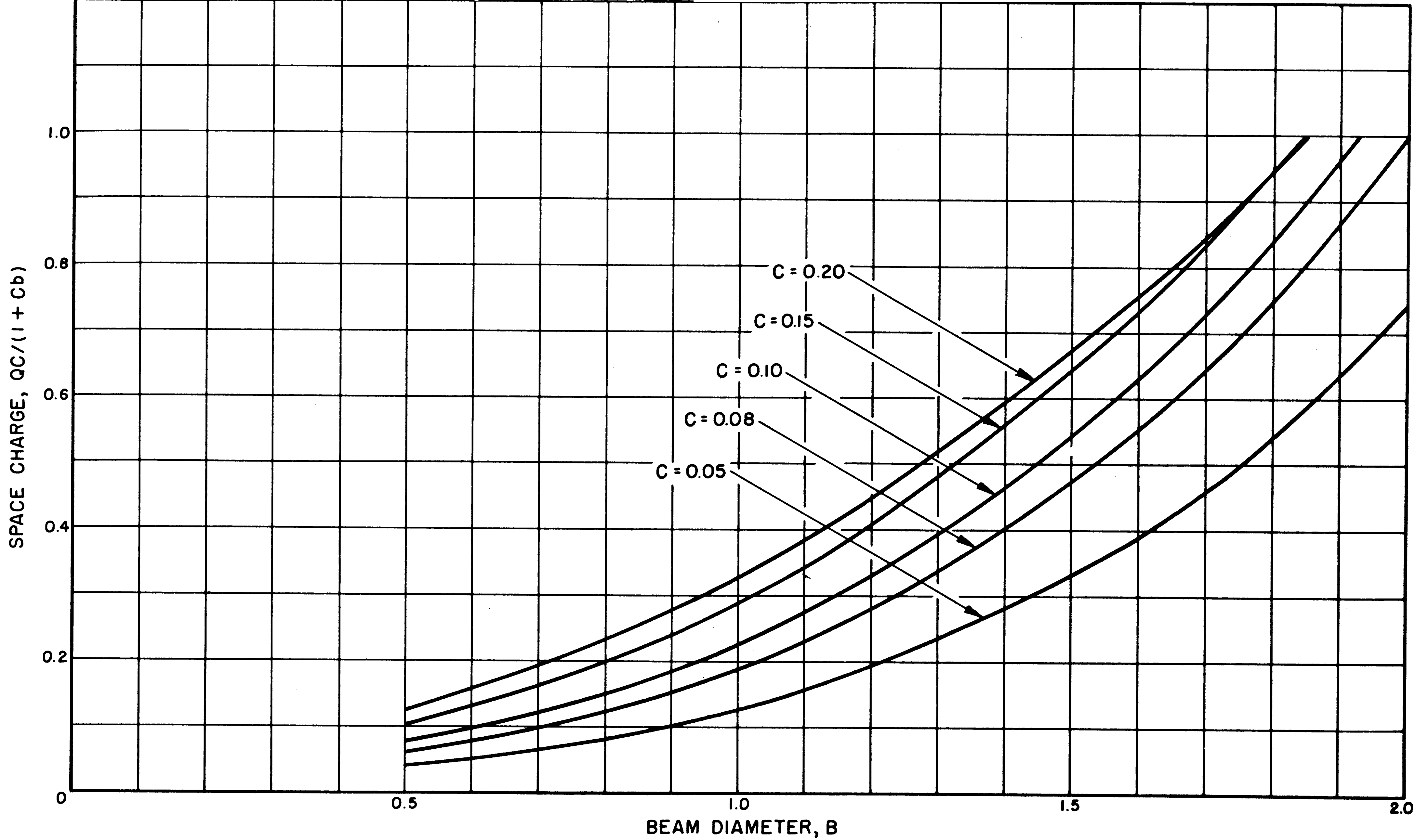


FIG. C.137 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.4$, $V_0 = 5$ KV, DLF = 85 %)

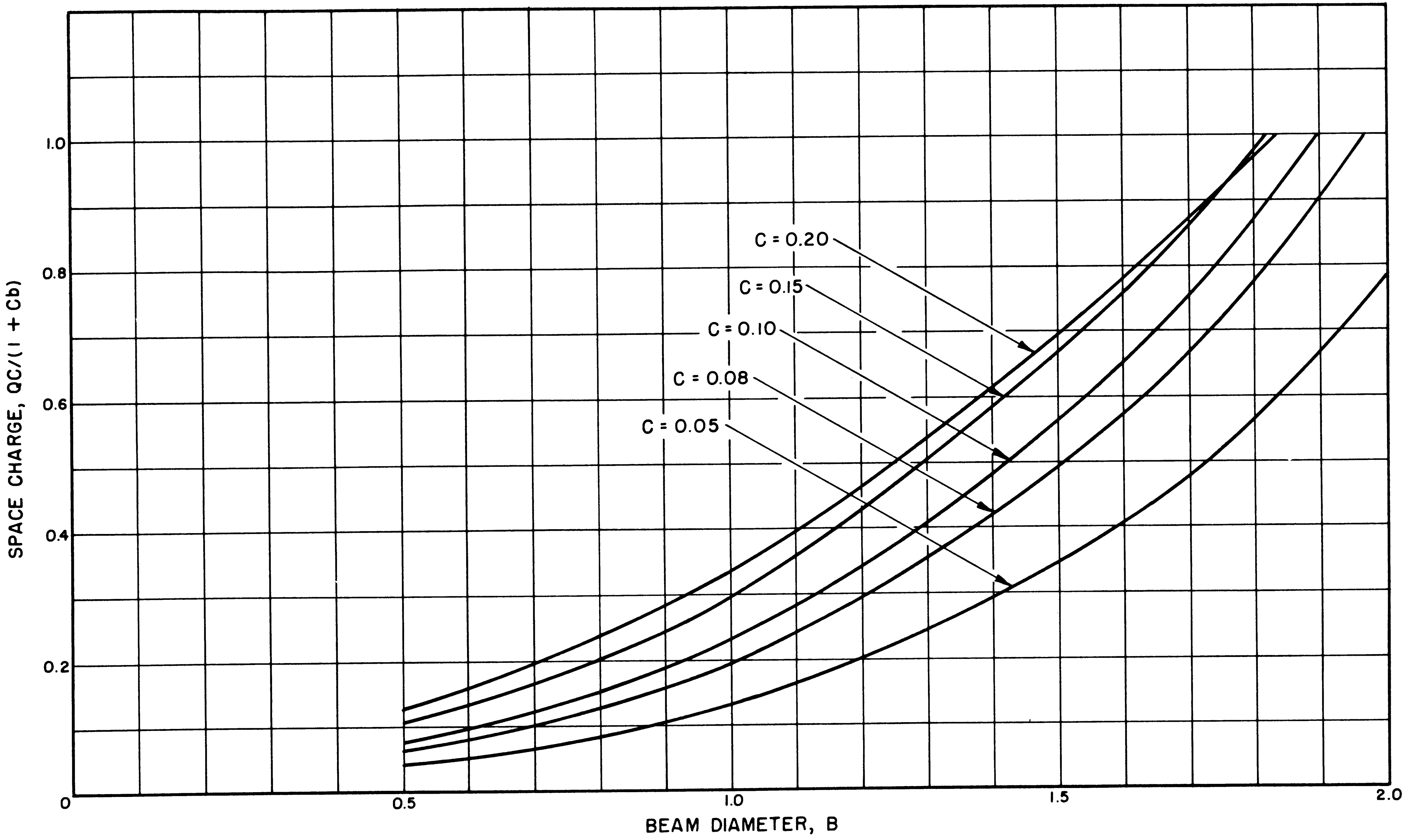


FIG. C.138 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.4$, $V_0 = 6$ KV, DLF = 85 %)

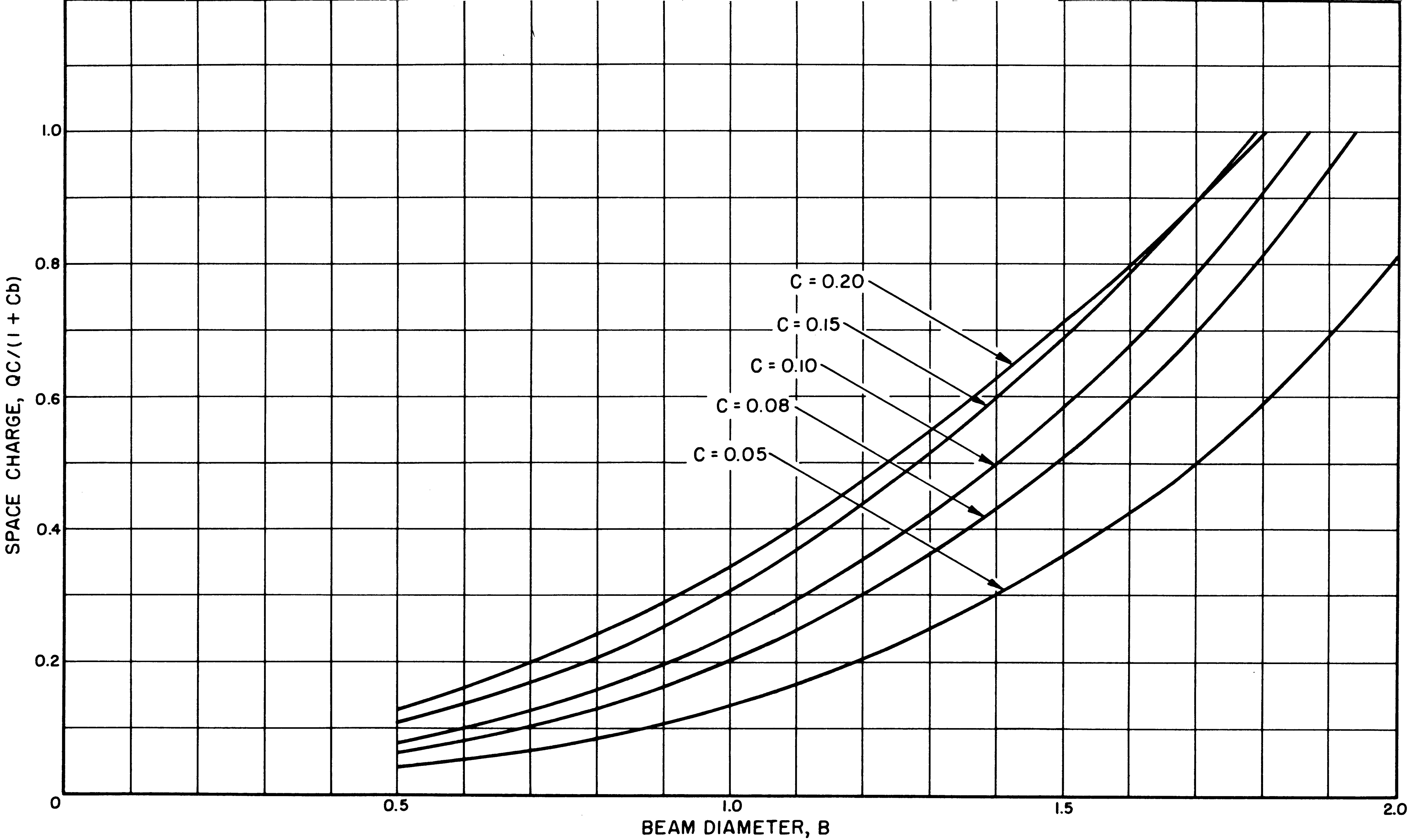


FIG. C.139 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER. ($a'/b' = 1.4$, $V_0 = 7$ KV, DLF = 85 %)

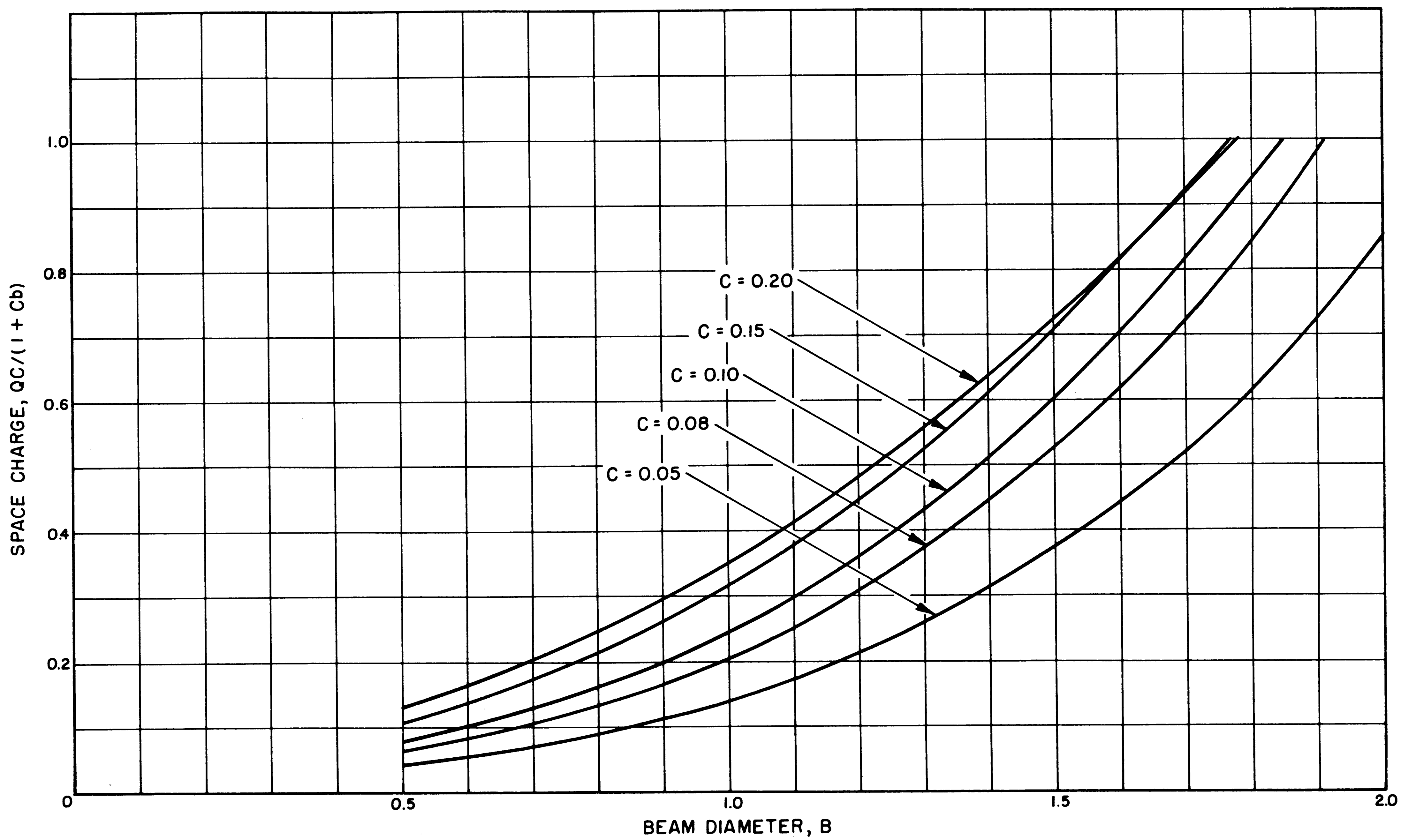


FIG. C.140 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.4$, $V_0 = 8$ KV, DLF = 85 %)

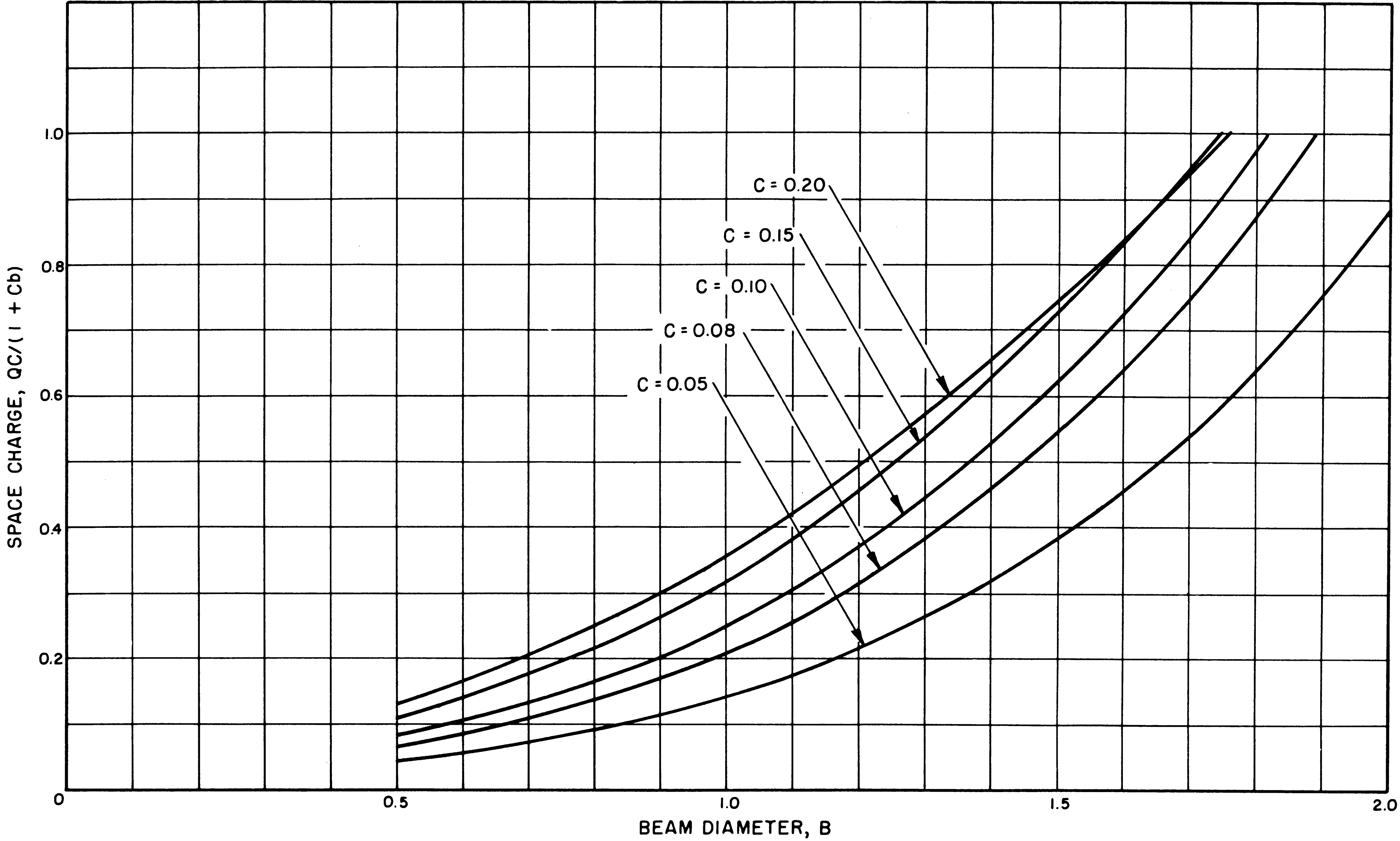


FIG. C.141 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER. ($a'/b' = 1.4$, $V_0 = 9$ KV, DLF = 85 %)

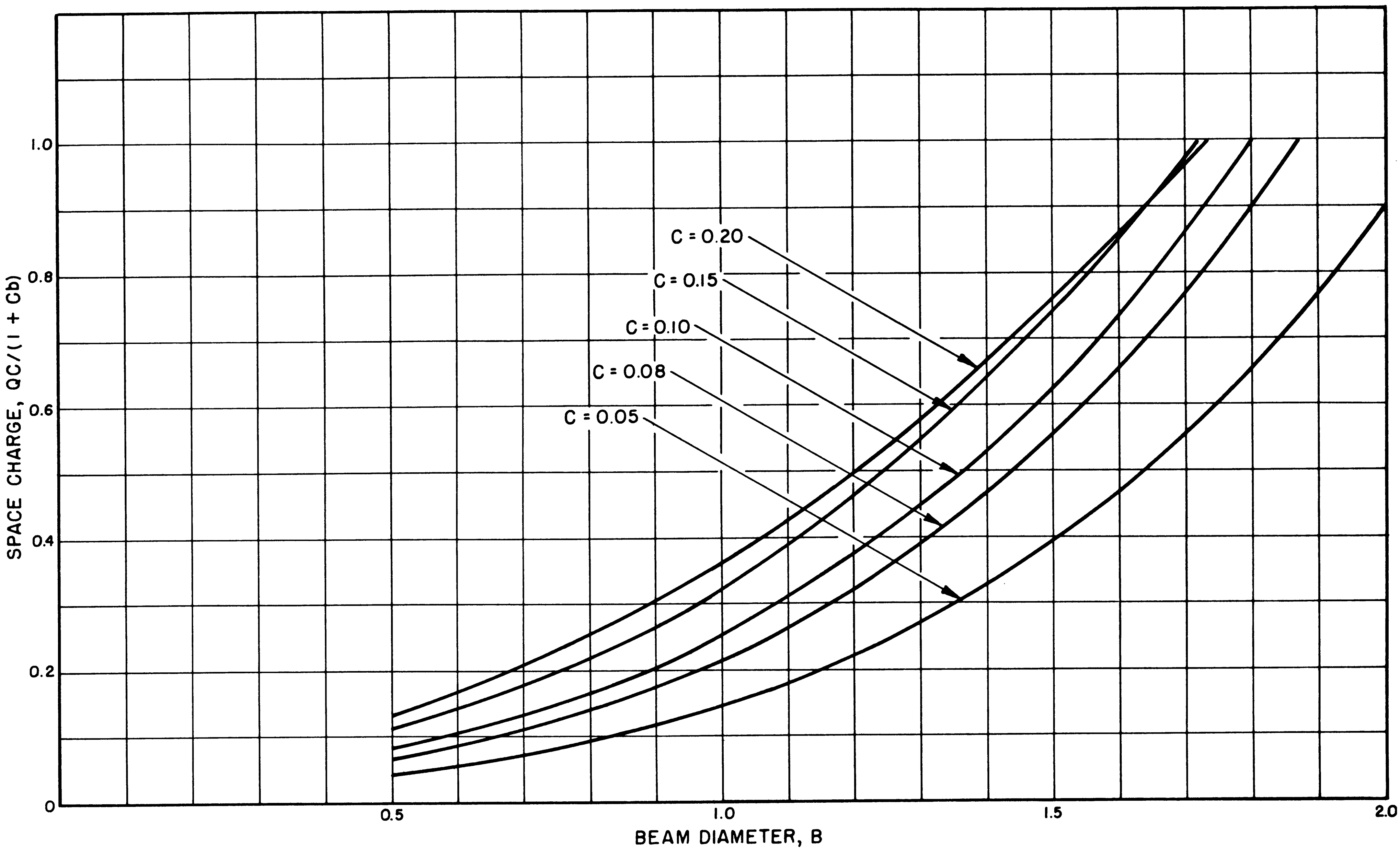


FIG. C.142 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.4$, $V_0 = 10$ KV, DLF = 85 %)

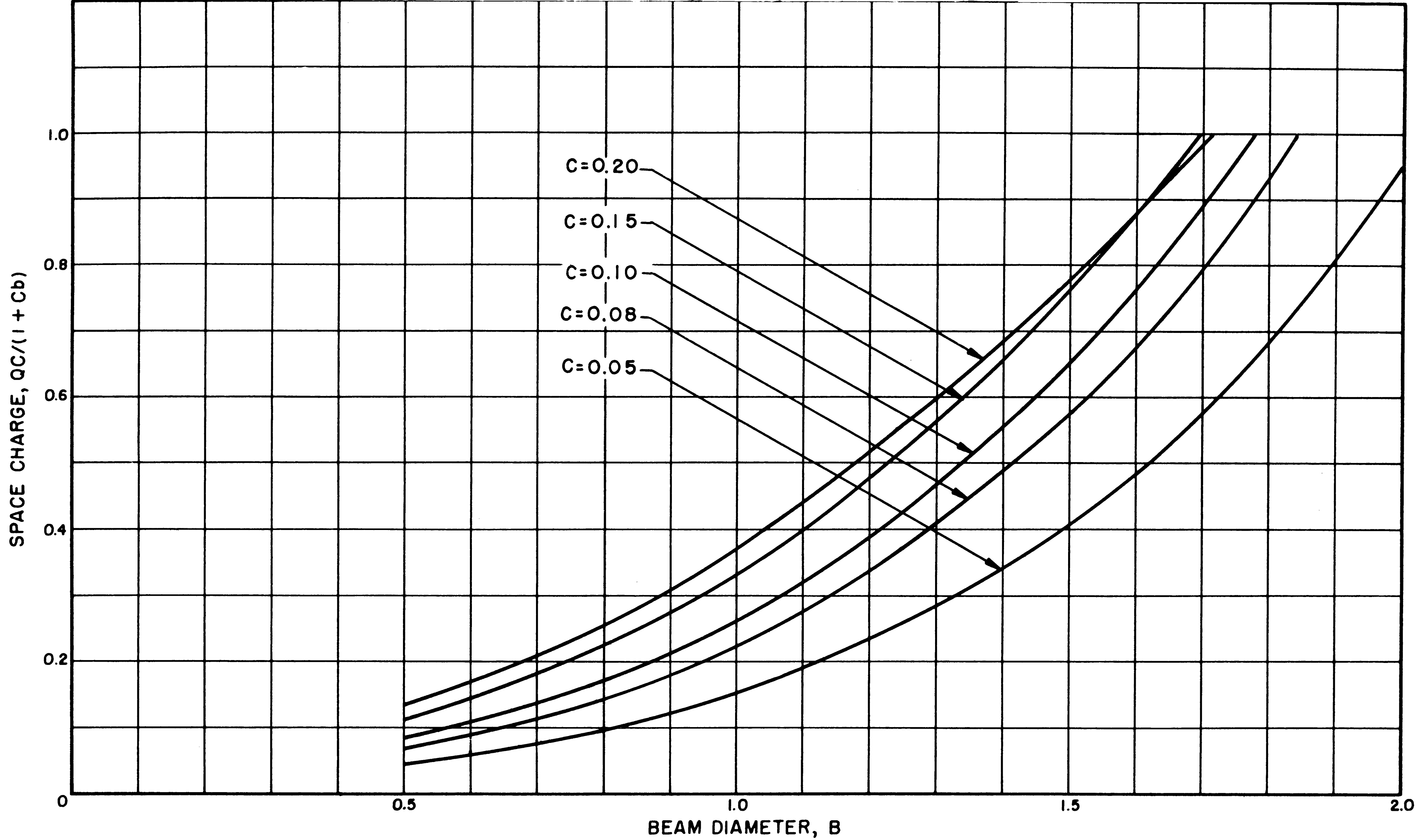


FIG. C.143 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER. ($a'/b' = 1.4$, $V_0 = 12$ KV, DLF = 85 %)

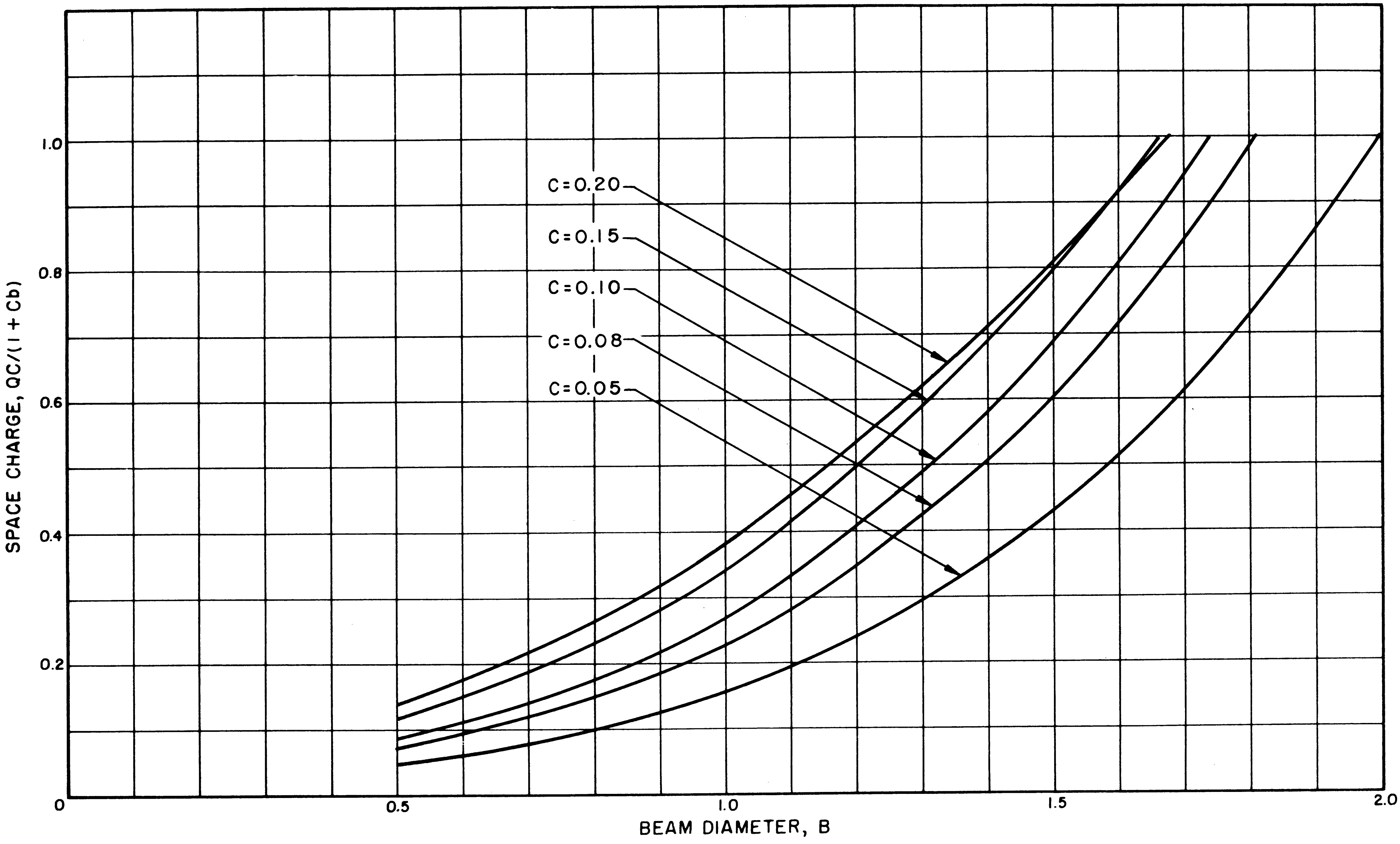


FIG. C.144 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.4$, $V_0 = 14$ KV, DLF = 85%)

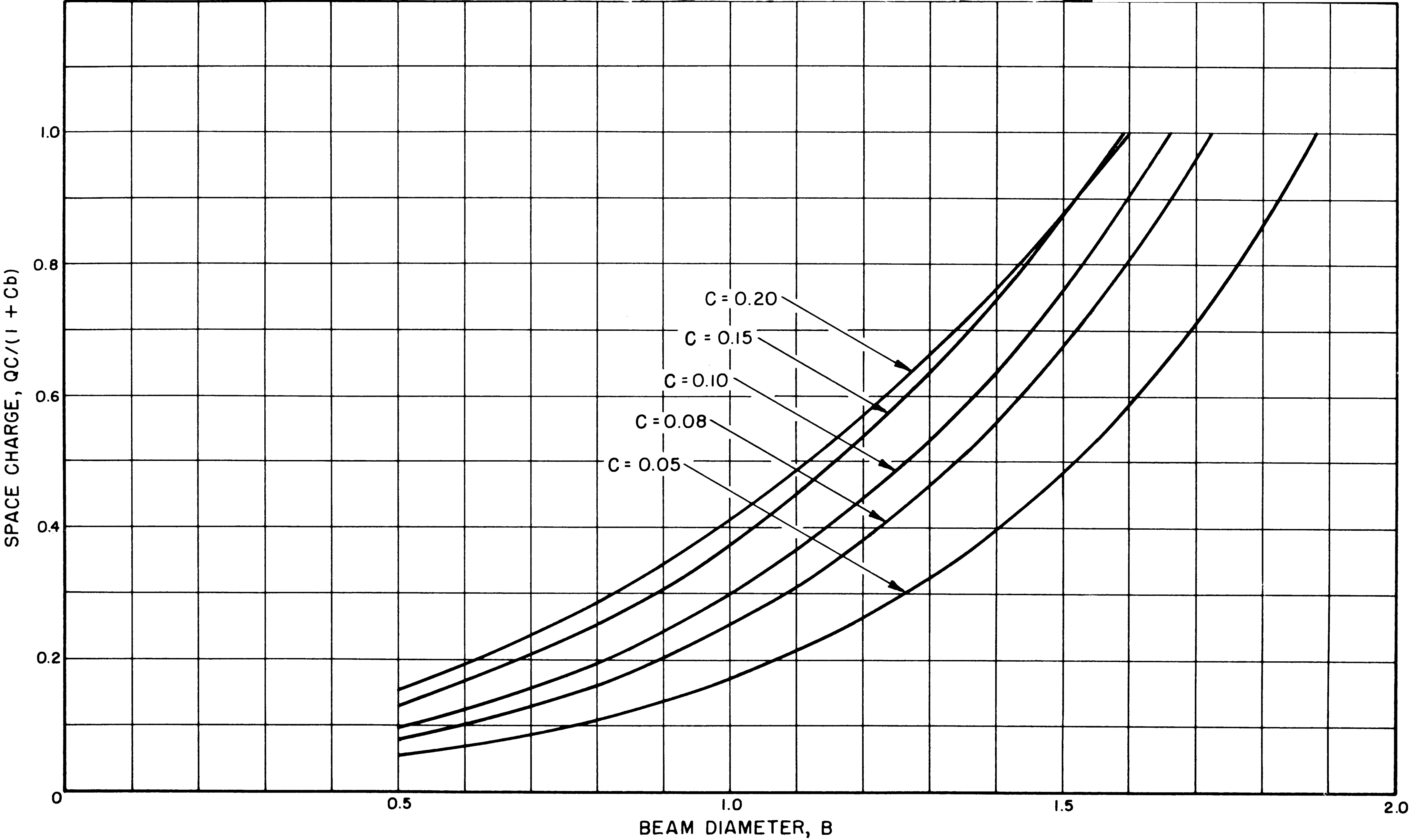


FIG. C.145 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER. ($a'/b' = 1.6$, $V_0 = 1$ KV, DLF = 85 %)

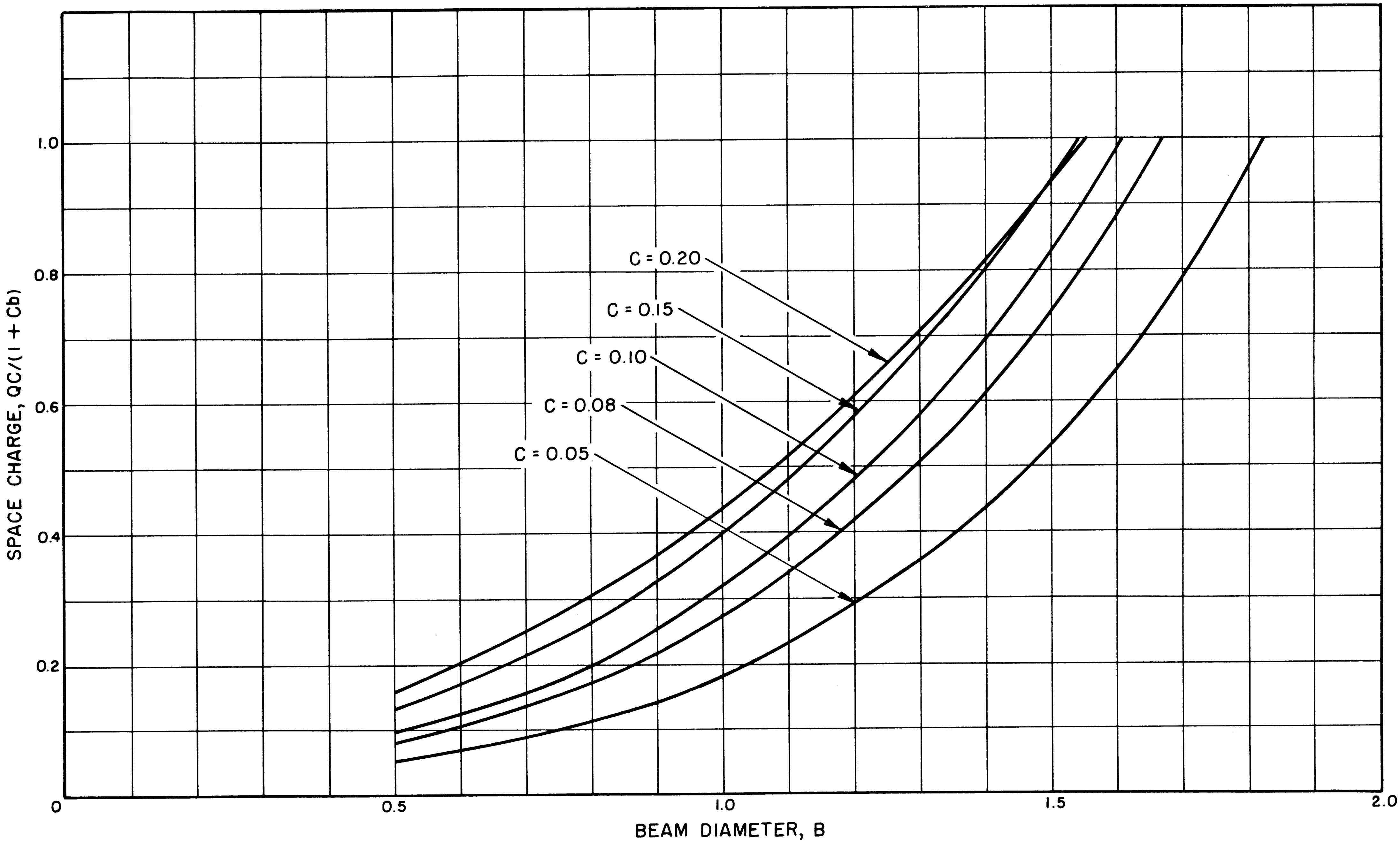


FIG. C.146 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.6$, $V_0 = 2$ KV, DLF = 85 %)

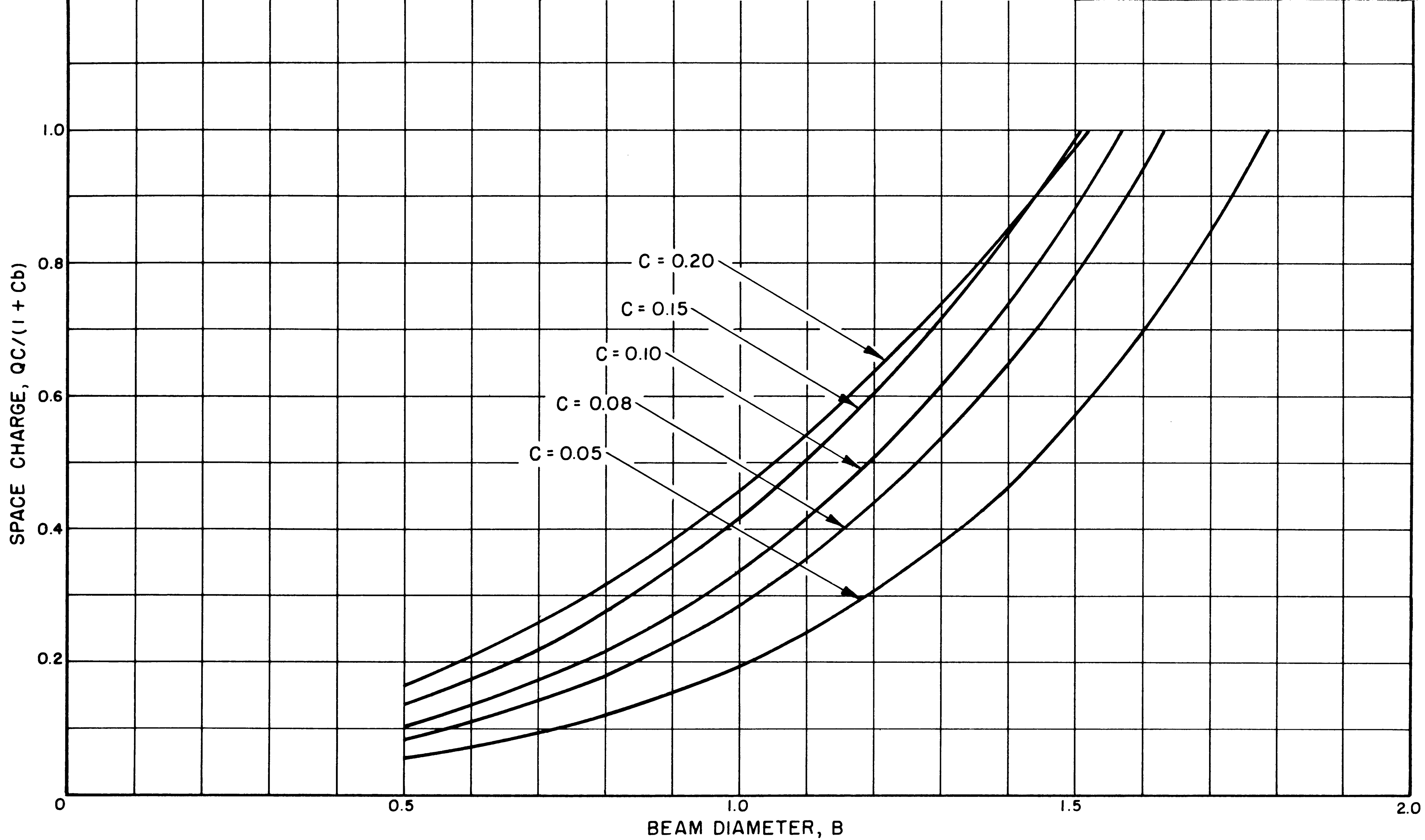


FIG. C.147 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.6$, $V_0 = 3$ KV, DLF = 85 %)

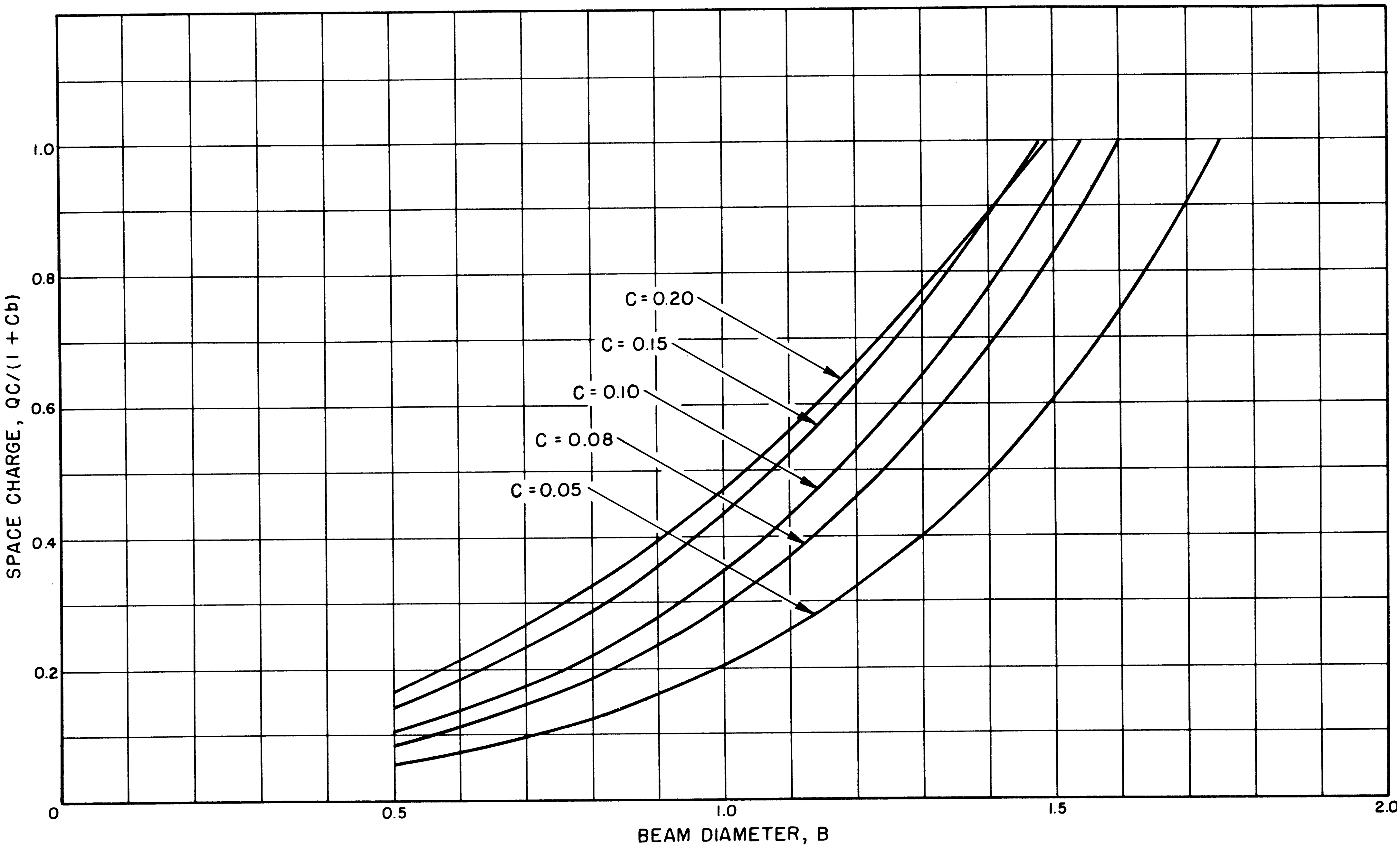


FIG. C.148 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER. ($a'/b' = 1.6$, $V_o = 4$ KV, DLF = 85%)

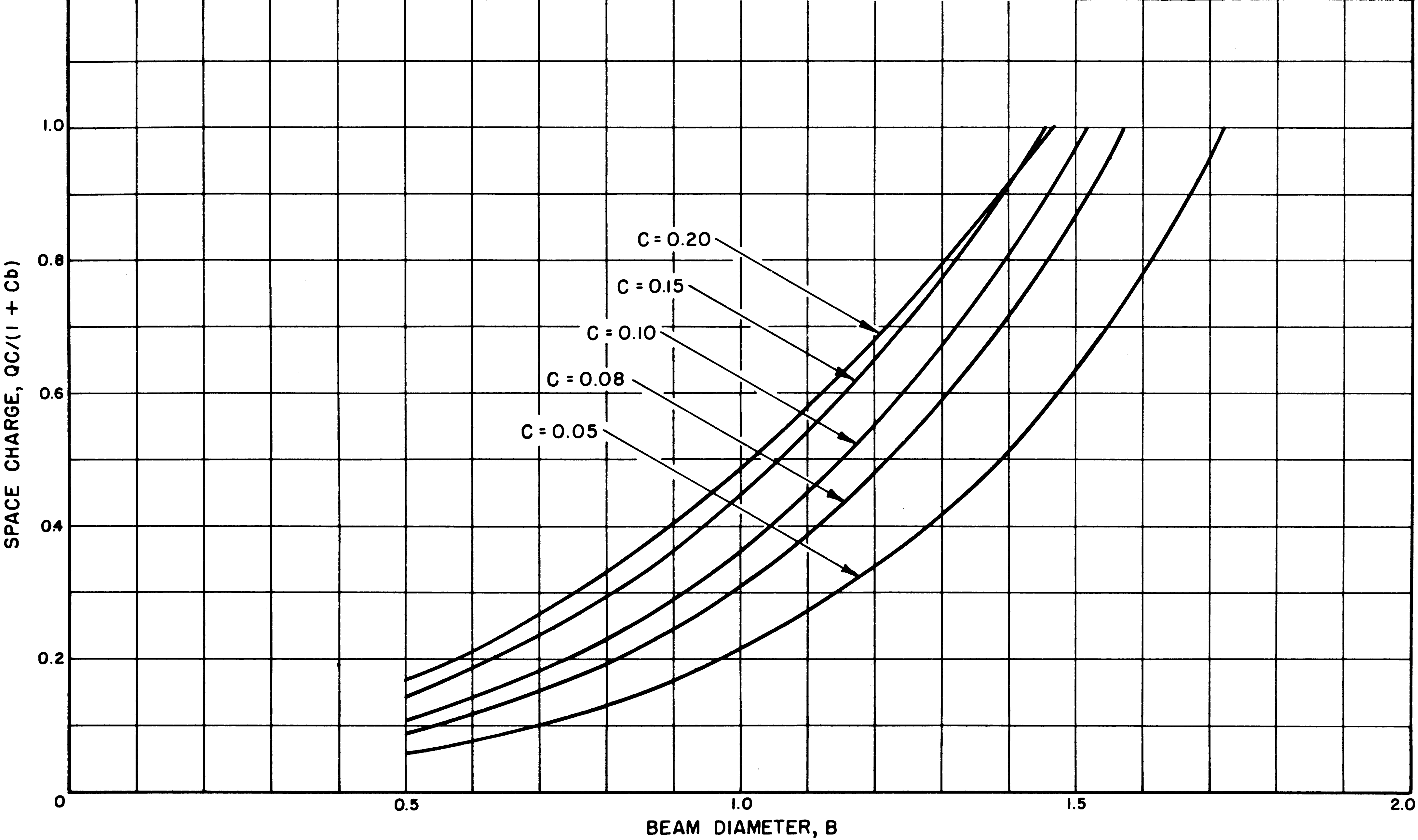


FIG. C.149 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER. ($a'/b' = 1.6$, $V_0 = 5$ KV, DLF = 85 %)

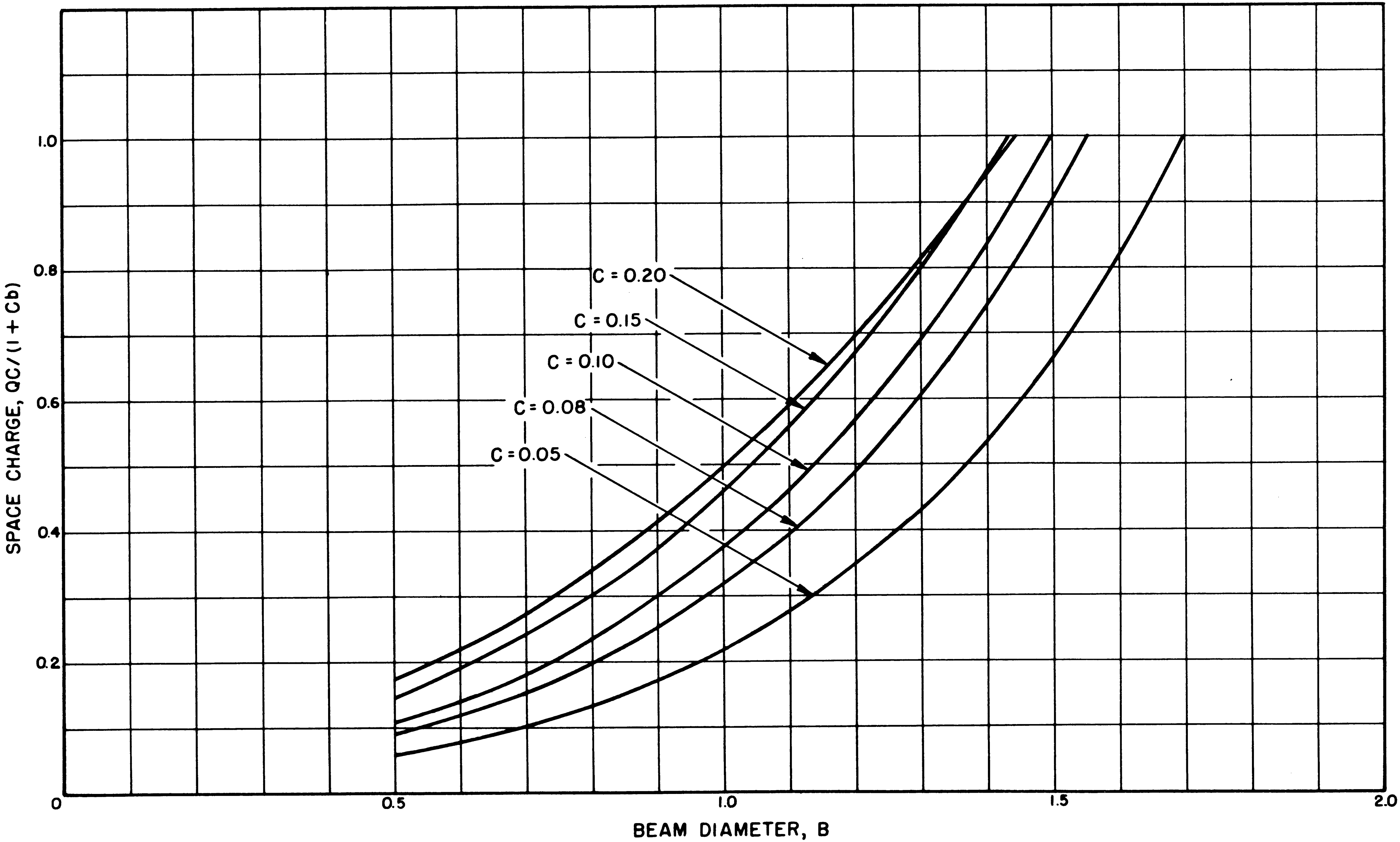


FIG. C.150 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
(a'/b' = 1.6, V_0 = 6 KV, DLF = 85 %)

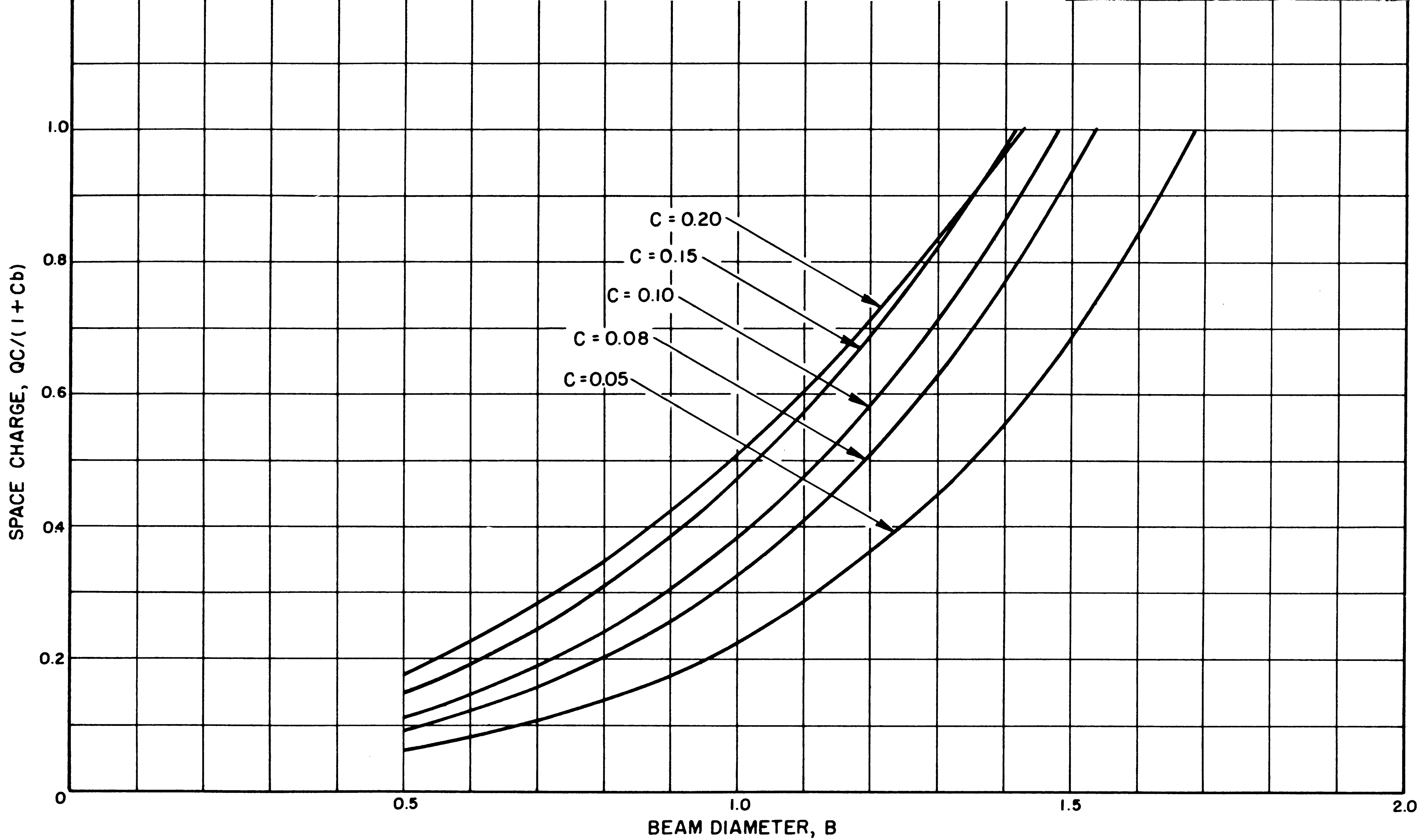


FIG. C.151 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.6$, $V_0 = 7$ KV, DLF = 85 %)

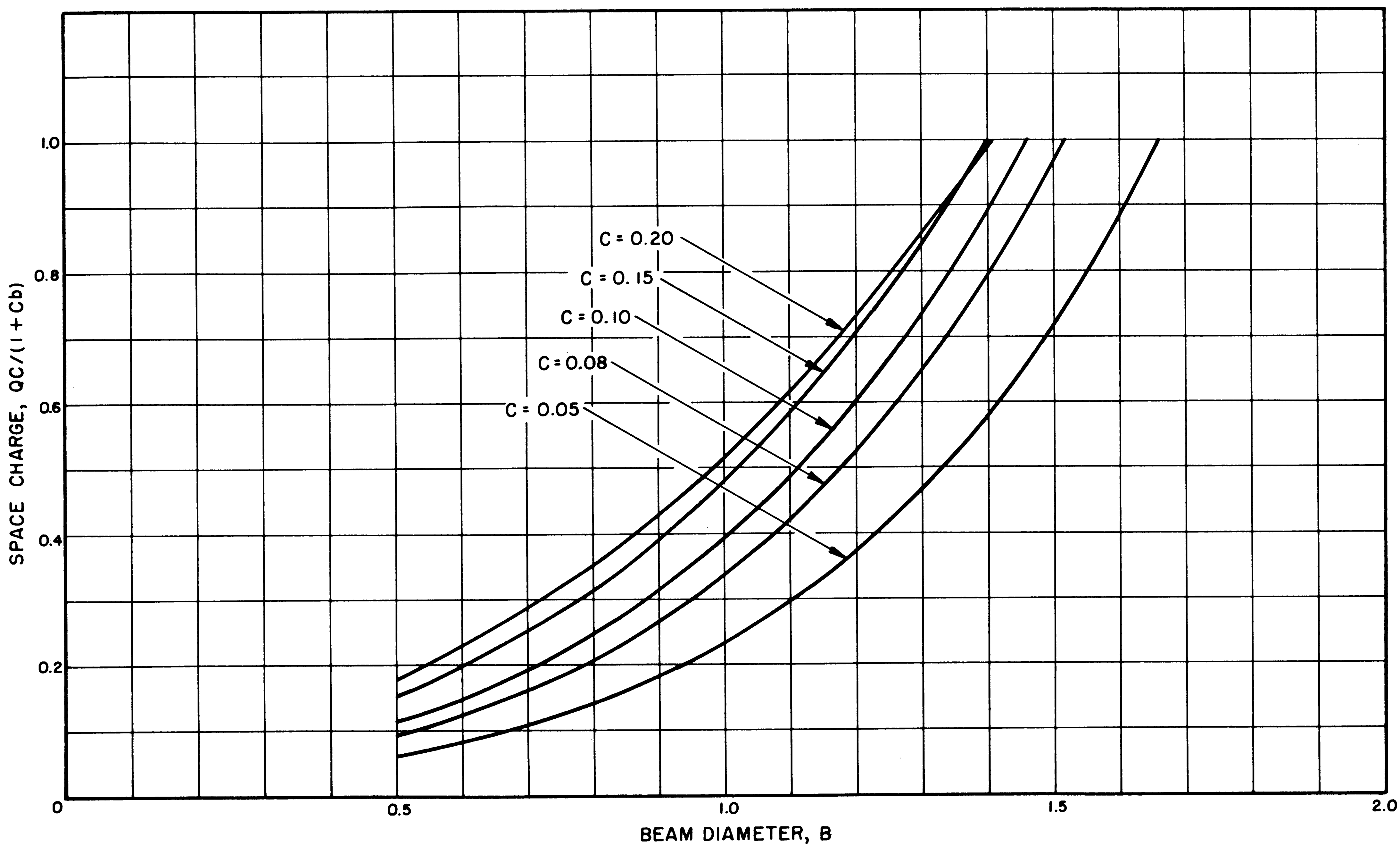


FIG. C.152 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
(a'/b' = 1.6, V_0 = 8 KV, DLF = 85 %)

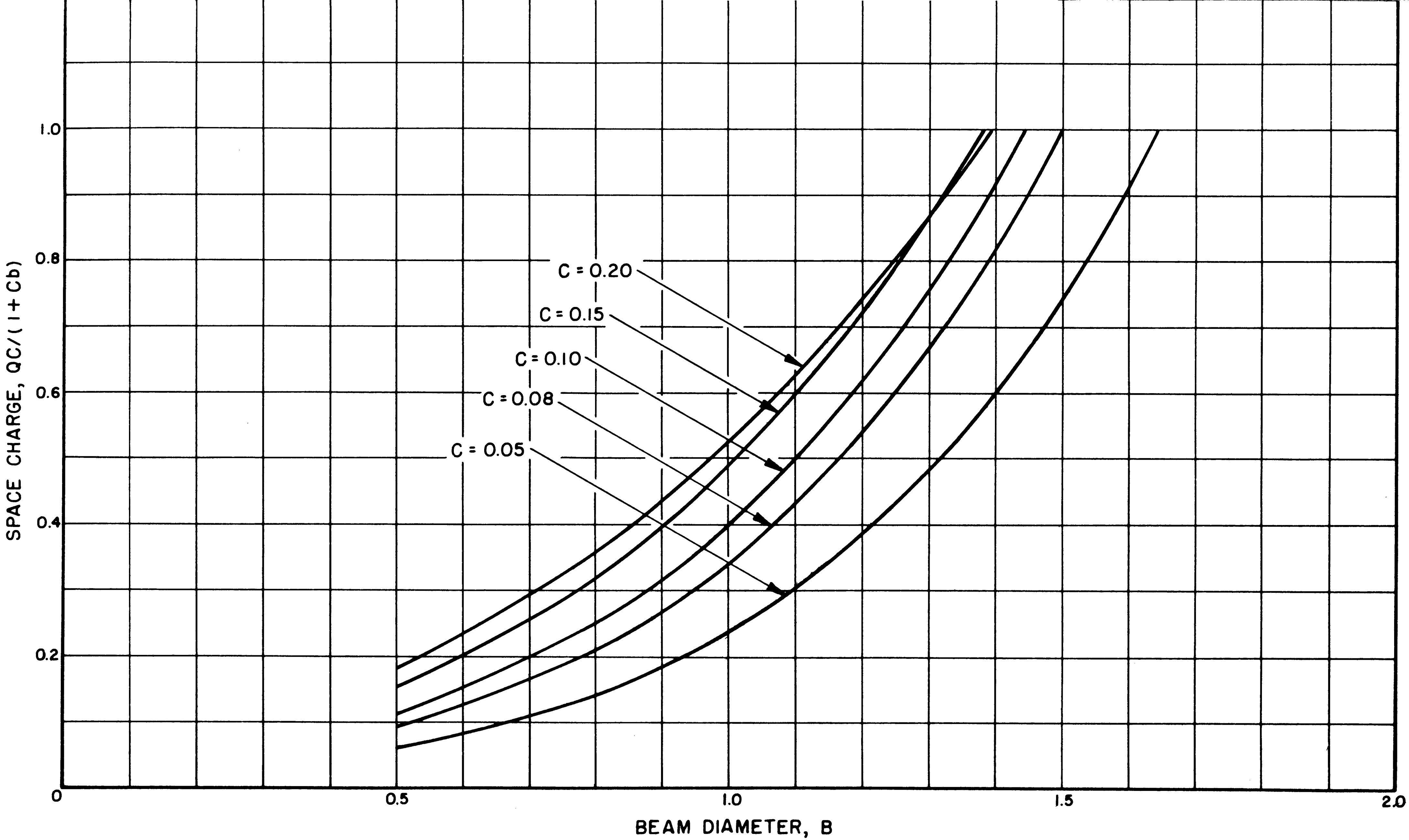


FIG. C.153 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER. (a'/b' = 1.6, V_0 = 9 KV, DLF = 85 %)

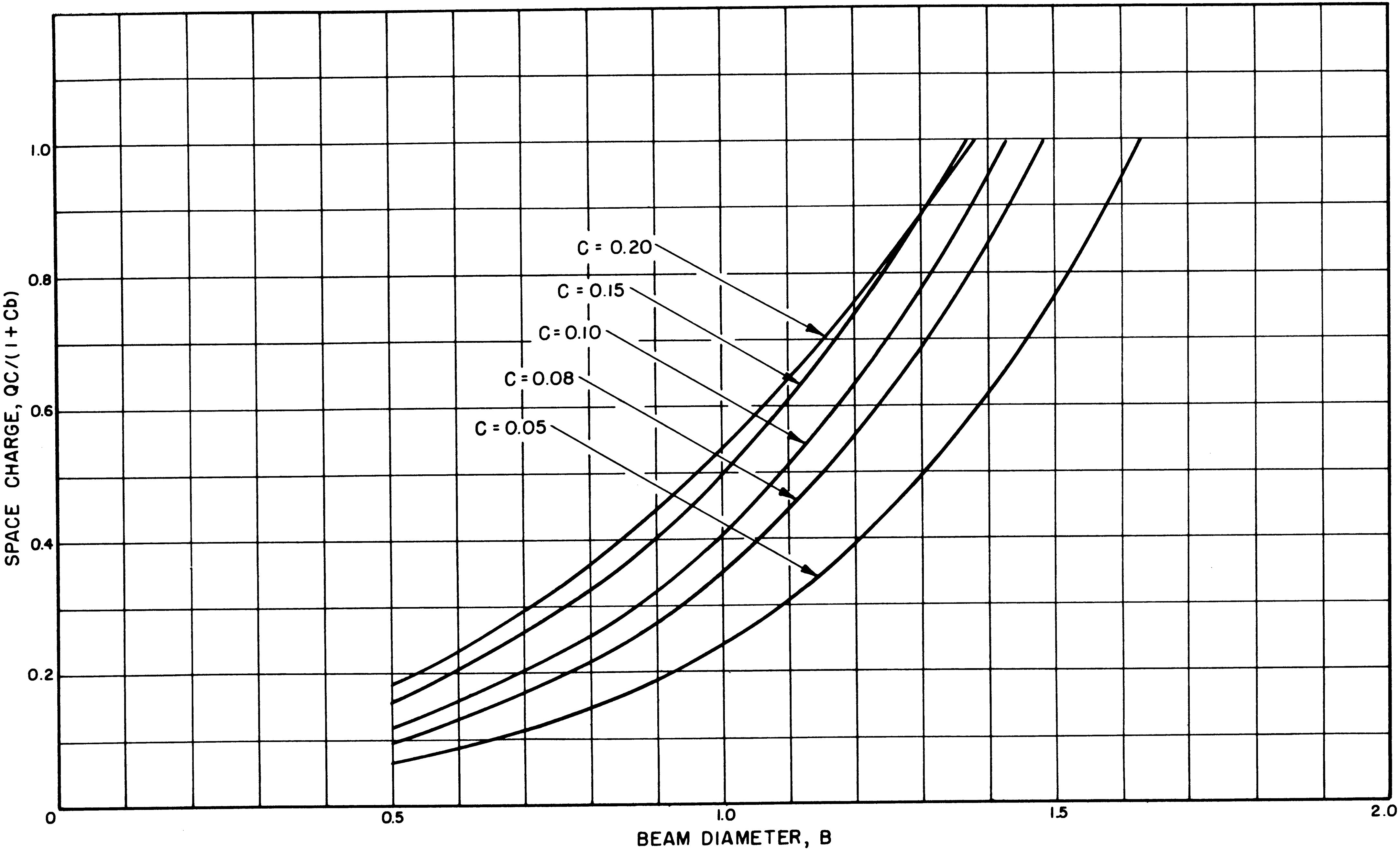


FIG. C.154 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.6$, $V_o = 10$ KV, DLF = 85 %)

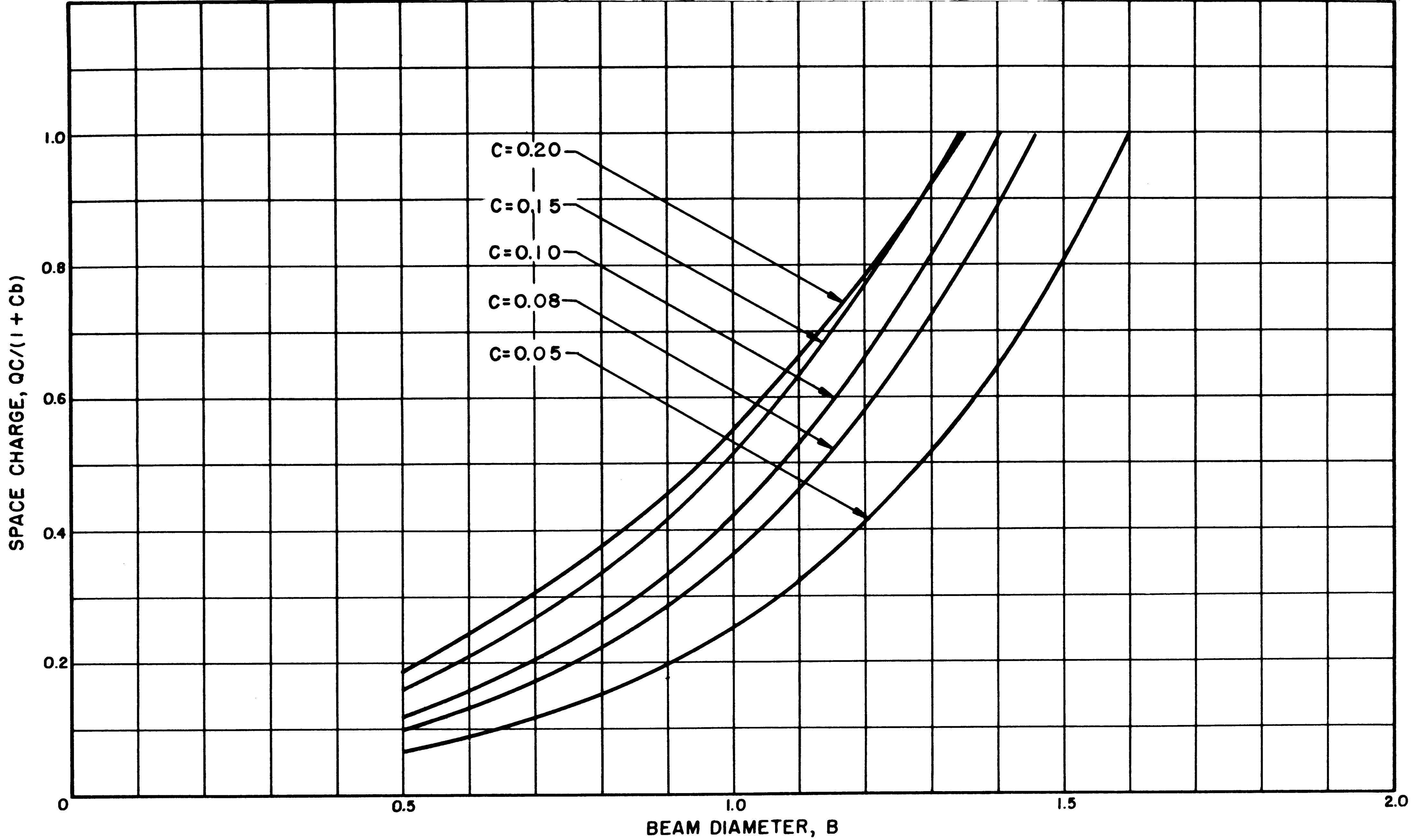


FIG. C.155 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.6$, $V_0 = 12$ KV, DLF = 85%)

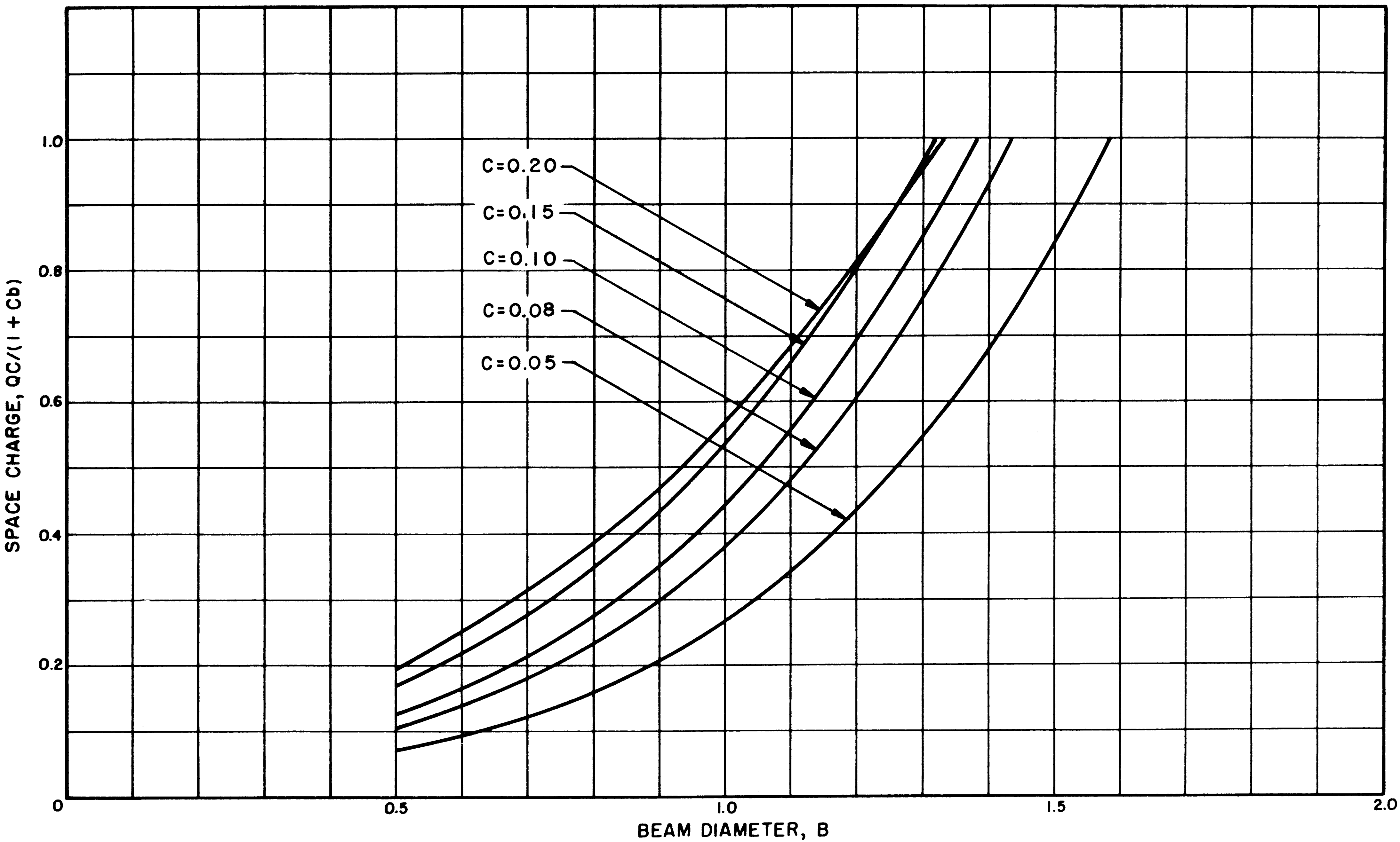


FIG. C.156 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.6$, $V_0 = 14$ KV, DLF = 85%)

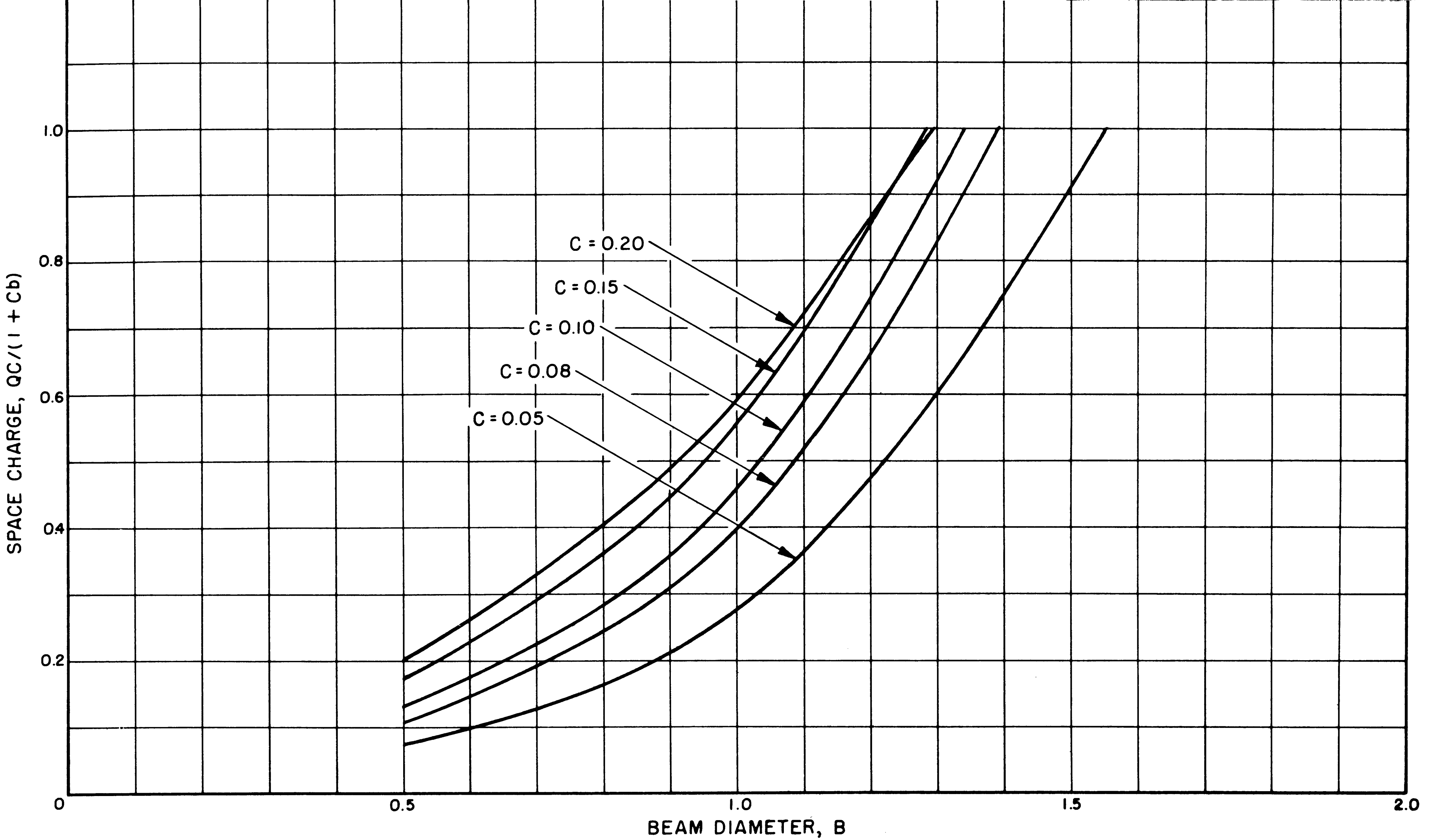


FIG. C.157 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.8$, $V_0 = 1$ KV, DLF = 85 %)

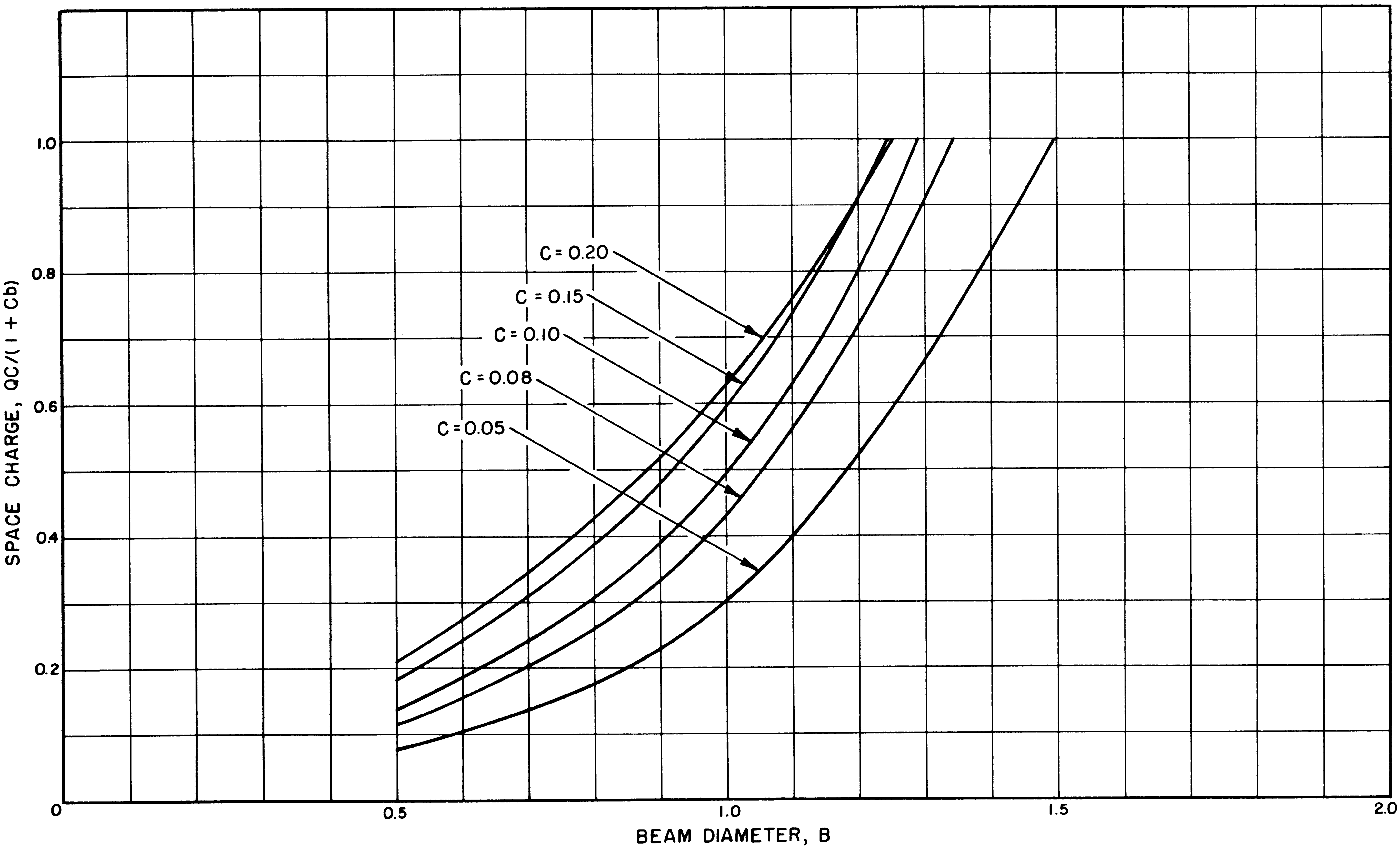


FIG. C.158 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER. ($a'/b' = 1.8$, $V_0 = 2$ KV, DLF = 85 %)

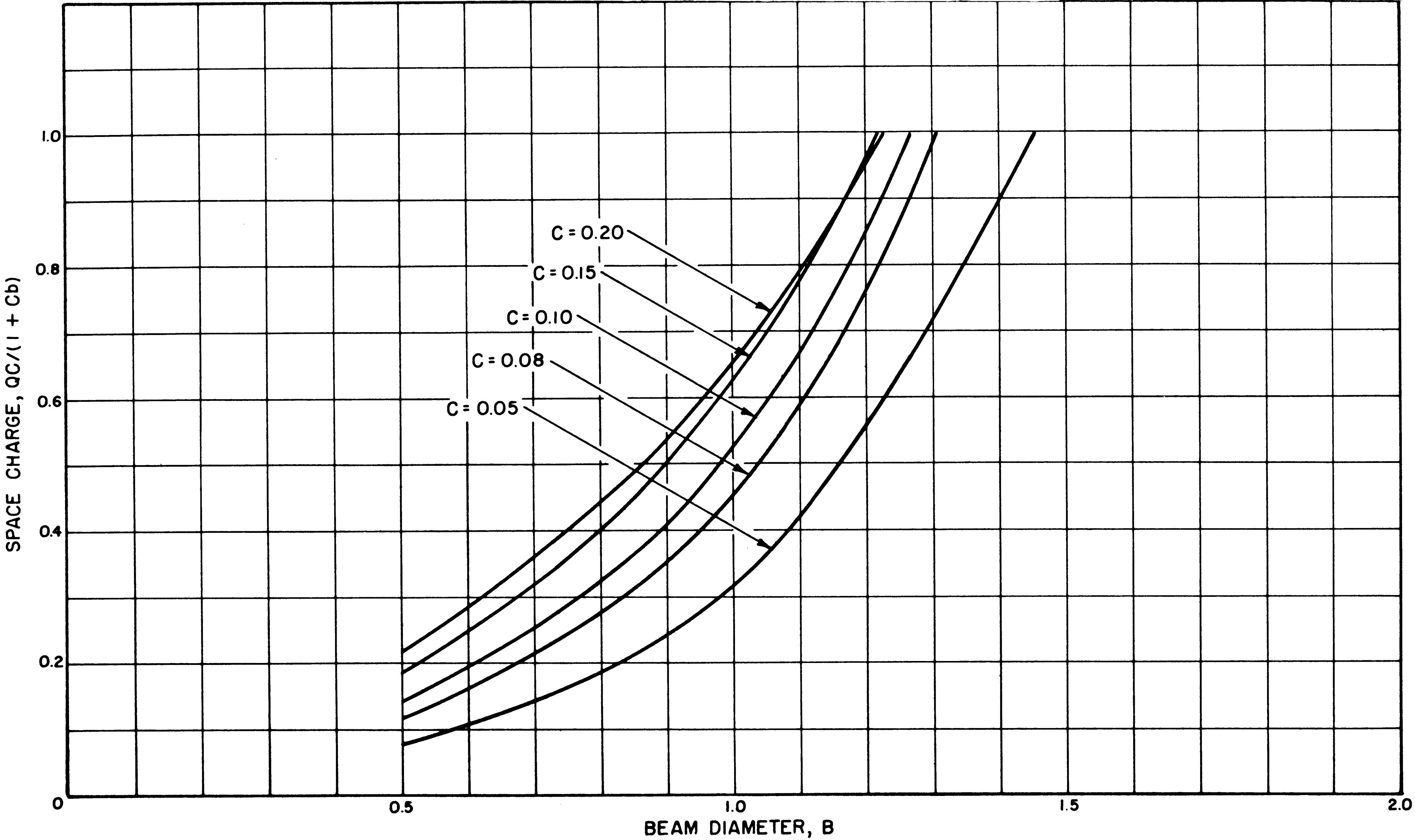


FIG. C.159 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
(a'/b' = 1.8, V_0 = 3 KV, DLF = 85 %)

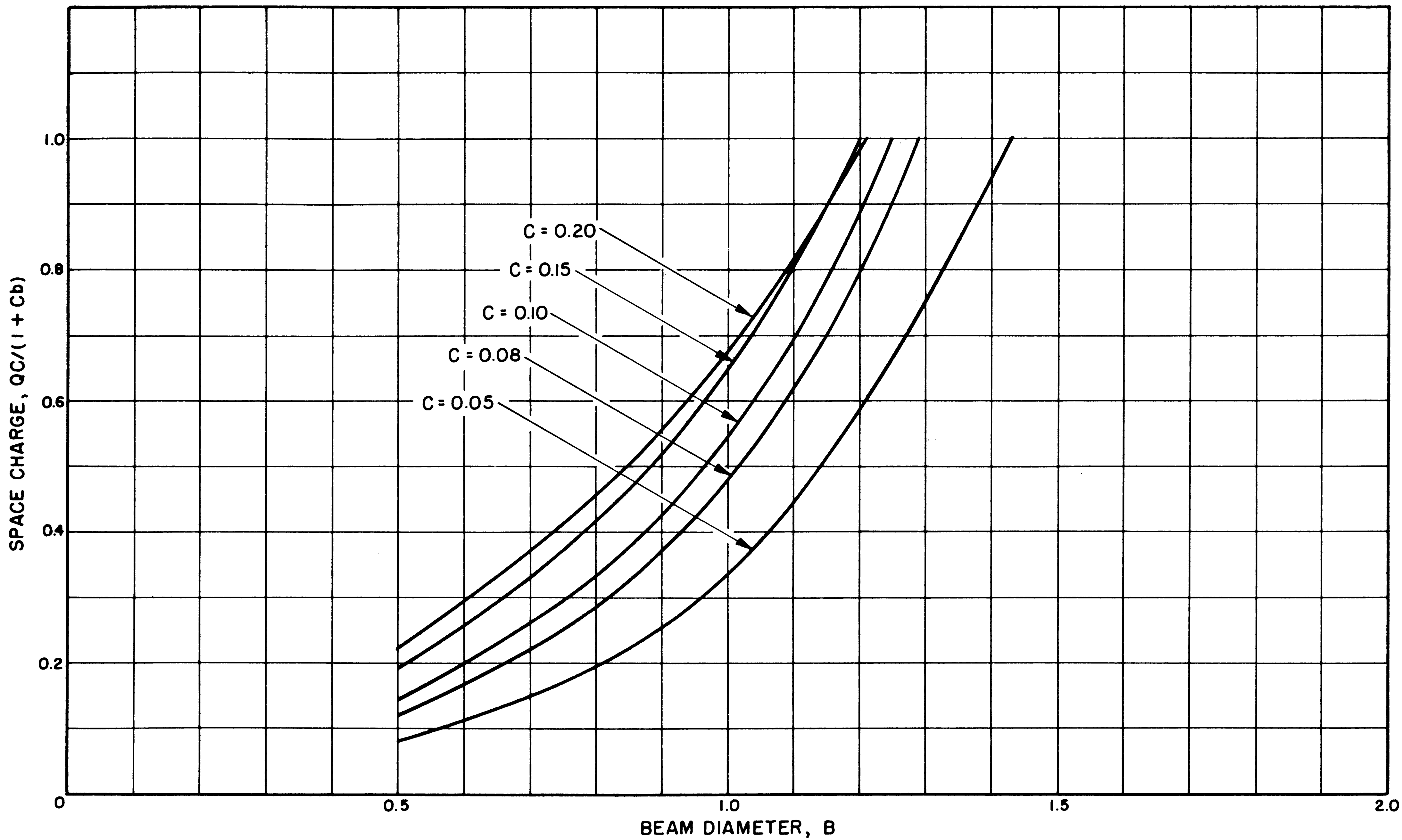


FIG. C.160 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
(a'/b' = 1.8, V_0 = 4 KV, DLF = 85 %)

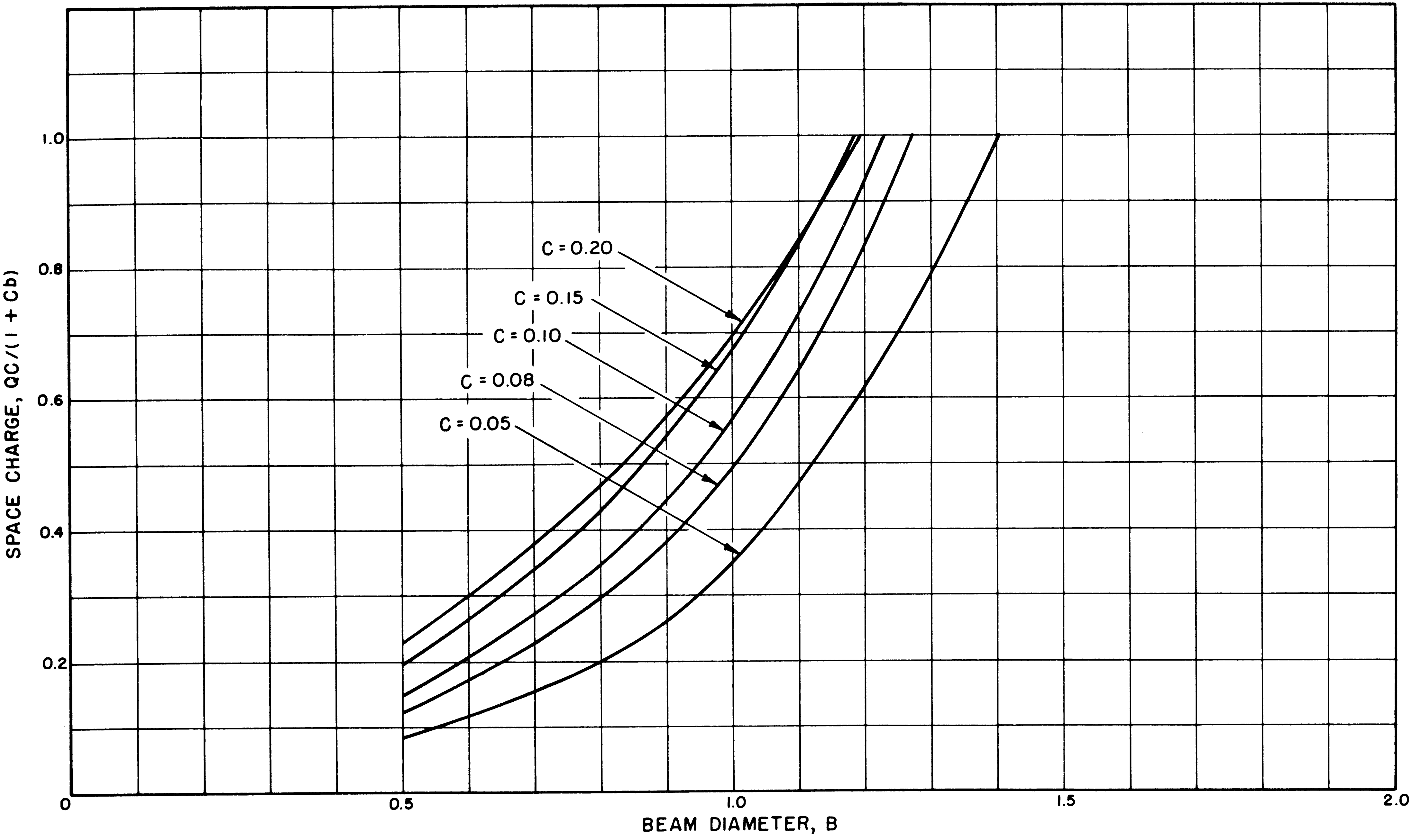


FIG. C.161 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.8$, $V_0 = 5$ KV, DLF = 85 %)

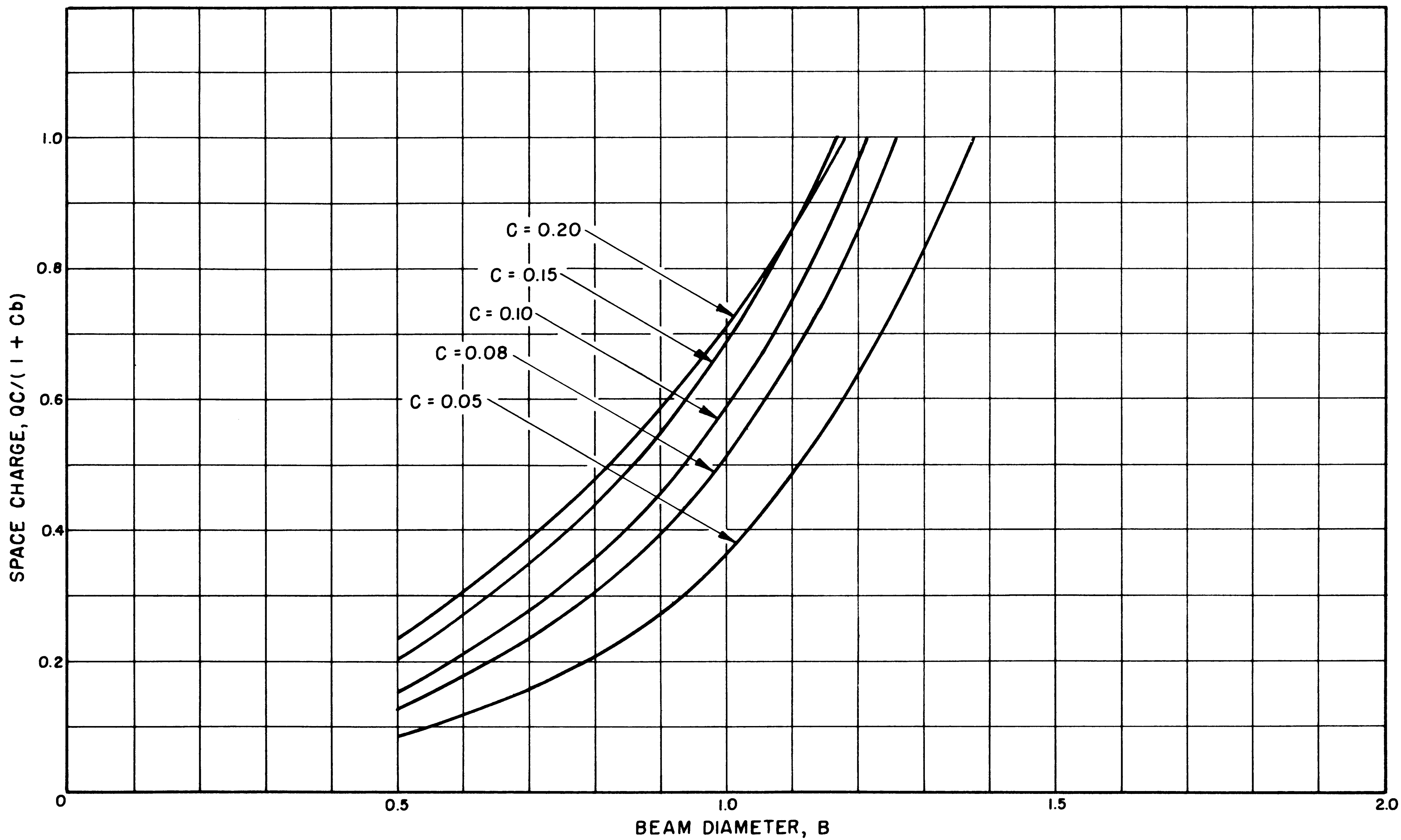


FIG. C.162 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER. ($a'/b' = 1.8$, $V_0 = 6$ KV, DLF = 85 %)

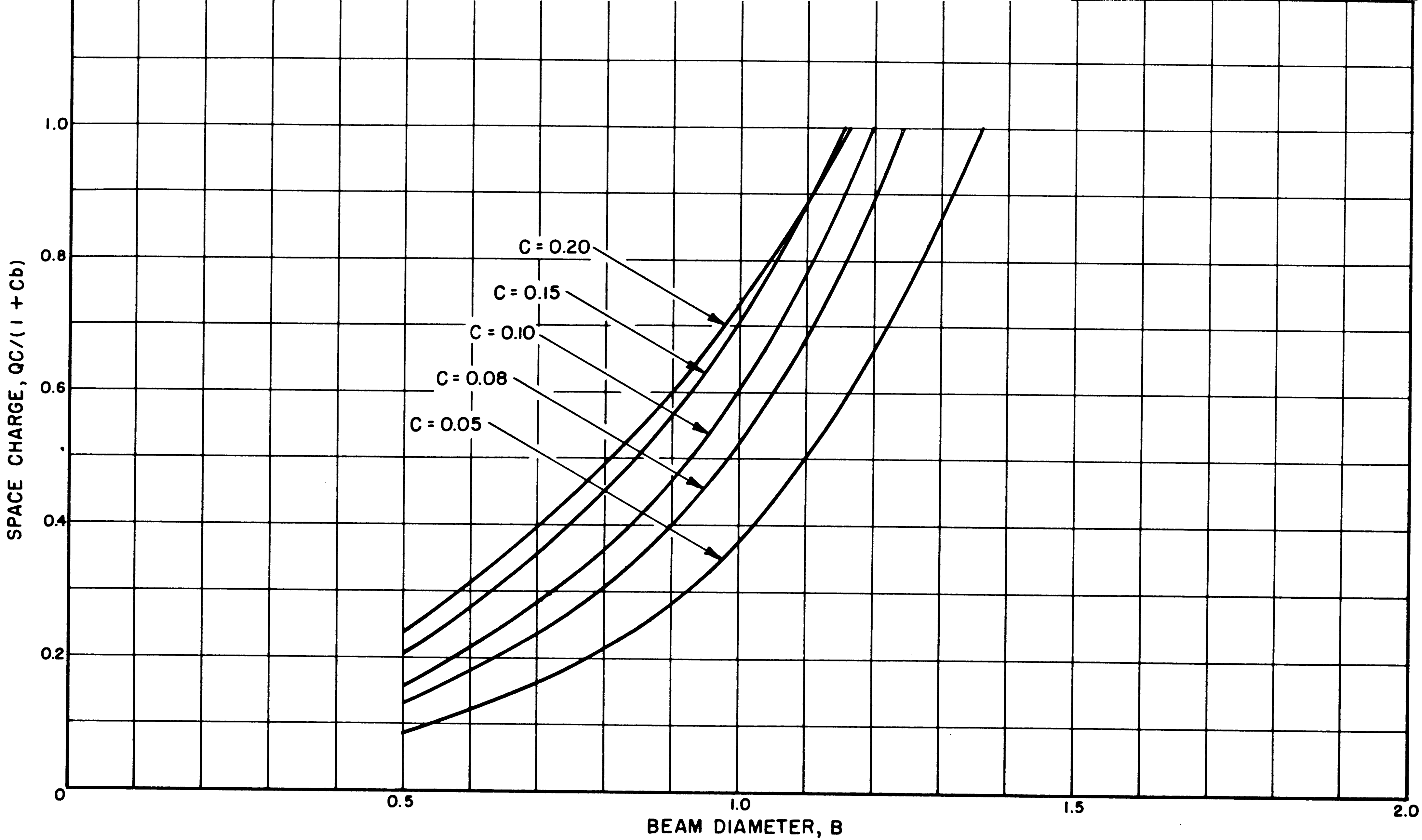


FIG. C.163 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER. (a'/b' = 1.8, V_0 = 7 KV, DLF = 85 %)

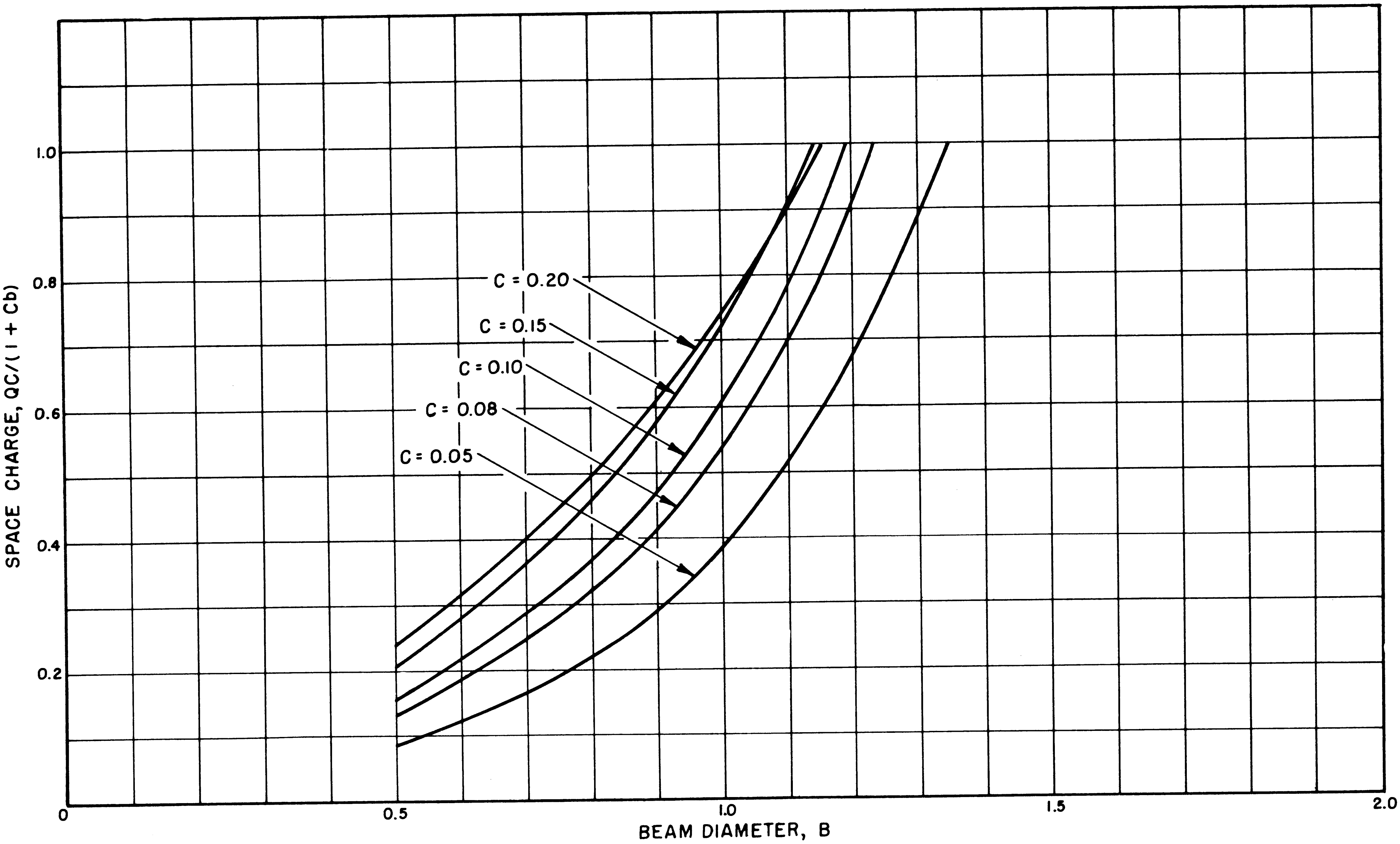


FIG. C.164 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
(a'/b' = 1.8, V = 8 KV, DLF = 85 %)

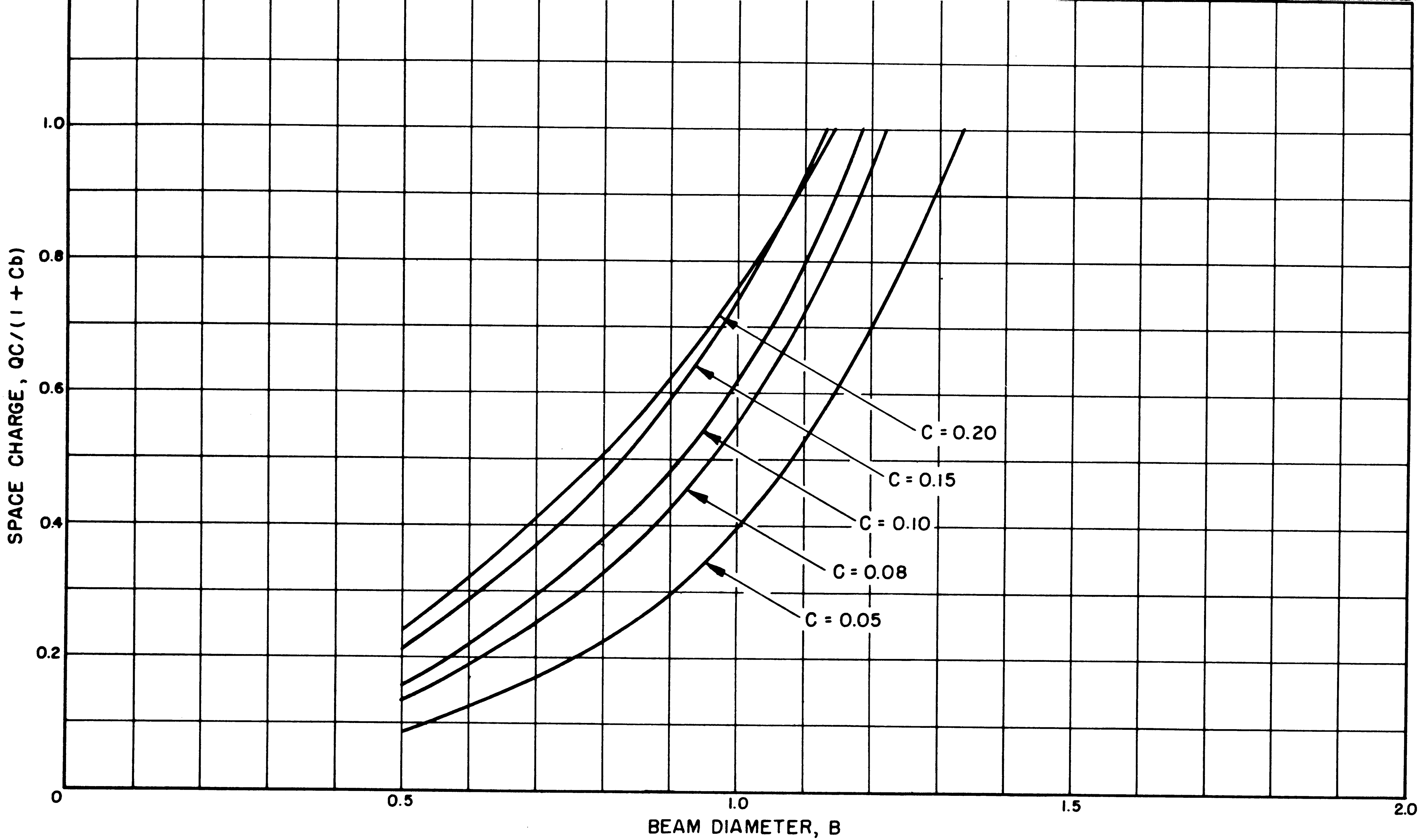


FIG. C.165 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($d'/b' = 1.8$, $V_0 = 9$ KV, DLF = 85 %)

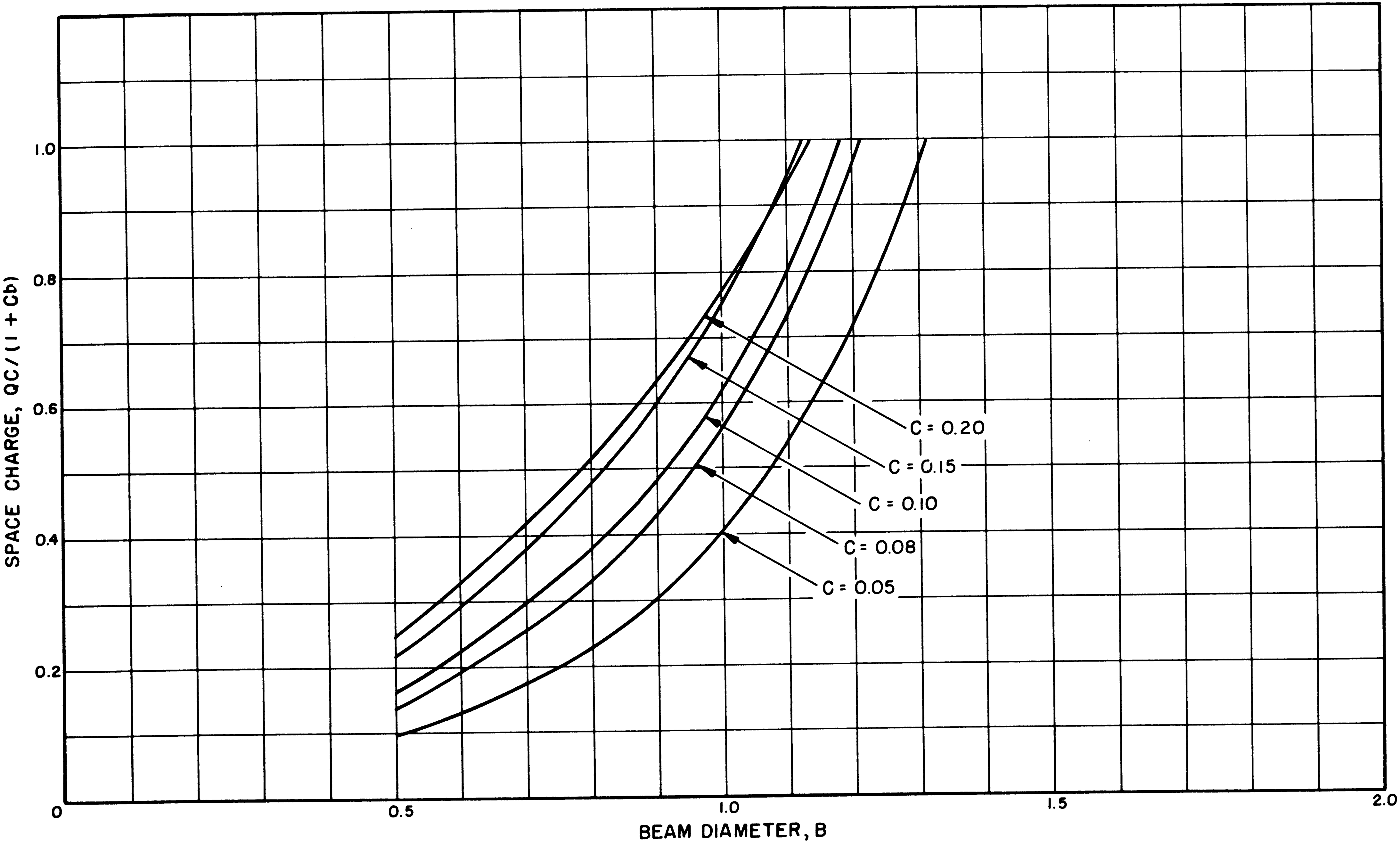


FIG. C.166 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.8$, $V_0 = 10$ KV, DLF = 85 %)

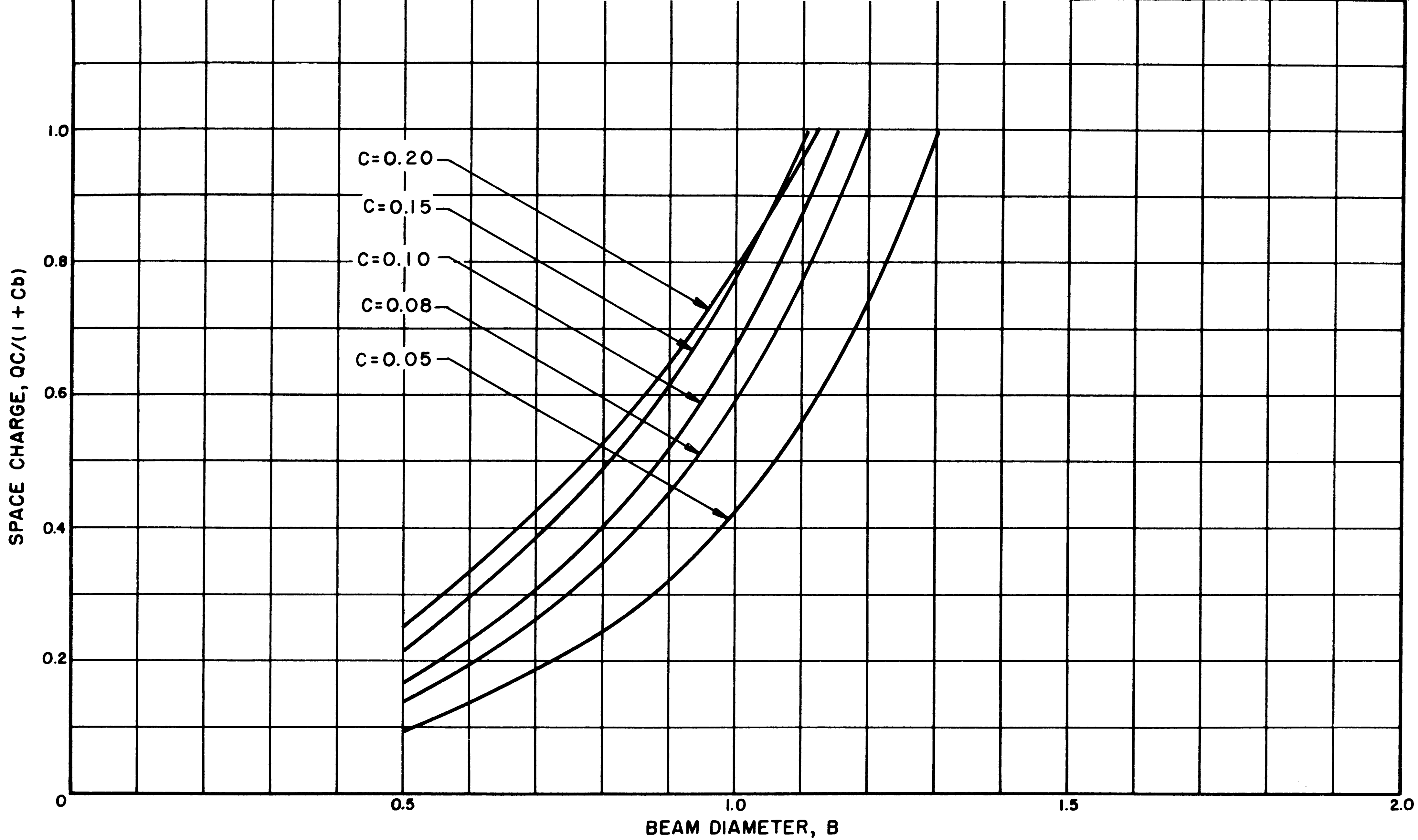


FIG. C.167 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER. ($a'/b' = 1.8$, $V_0 = 12$ KV, DLF = 85%)

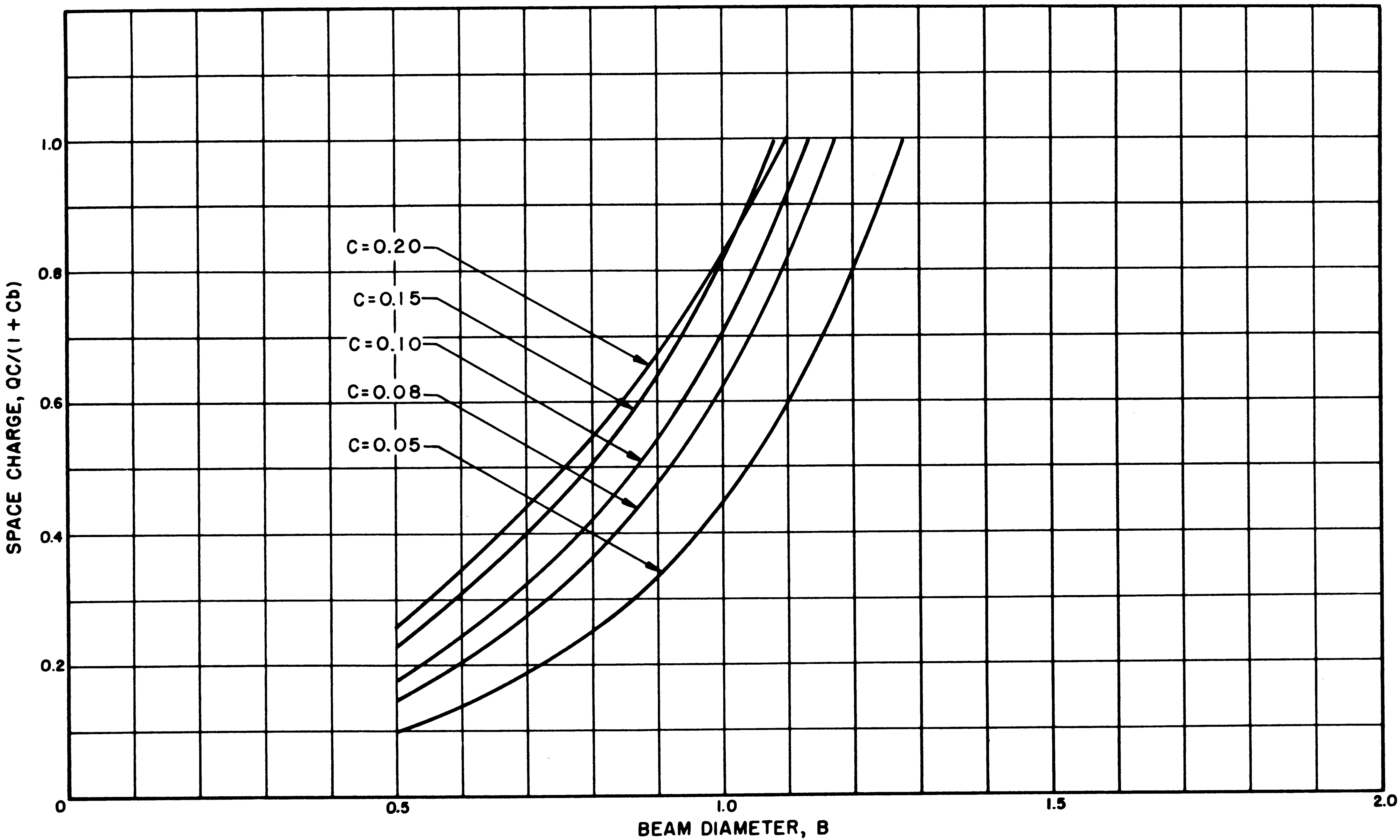


FIG. C.168 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER. ($a'/b' = 1.8$, $V_0 = 14$ KV, DLF = 85%)

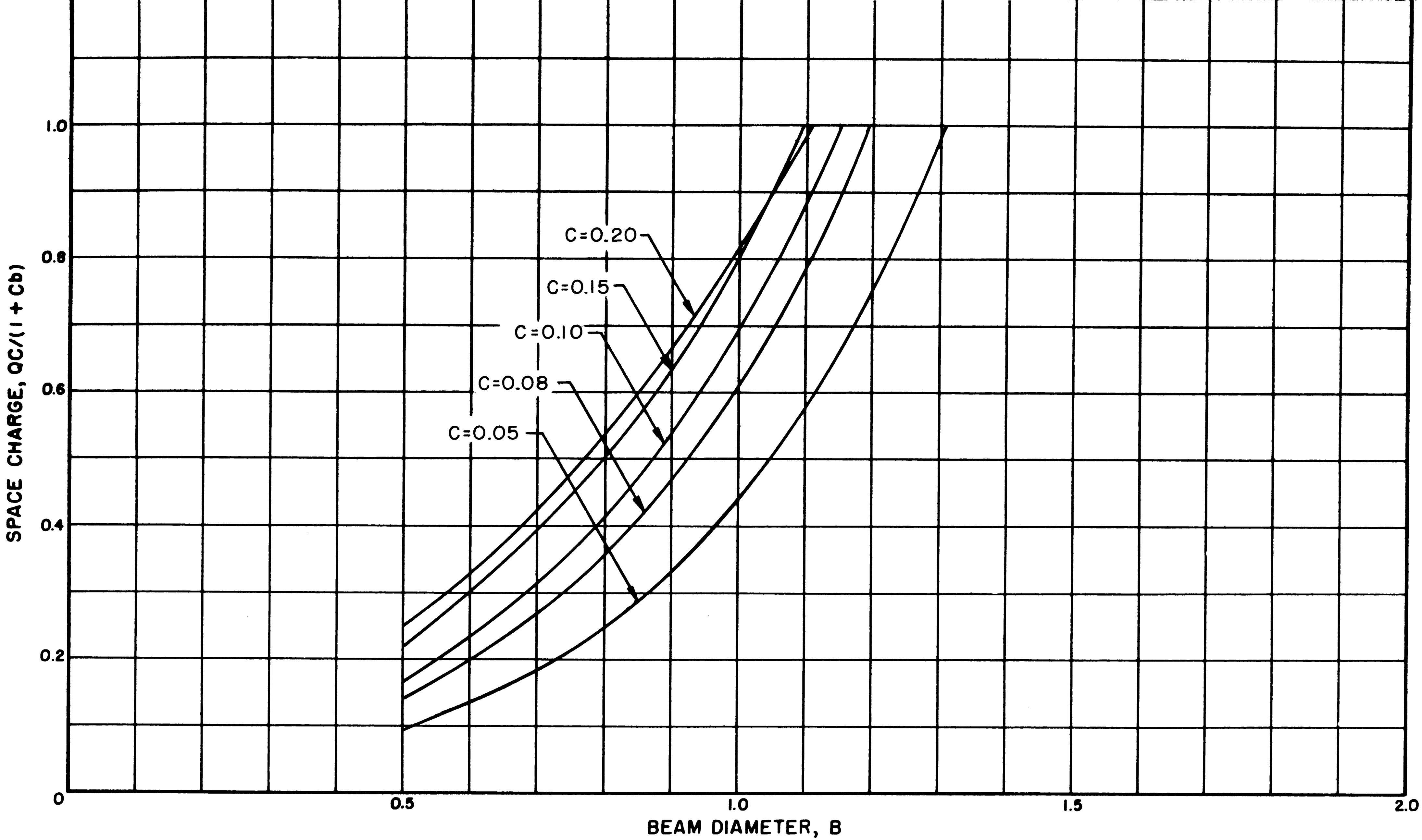


FIG. C.169 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 2.0$, $V_0 =$ 1 KV, DLF = 85 %)

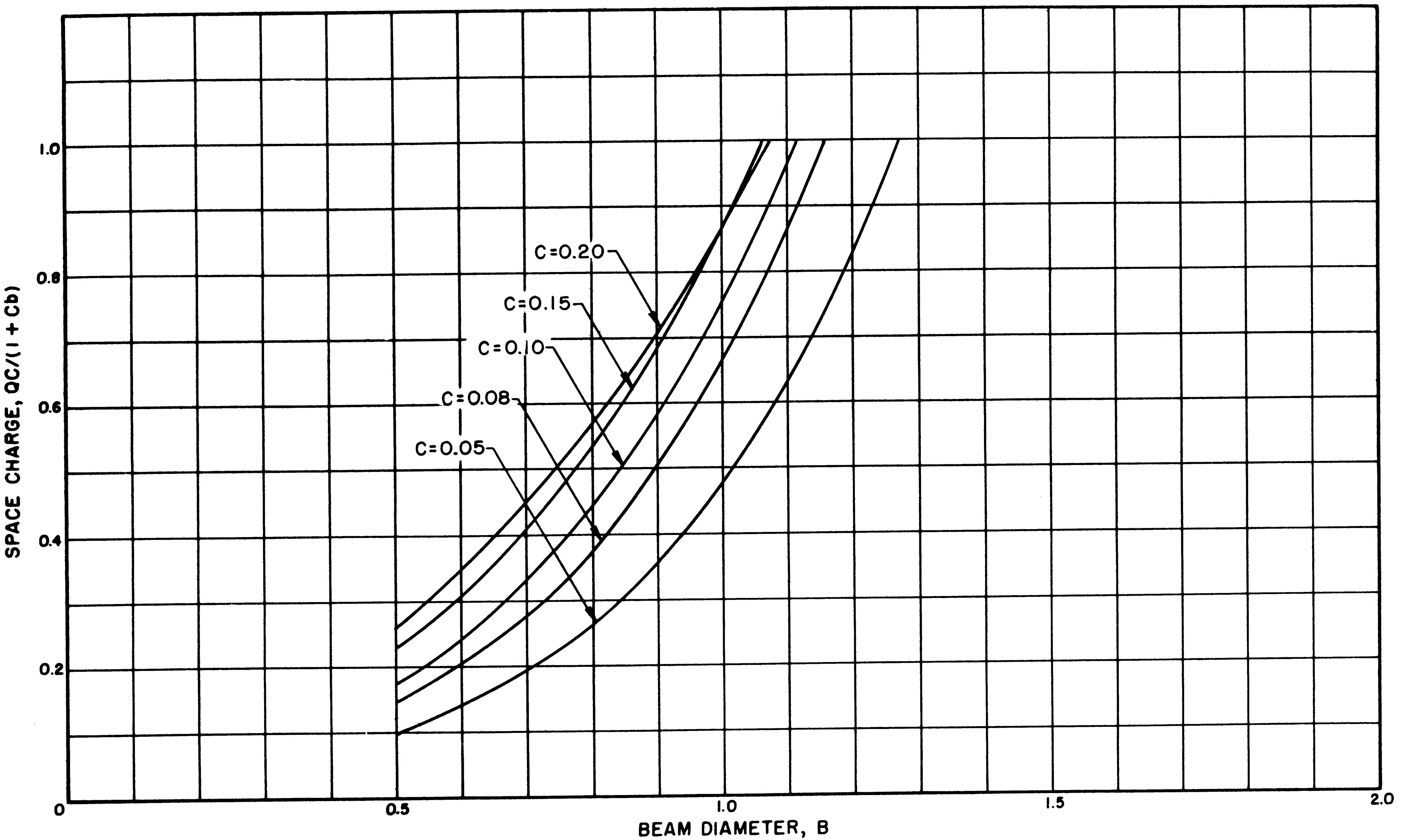


FIG. C.170 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 2.0$, $V_0 = 2$ KV, DLF = 85%)

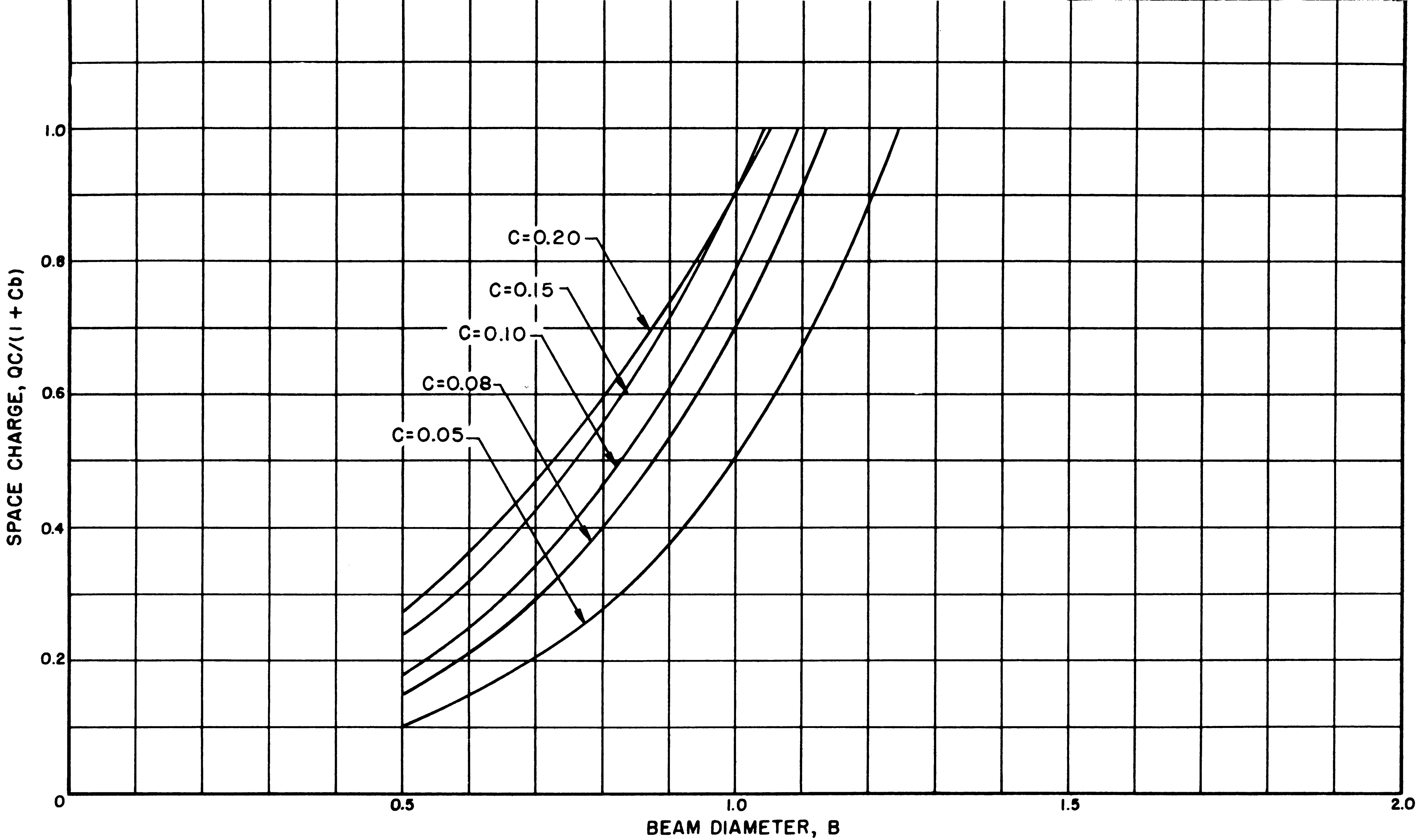


FIG. C.171 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 2.0$, V_0 = 3 KV, DLF = 85%)

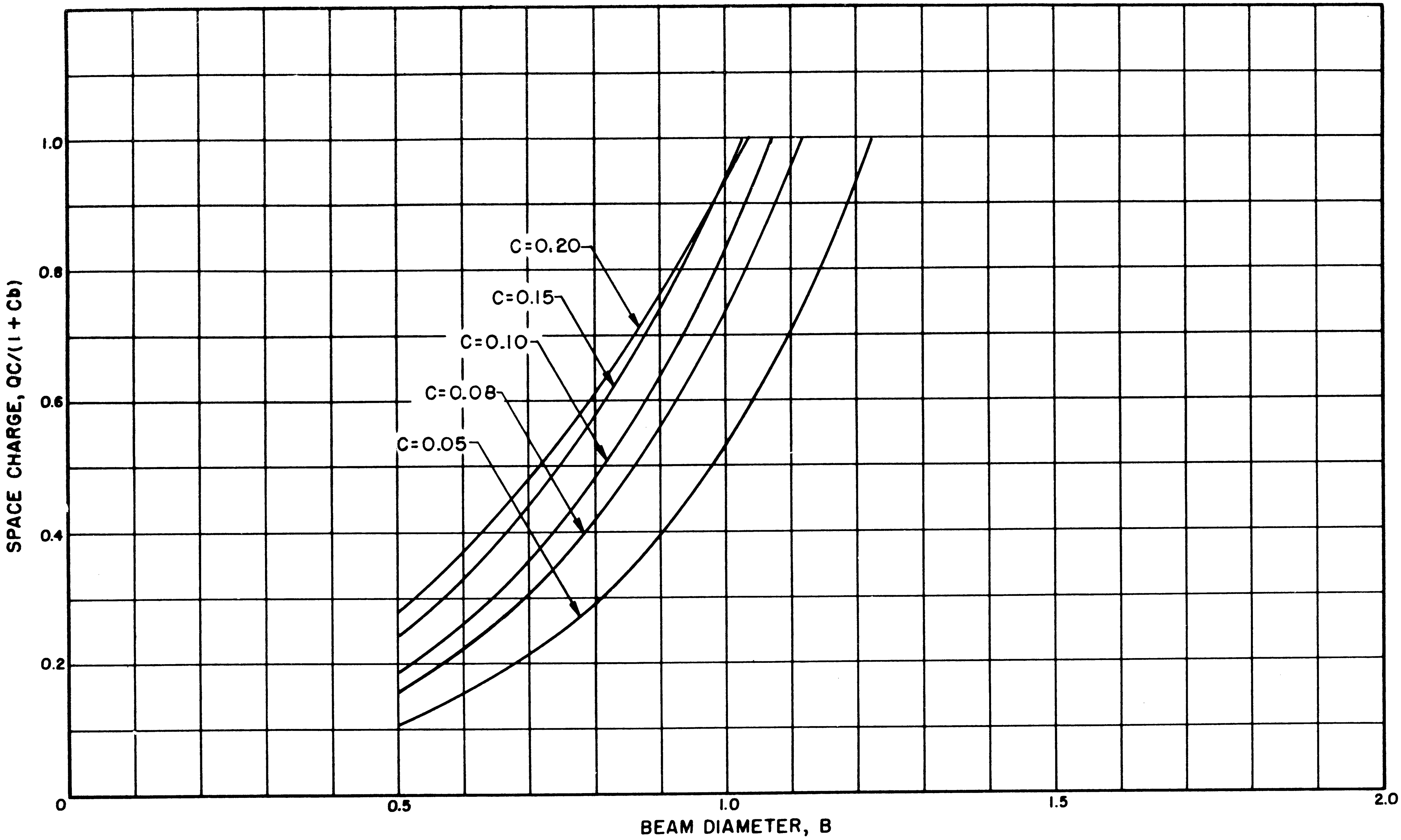


FIG. C.172 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 2.0$, $V_0 = 4$ KV, DLF = 85%)

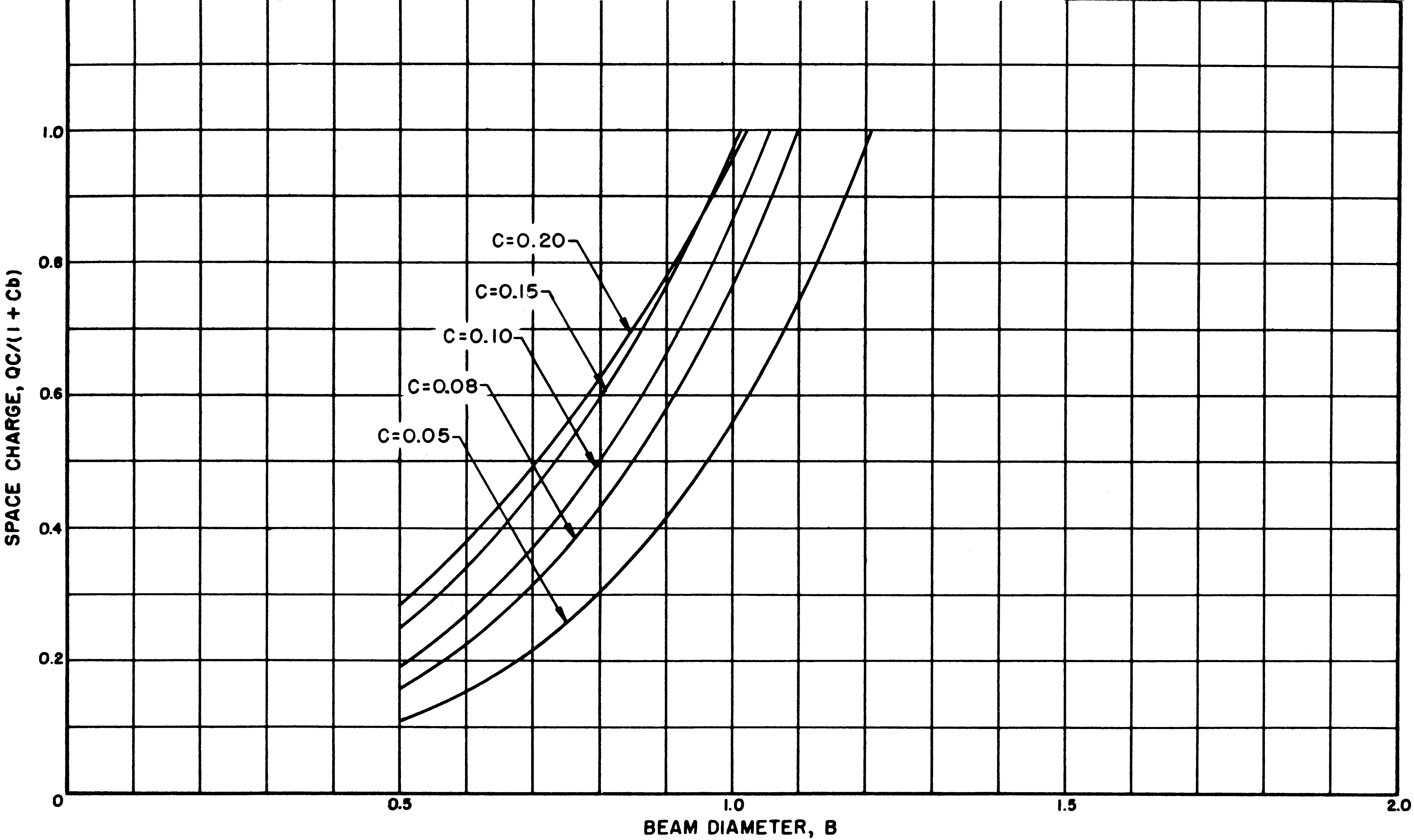


FIG. C.173 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER. ($a'/b' = 2.0$, $V_0 = 5$ KV, DLF = 85%)

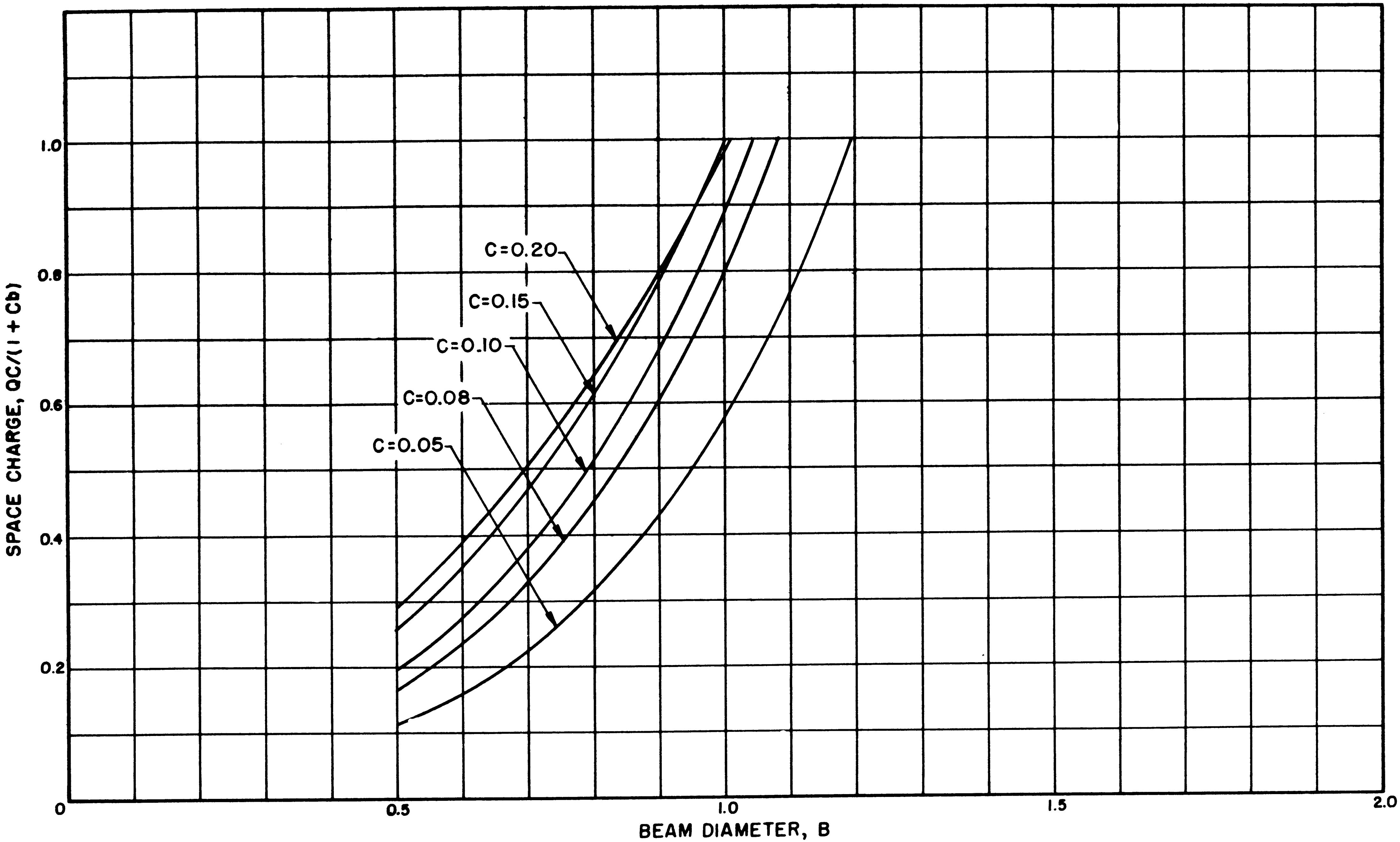


FIG. C.174 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 2.0$, $V_0 = 6$ KV, DLF = 85 %)

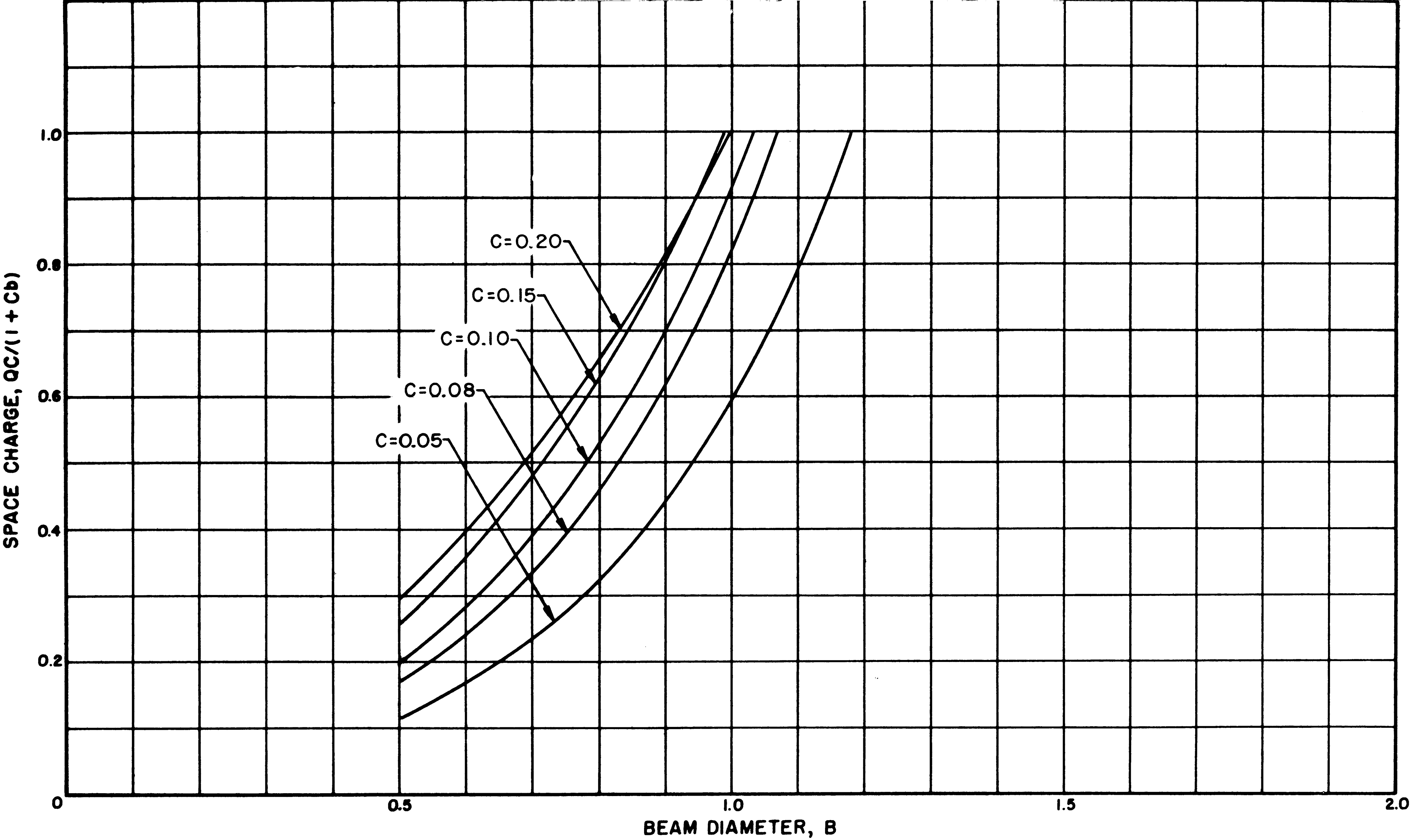


FIG. C.175 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 2.0$, $V_0 = 7$ KV, DLF = 85%)

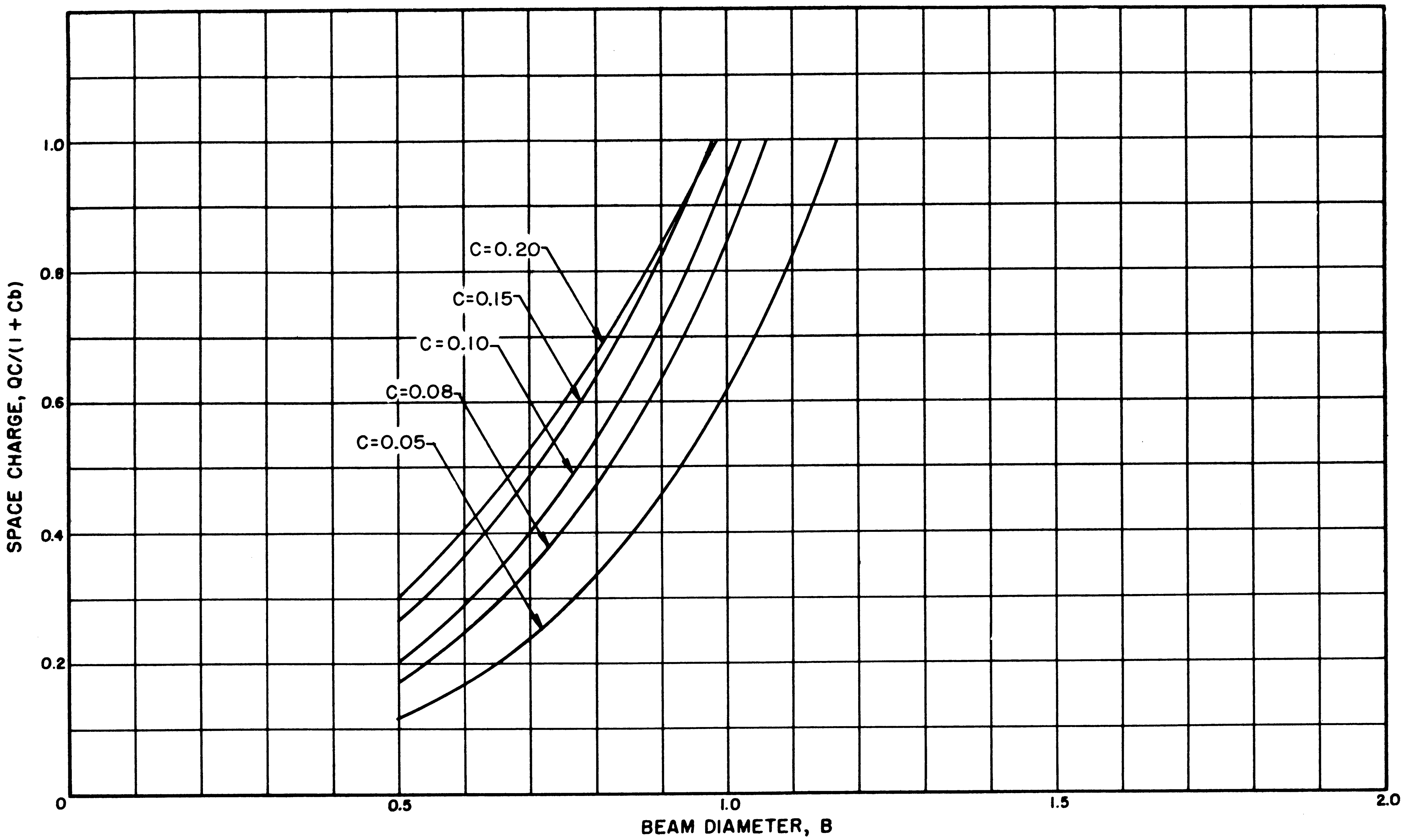


FIG. C.176 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 2.0$, V_0 = 8 KV, DLF = 85 %)

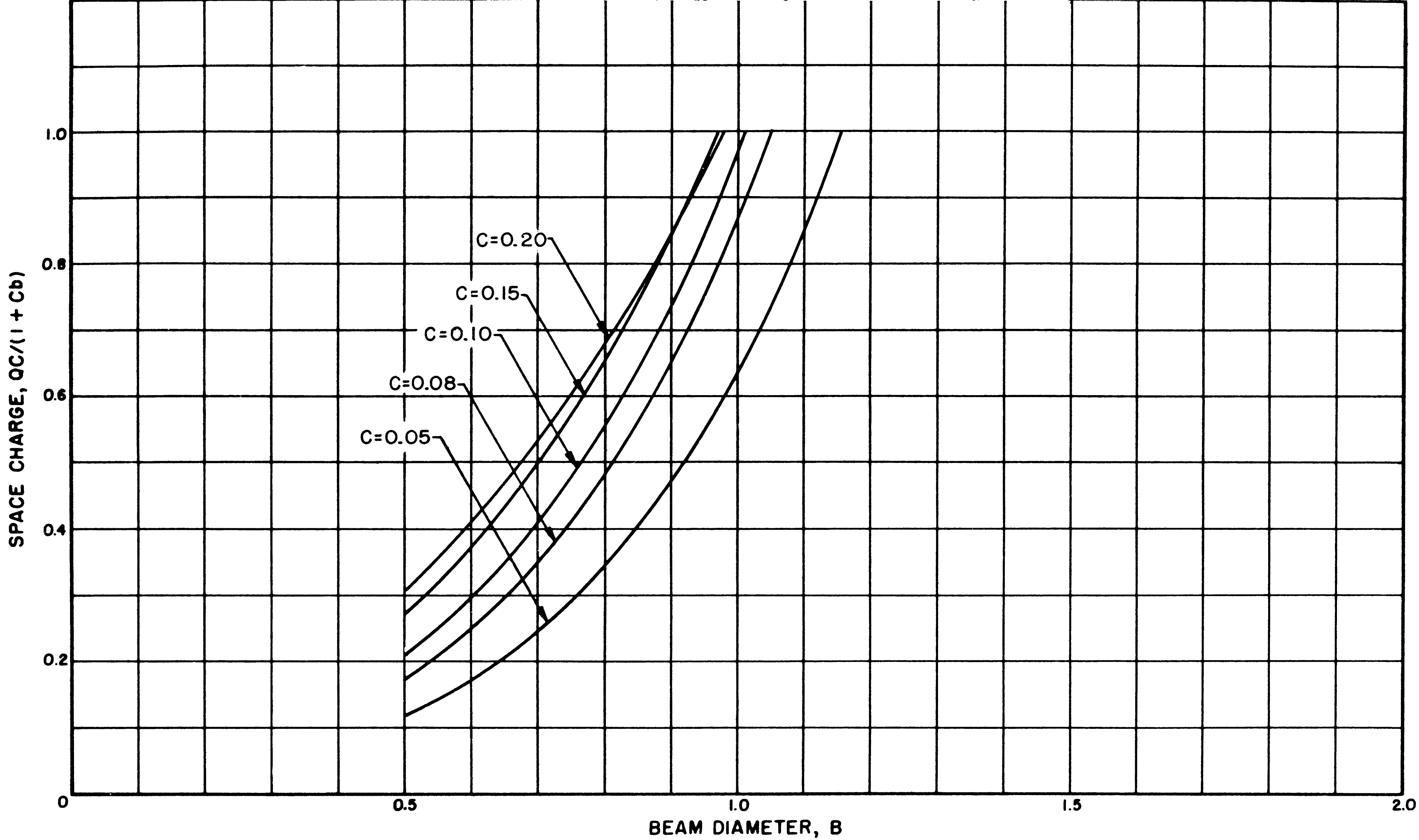


FIG. C.177 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
(a'/b' = 2.0, V_0 = 9 KV, DLF = 85%)

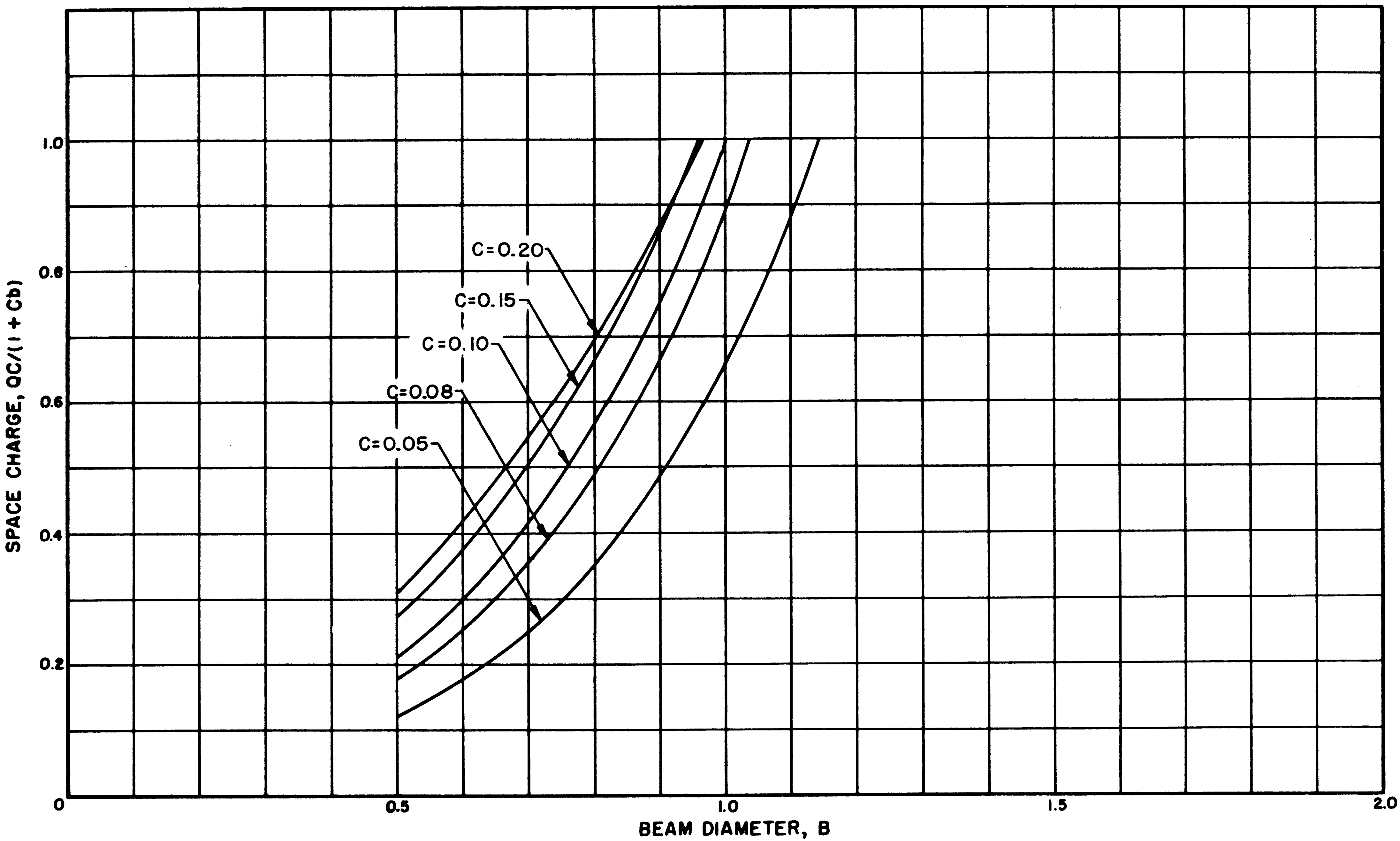


FIG. C.178 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 2.0$, $V_0 = 10$ KV, DLF = 85%)

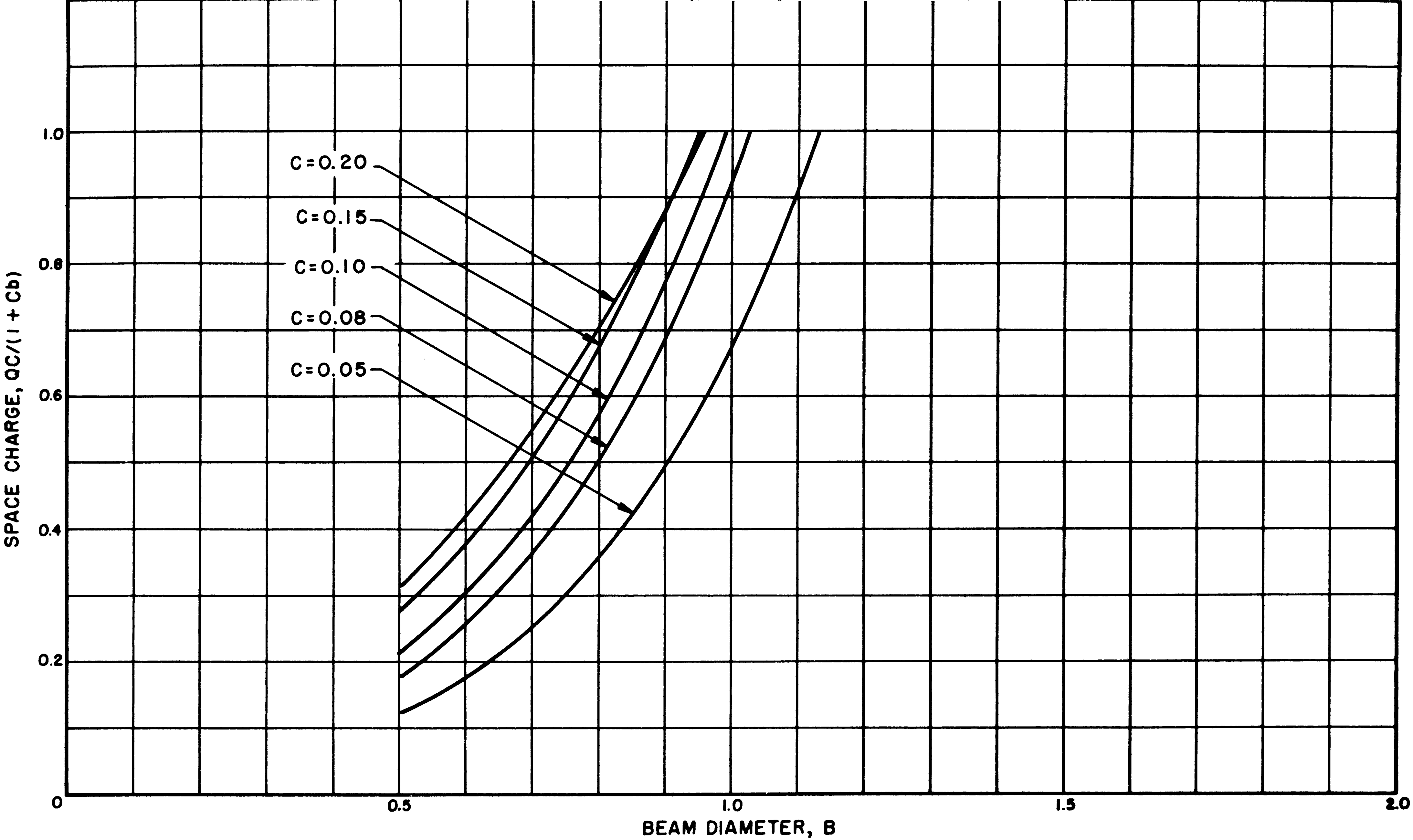


FIG. C.179 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 2.0$, $V_0 = 12$ KV, DLF = 85%)

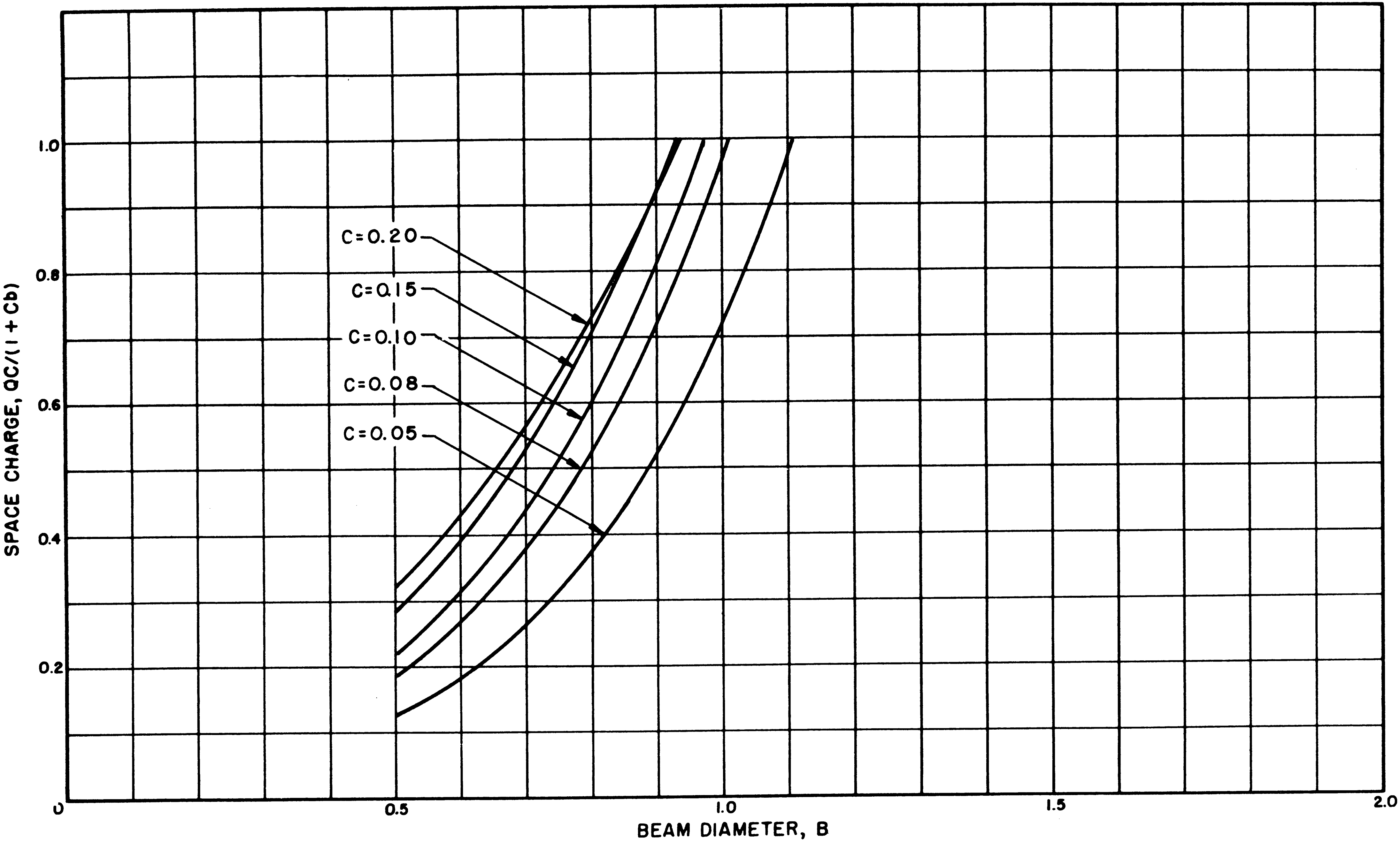


FIG. C.180 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 2.0$, $V_0 = 14$ KV, DLF = 85%)

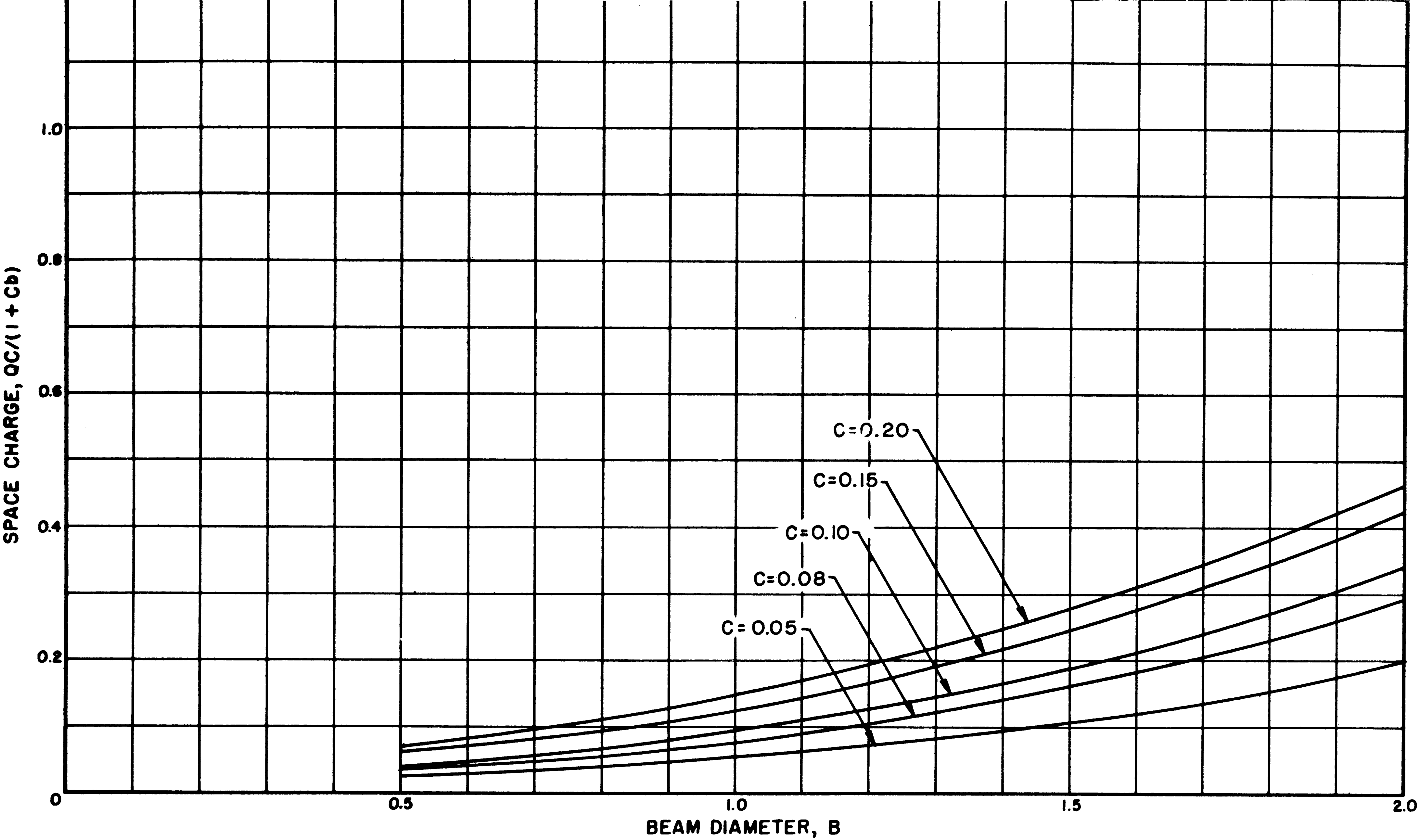


FIG. C.181 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.2$, $V_0 = 1$ KV, DLF = 90%)

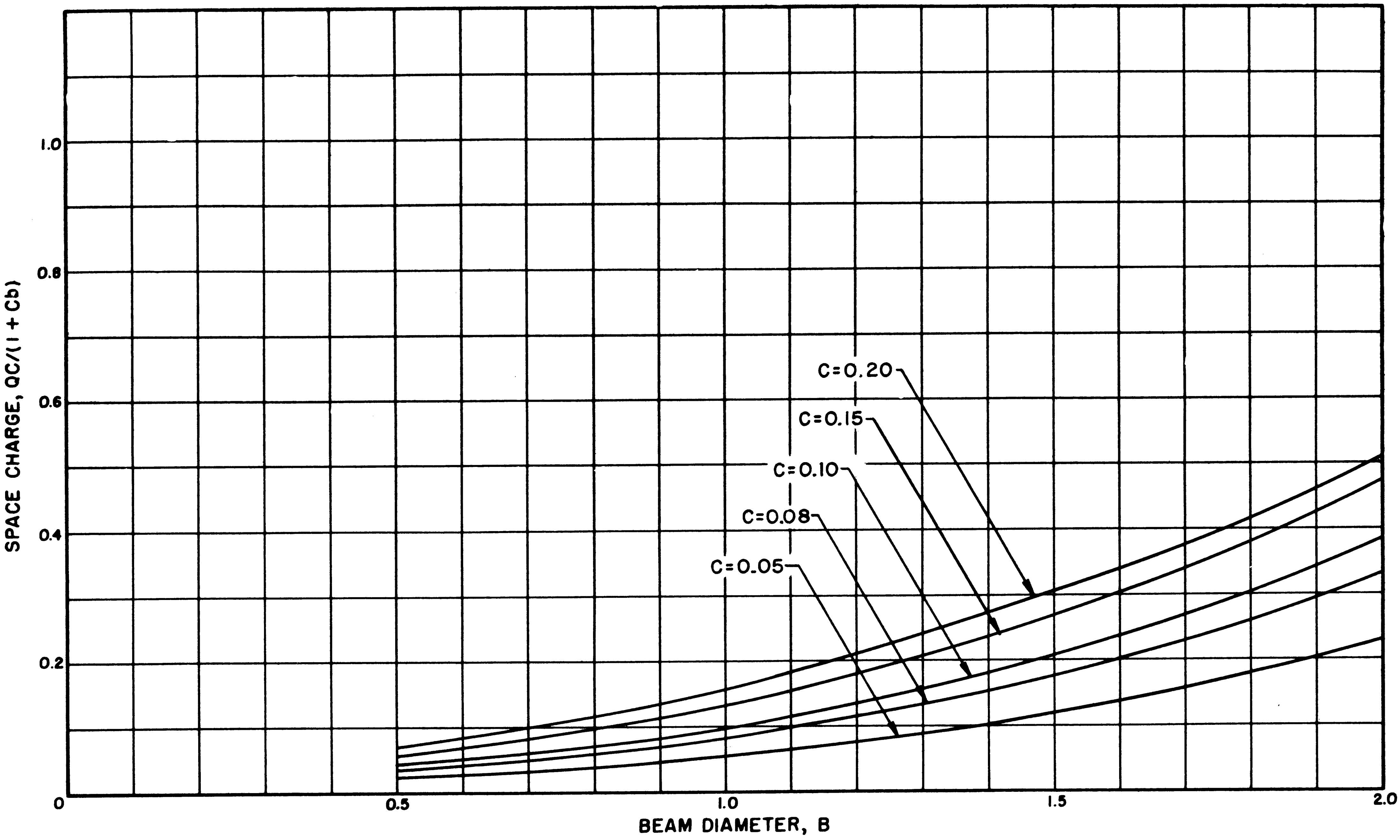


FIG. C.182 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.2$, $V_0 = 2$ KV, DLF = 90%)

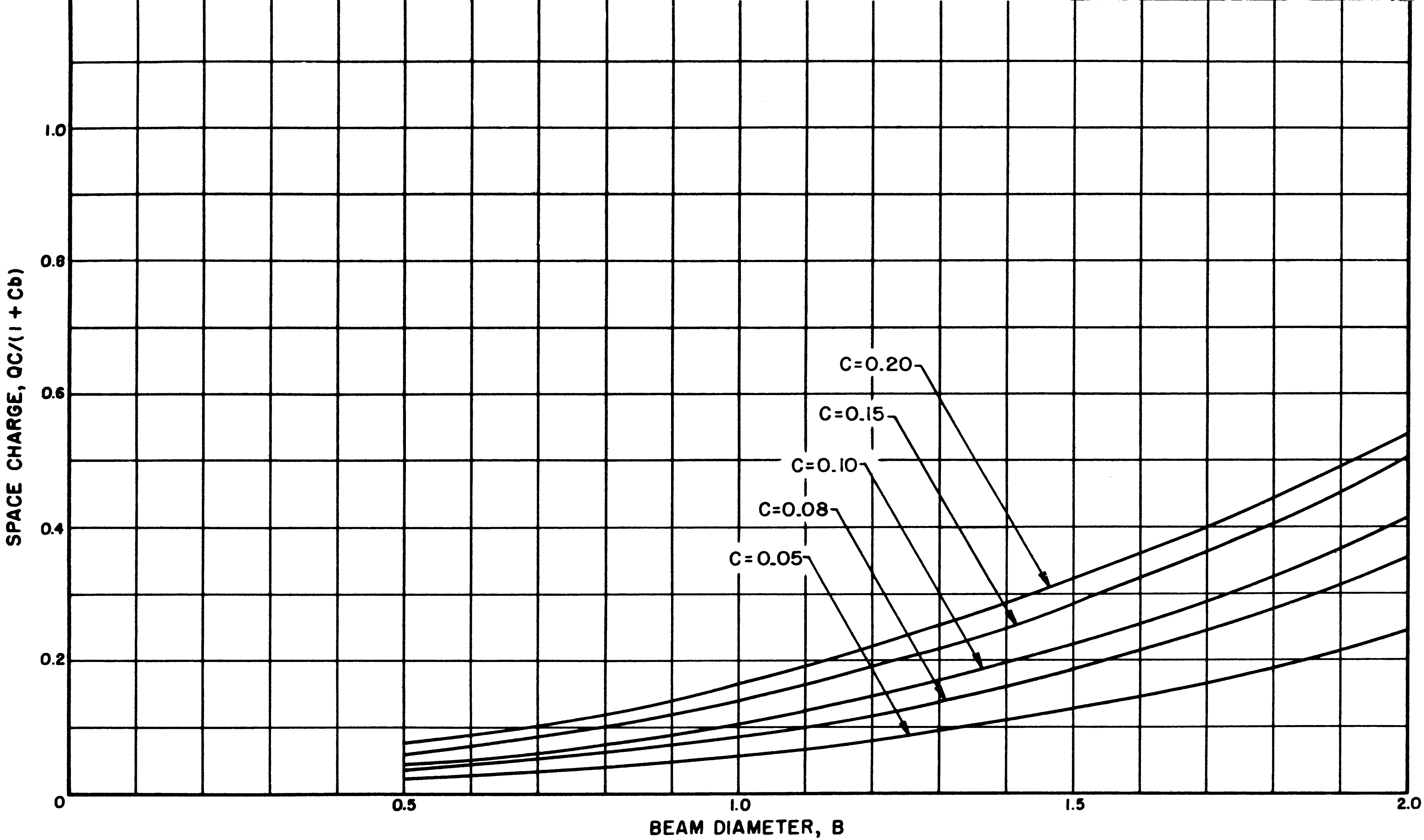


FIG. C.183 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.2$, $V_0 = 3$ KV, DLF = 90%)

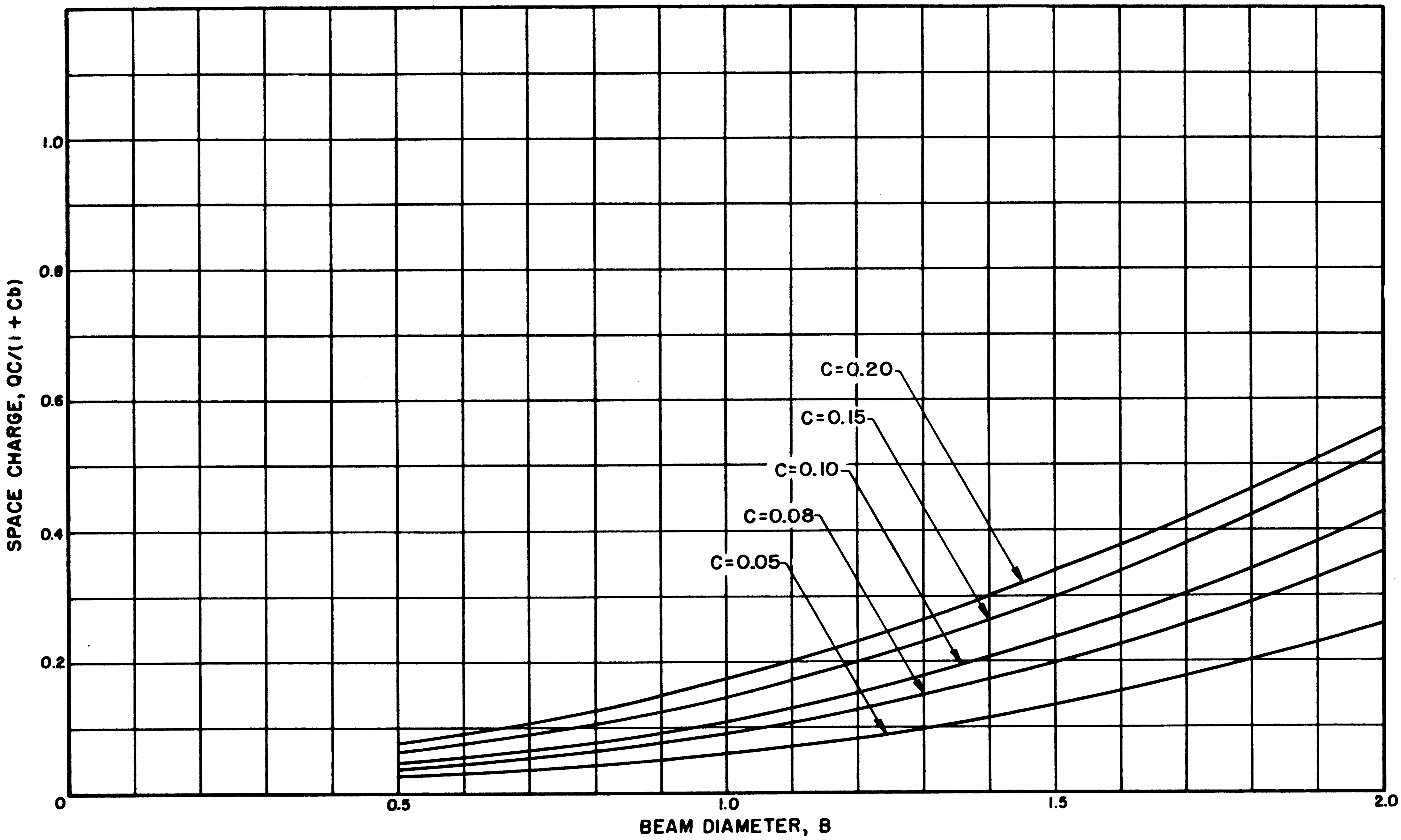


FIG. C.184 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.2$, V_0 = 4 KV, DLF = 90%)

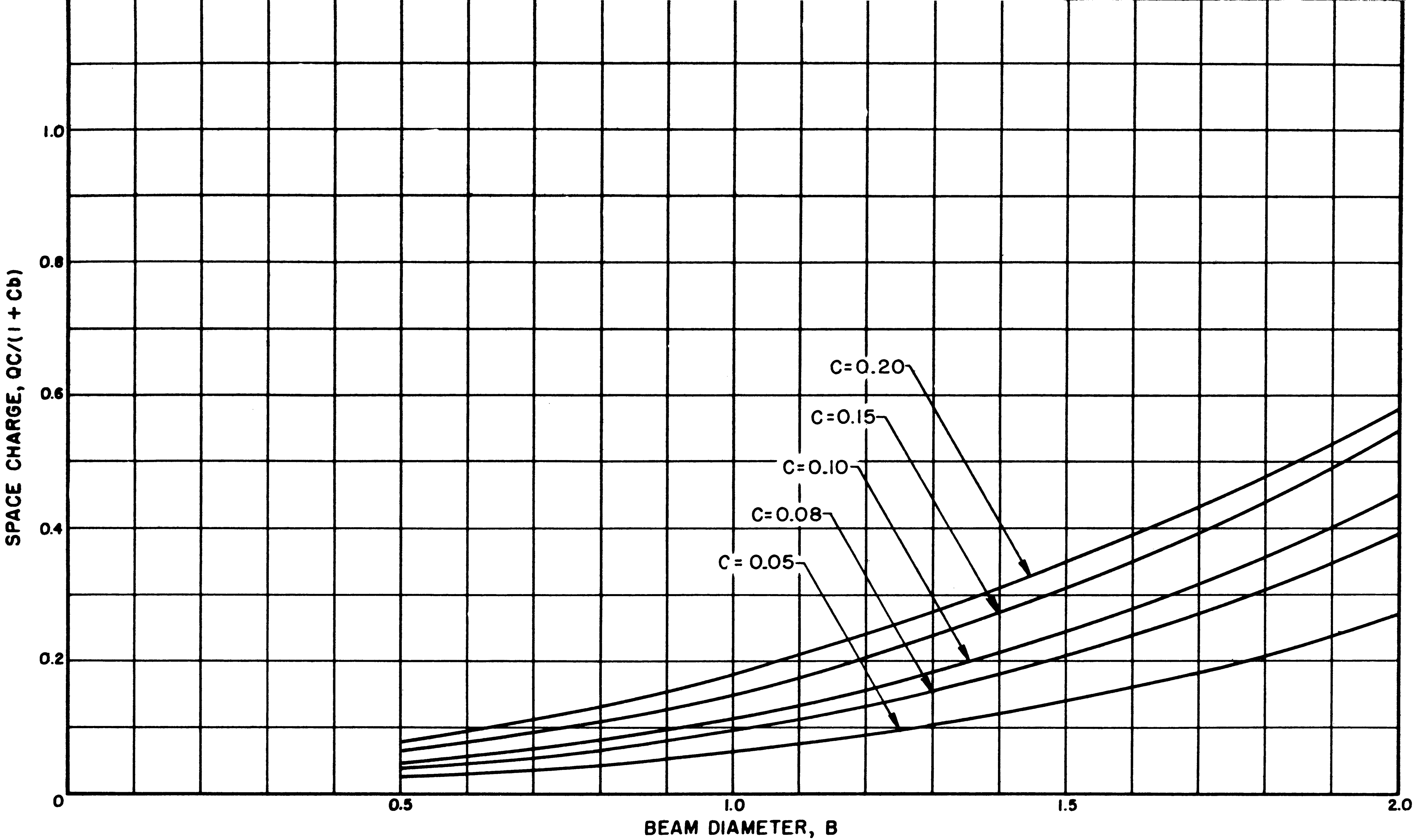


FIG. C.185 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER. ($a'/b' = 1.2$, $V_0 = 5$ KV, DLF = 90%)

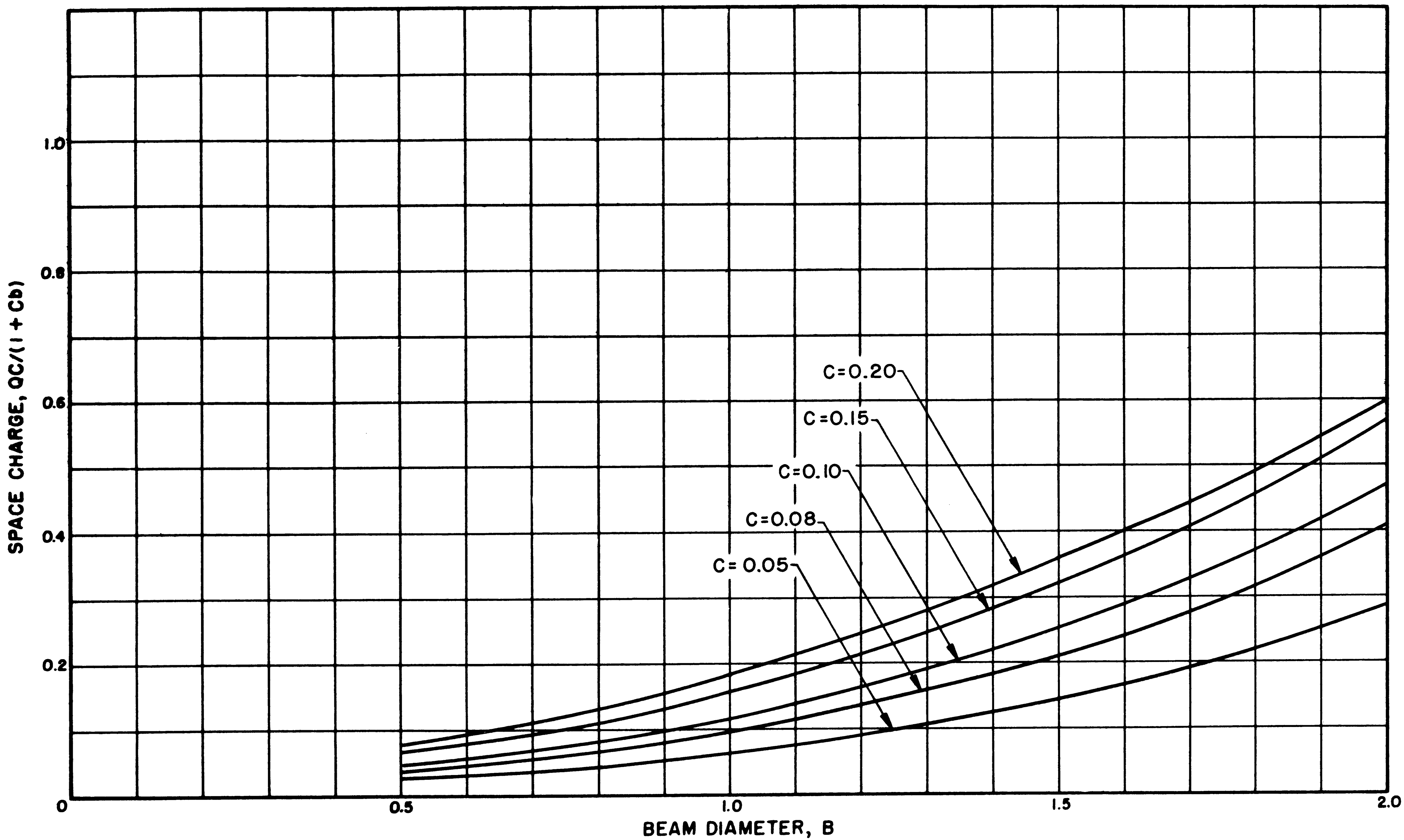


FIG. C.186 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.2$, $V_0 = 6$ KV, DLF = 90%)

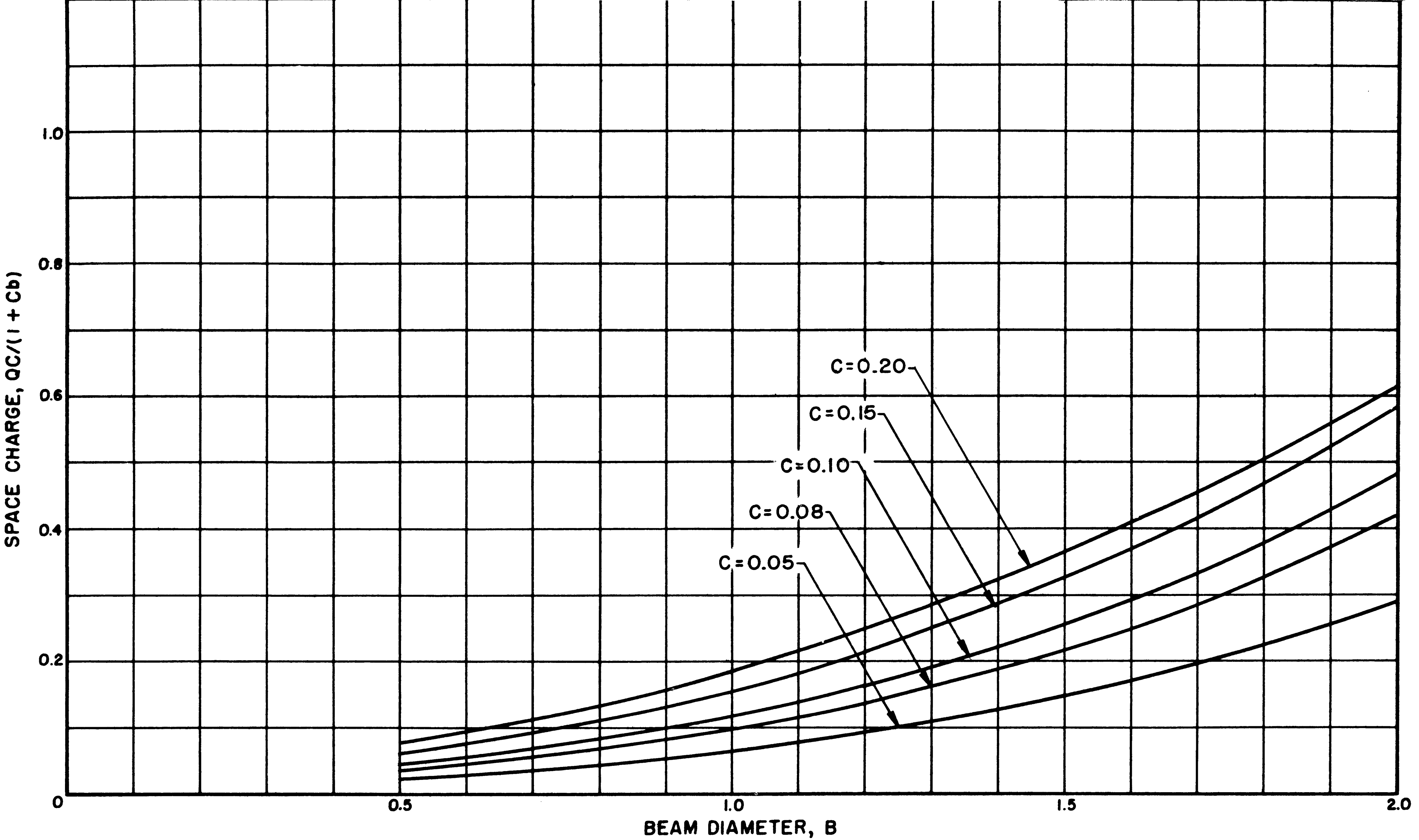


FIG. C.187 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER. ($a'/b' = 1.2$, $V_0 = 7$ KV, DLF = 90%)

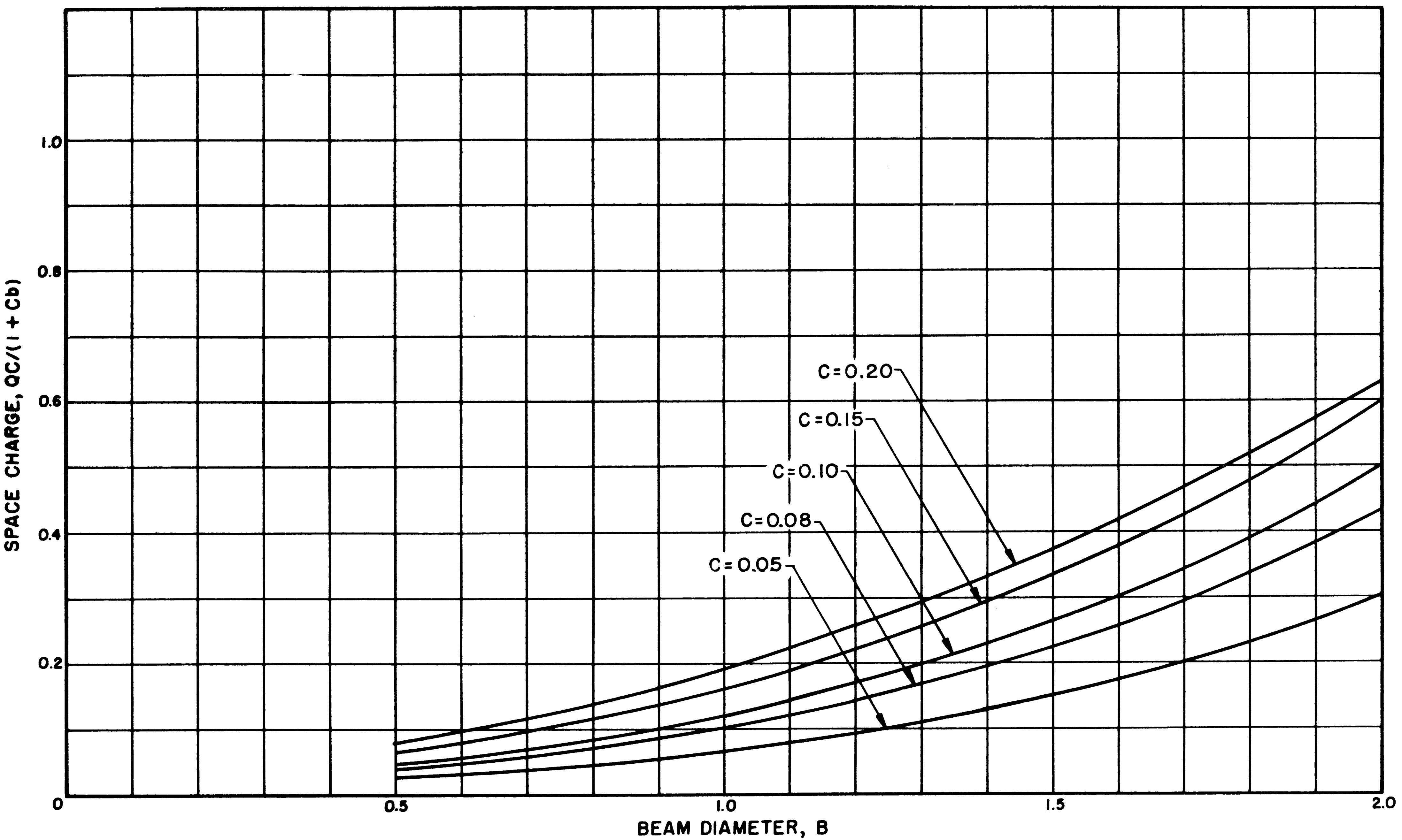


FIG. C.188 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.2$, V_0 = 8 KV, DLF = 90%)

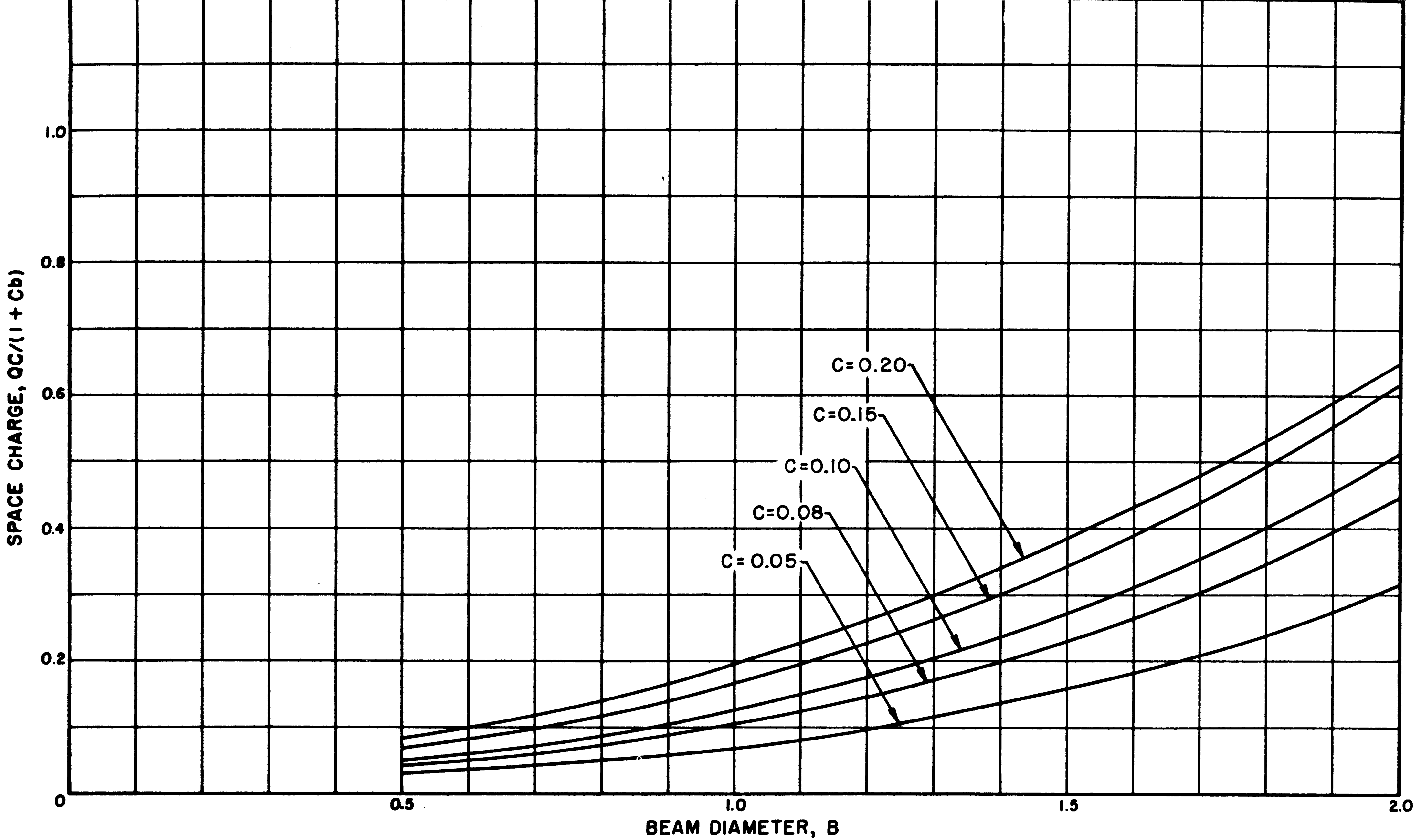


FIG. C.189 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
(a'/b' = 1.2, V_0 = 9 KV, DLF = 90%)

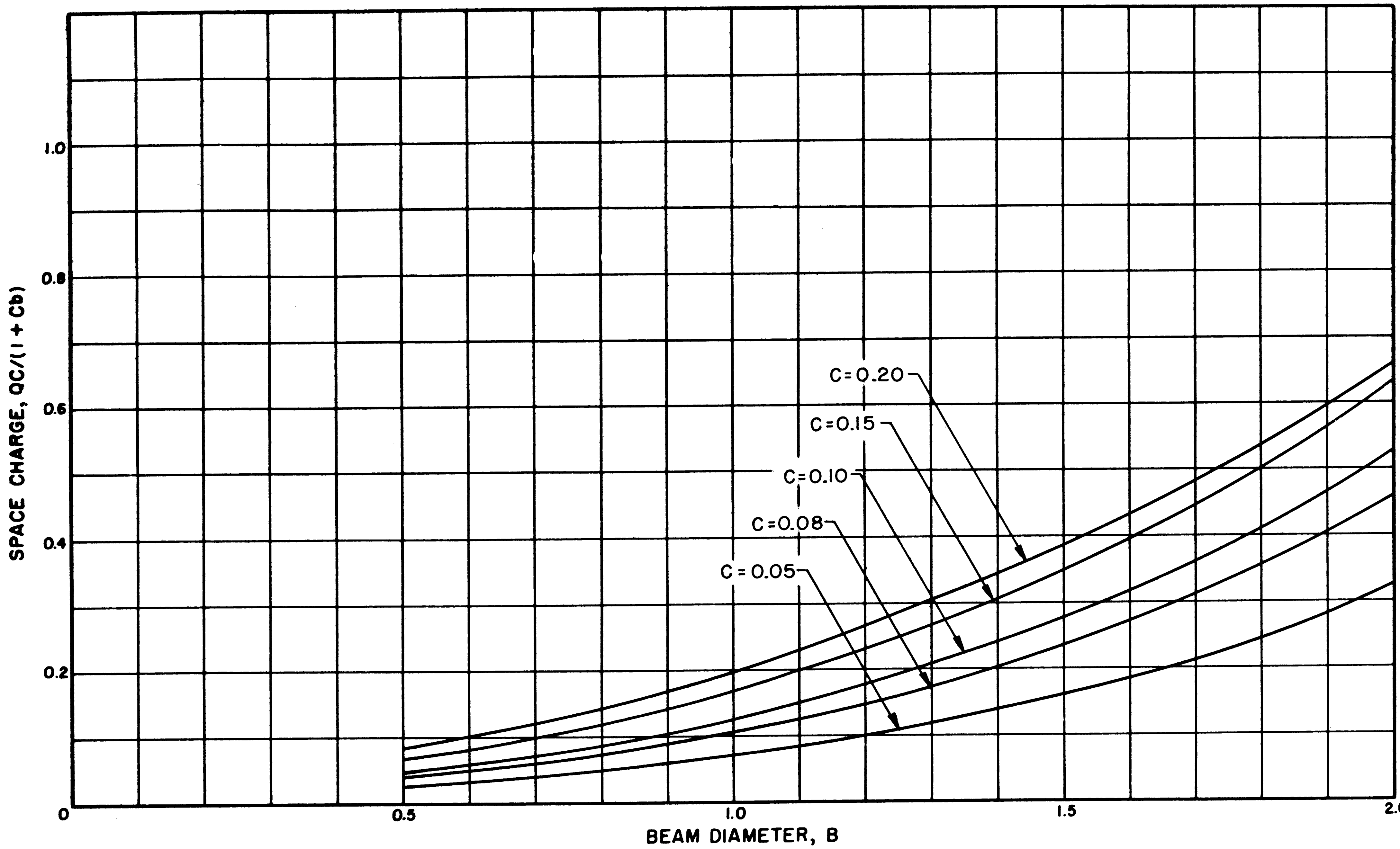


FIG. C.190 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.2$, $V_0 = 10$ KV, DLF = 90%)

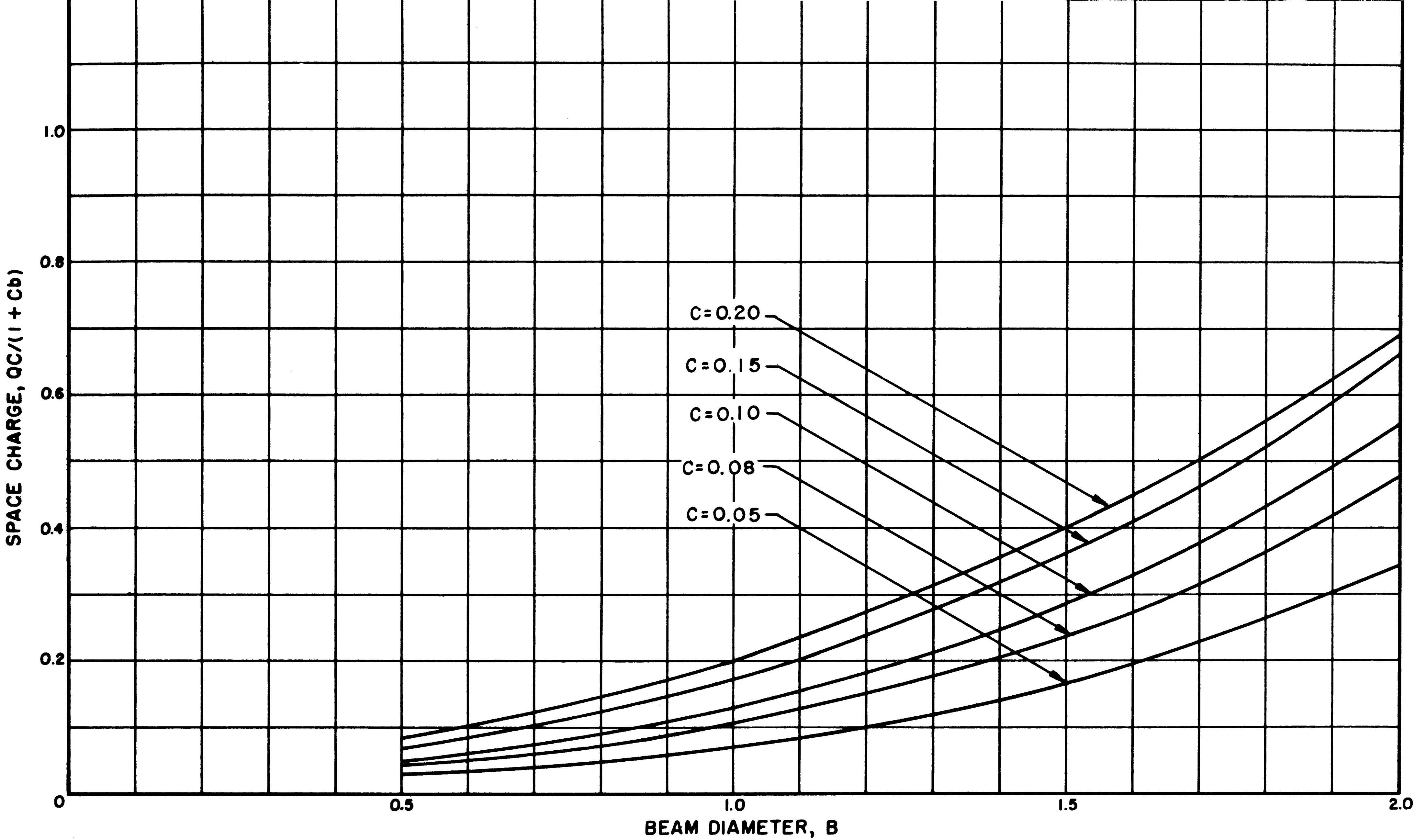


FIG. C.191 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
(a'/b' = 1.2, V_0 = 12 KV, DLF = 90%)

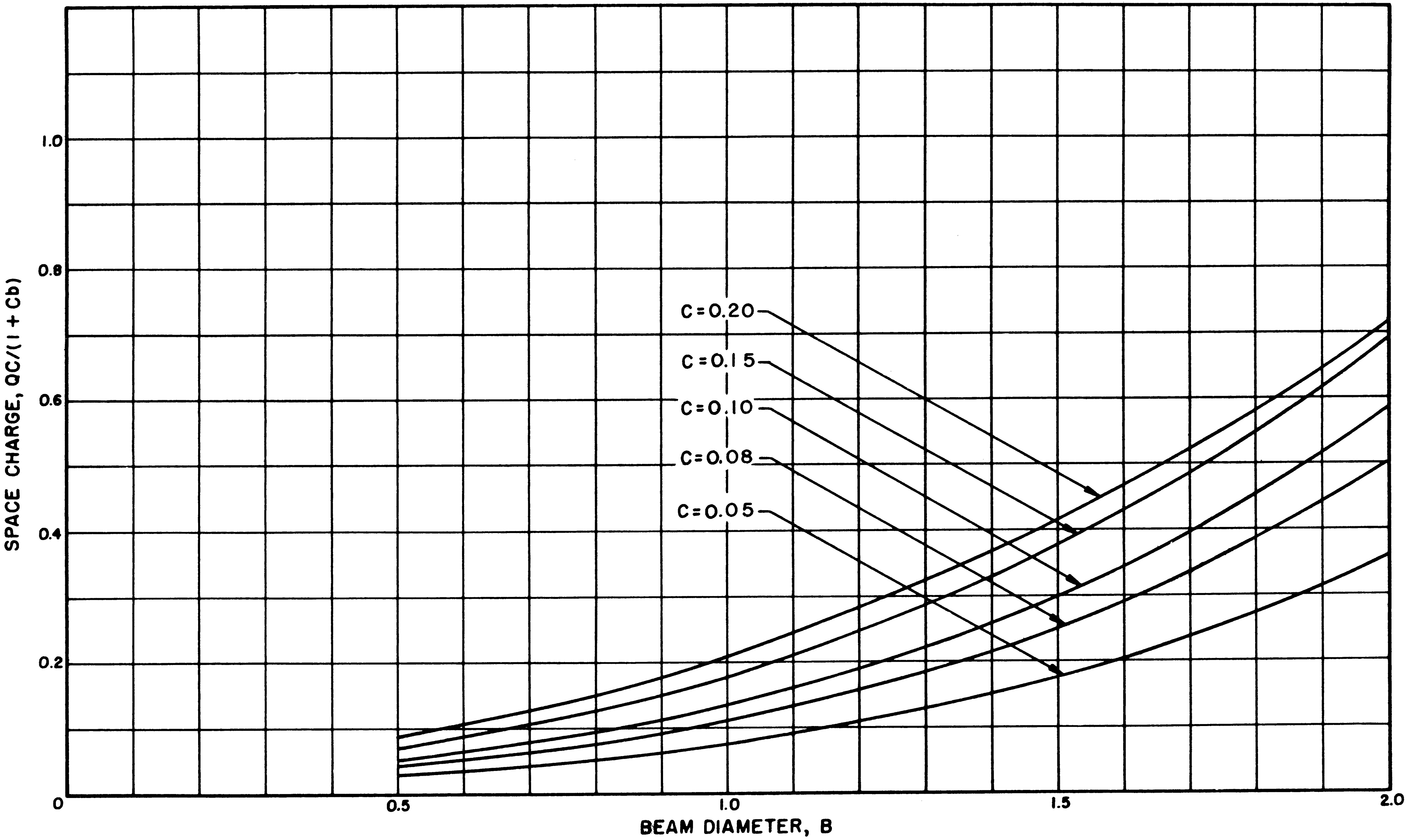


FIG. C.192 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.2$, $V_0 = 14$ KV, DLF = 90%)

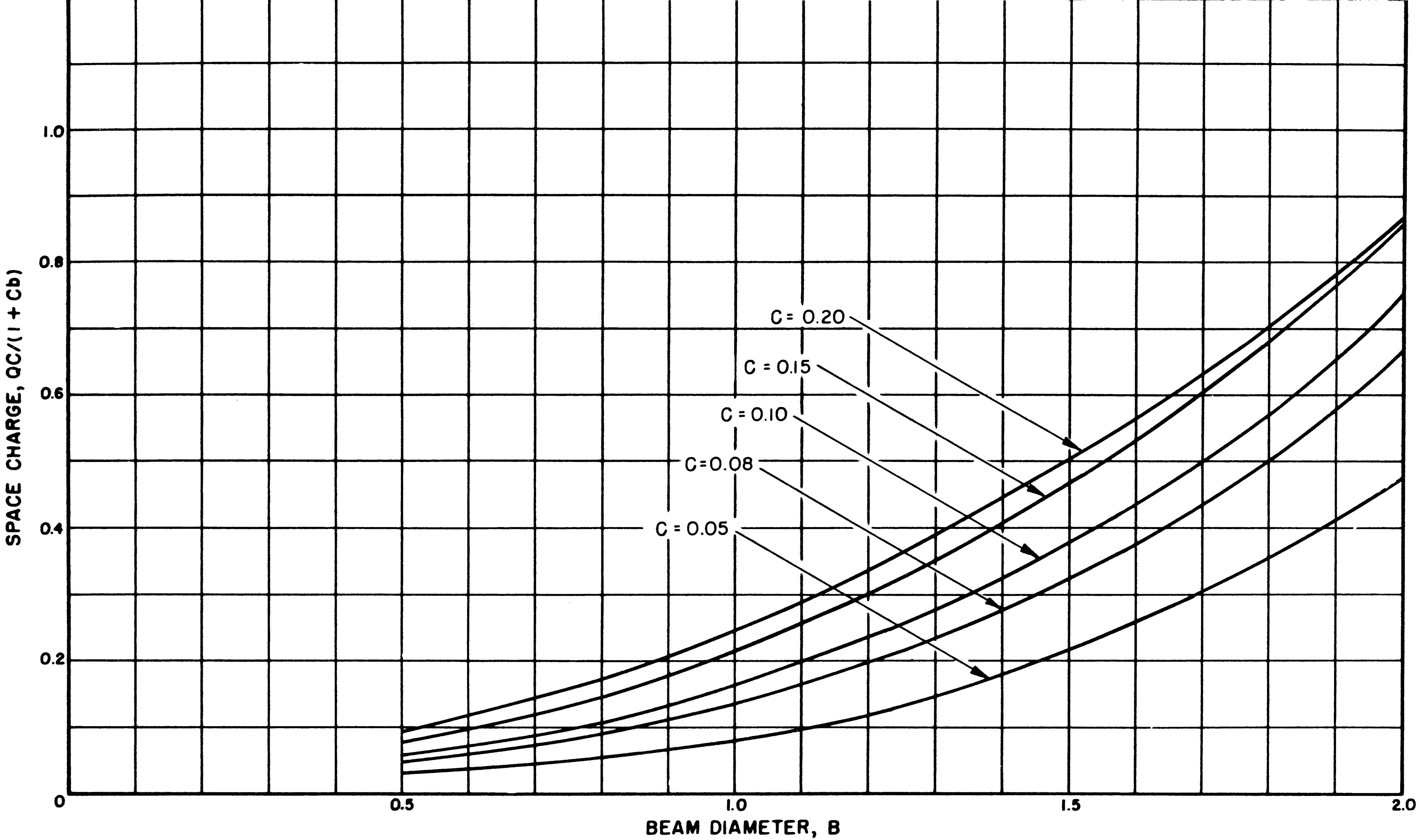


FIG. C.193 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
(a'/b' = 1.4, V_0 = 1 KV, DLF = 90 %)

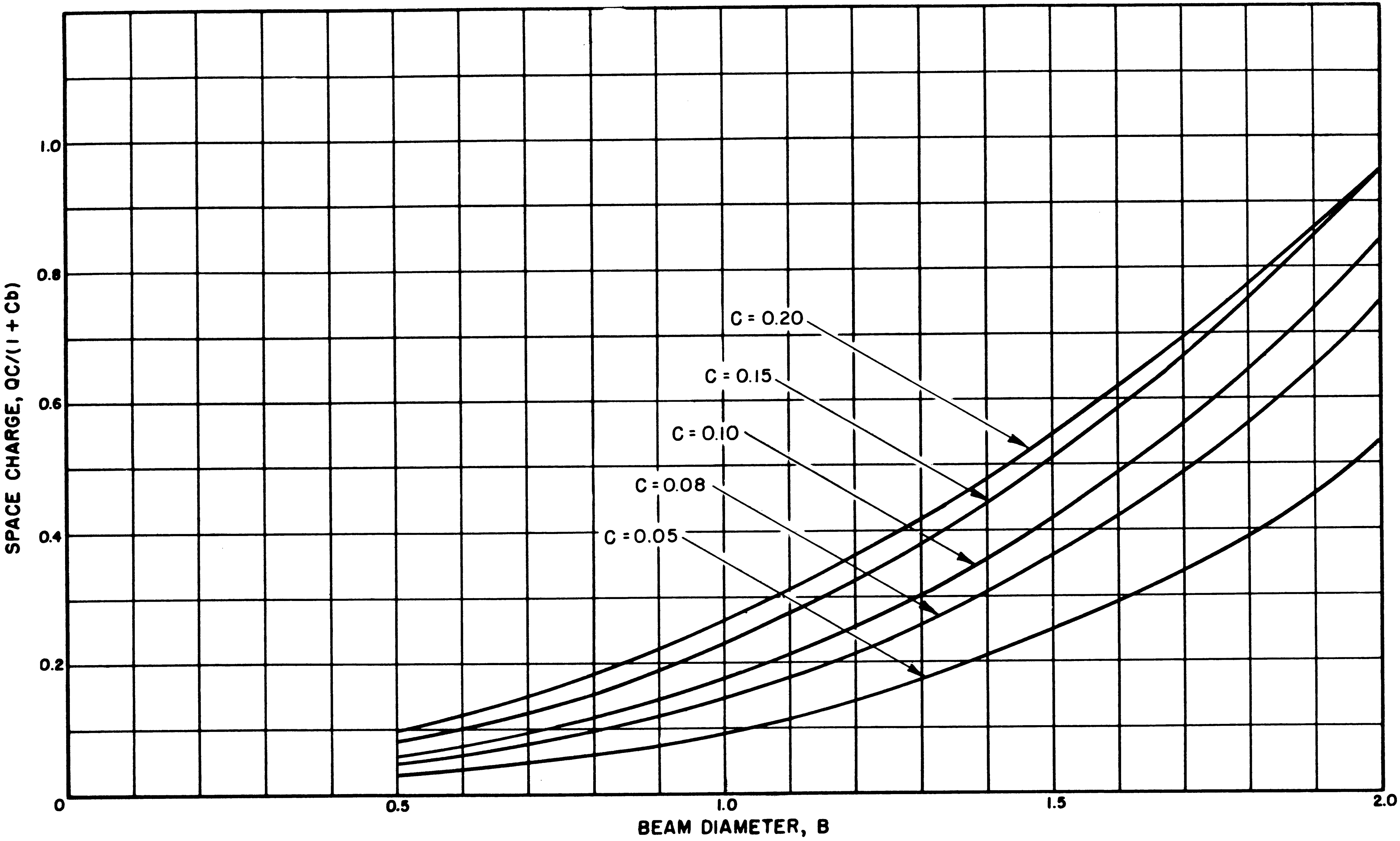


FIG. C.194 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER. ($a'/b' = 1.4$, $V_0 = 2$ KV, DLF = 90 %)

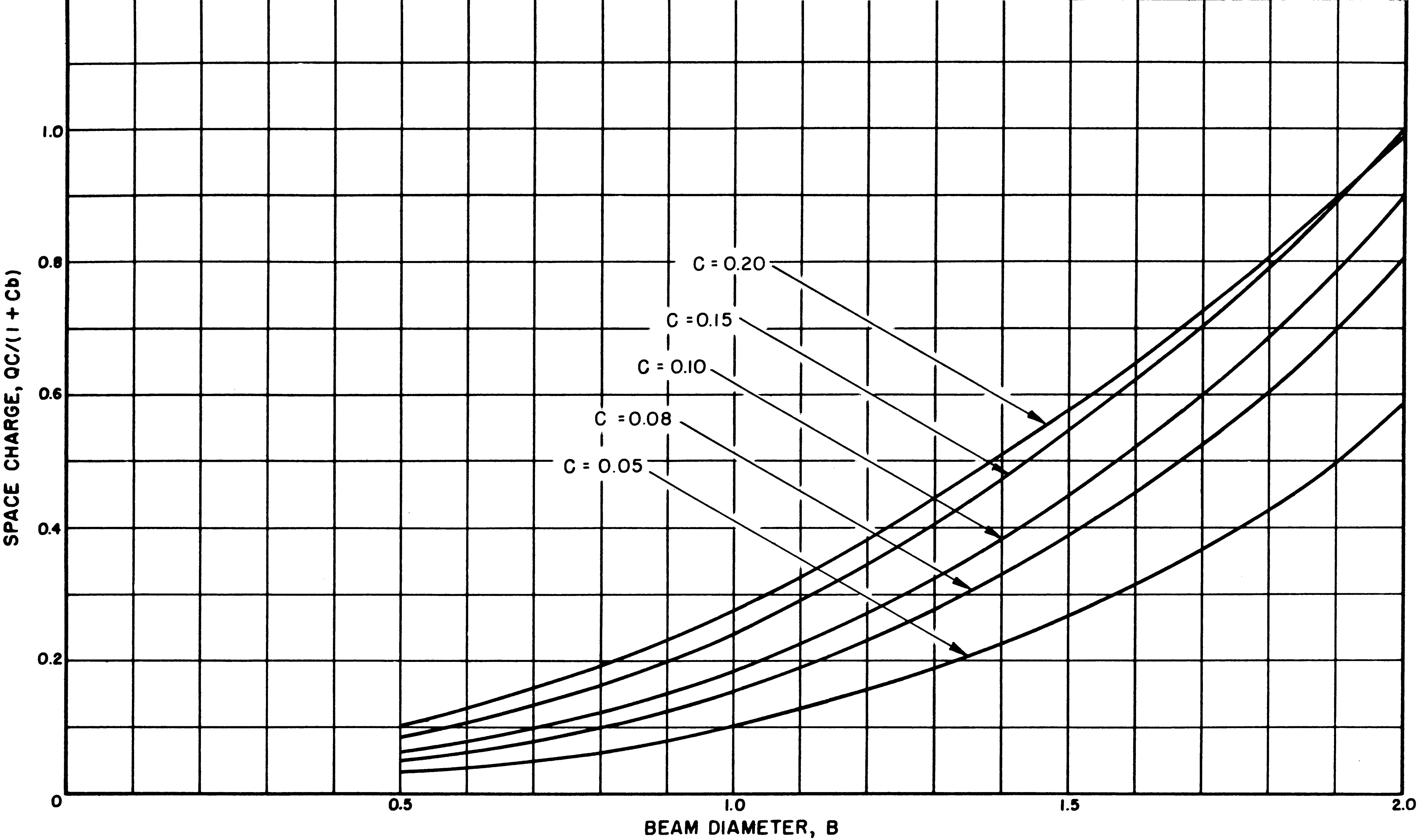


FIG. C.195 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.4$, $V_0 = 3$ KV, DLF = 90 %)

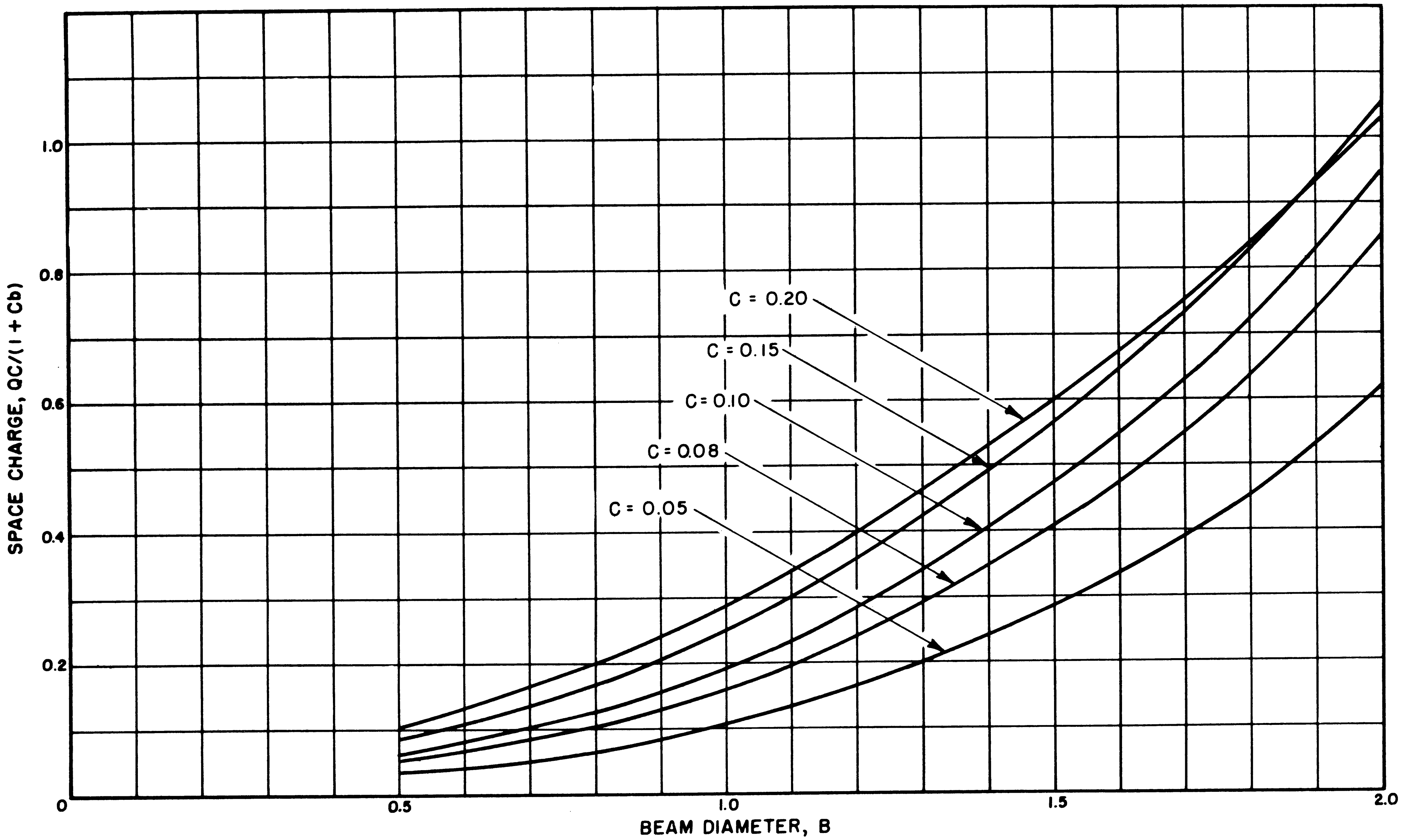


FIG. C.196 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.4$, $V_0 = 4$ KV, DLF = 90 %)

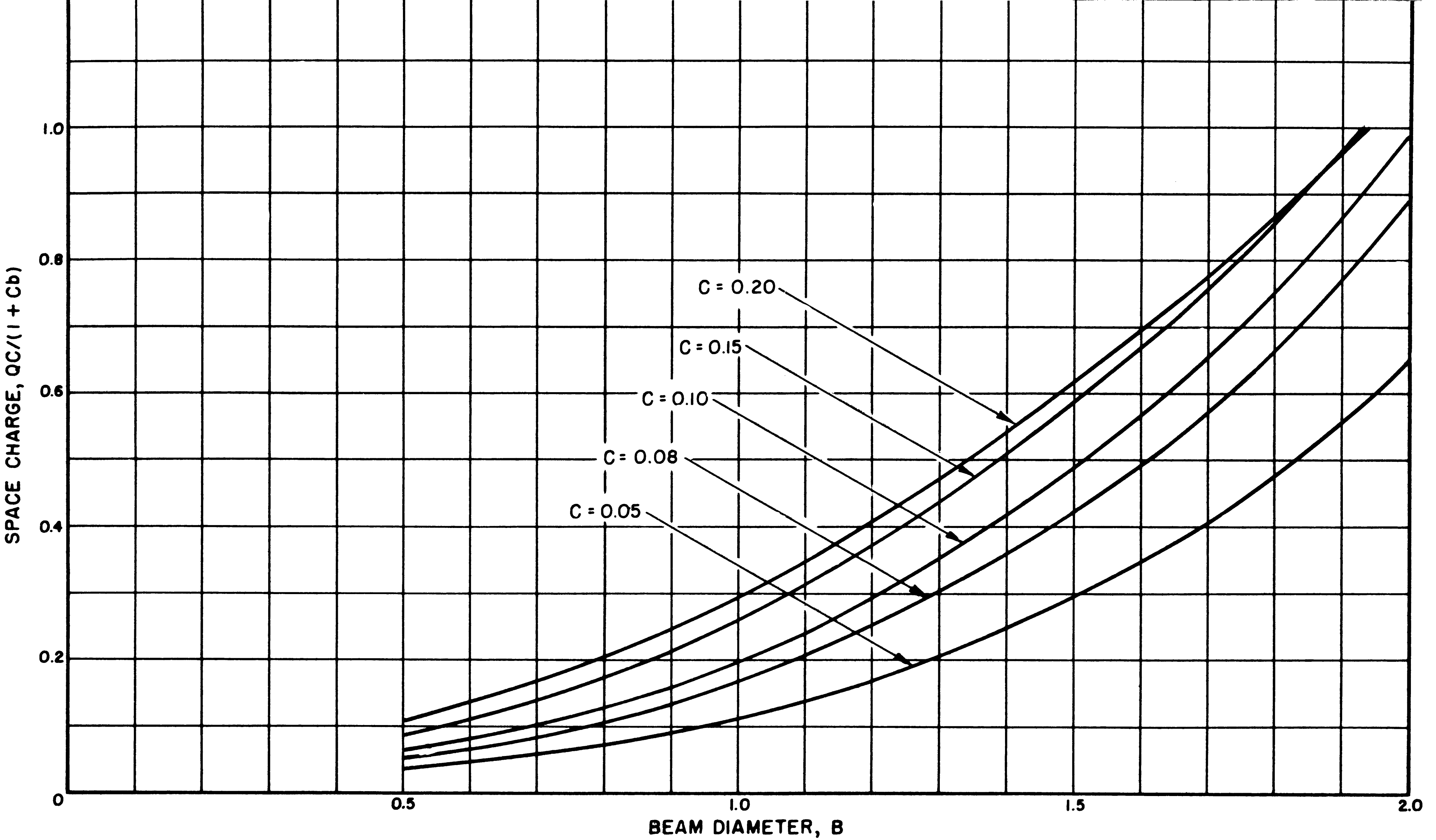


FIG. C.197 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.4$, $V_0 = 5$ KV, DLF = 90 %)

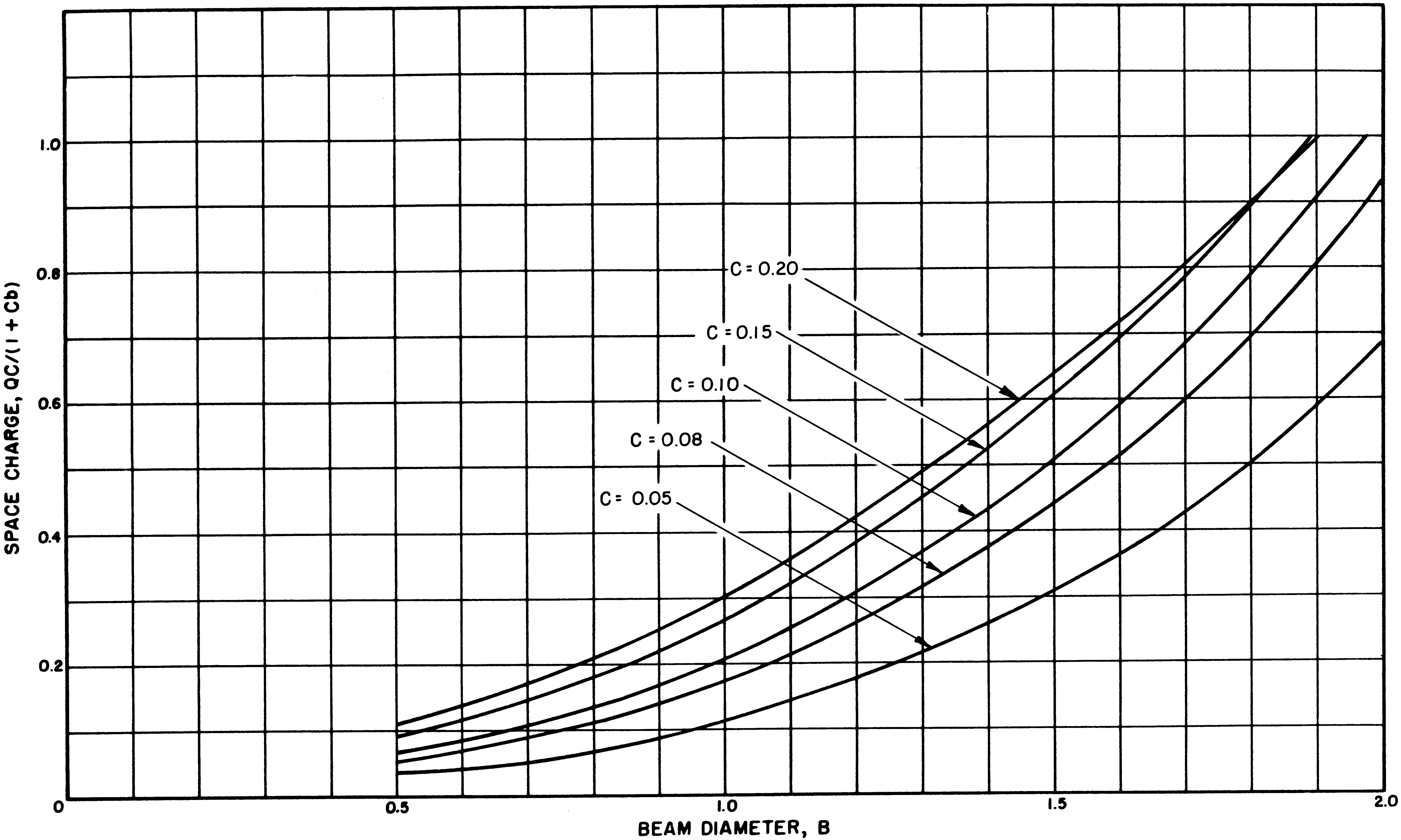


FIG. C.198 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.4$, $V_0 = 6$ KV, DLF = 90 %)

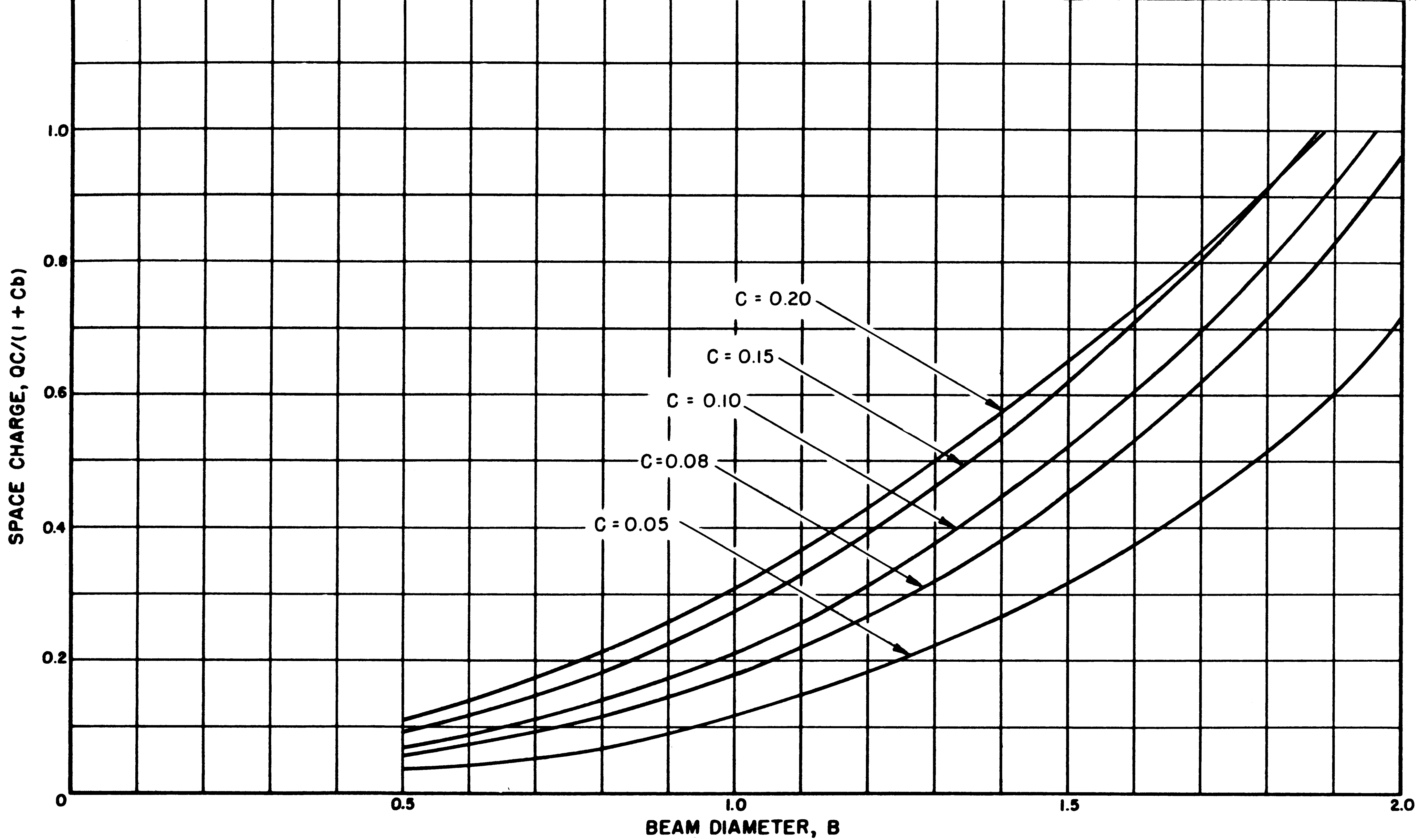


FIG. C.199 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.4$, $V_0 = 7$ KV, DLF = 90 %)

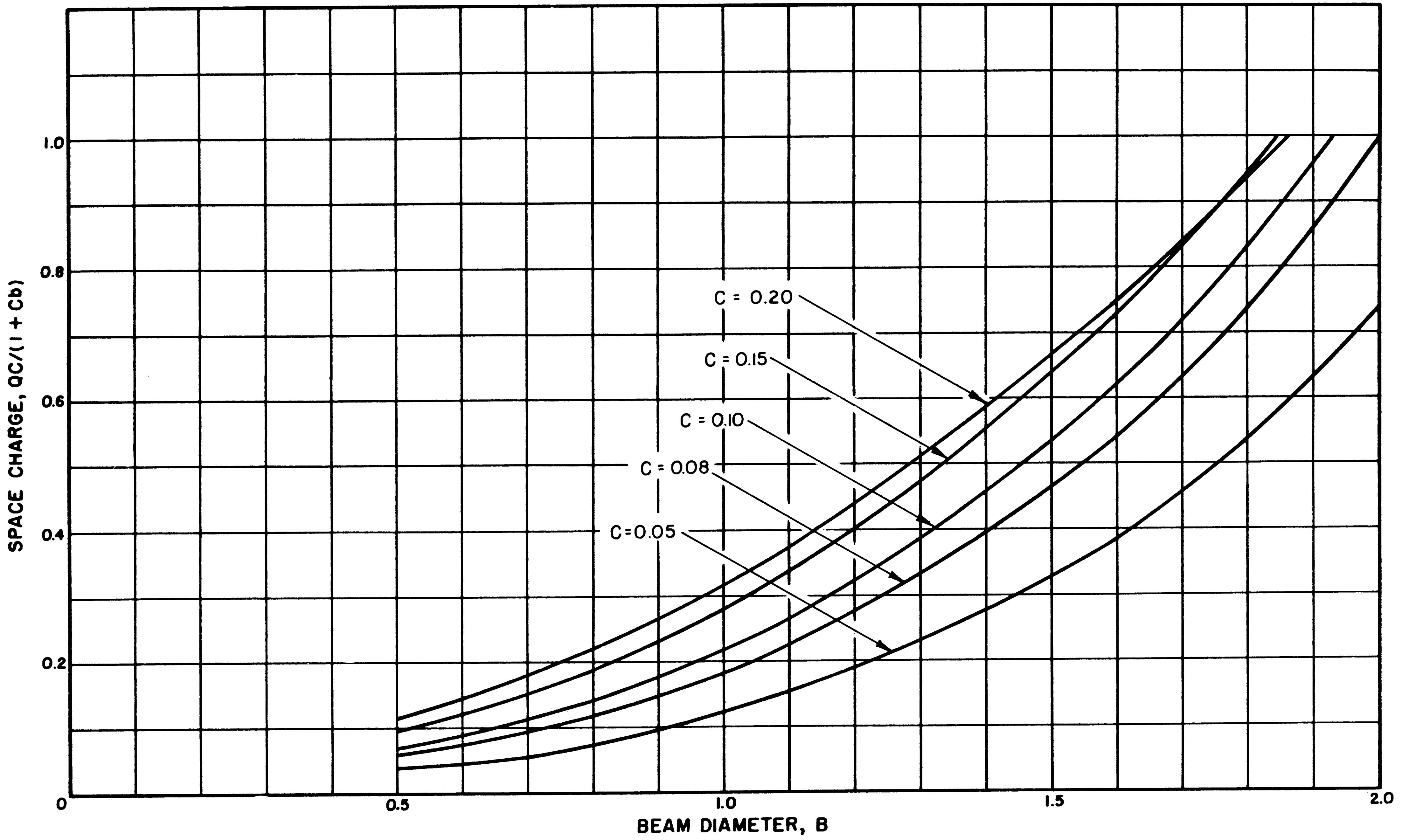


FIG. C.200 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.4$, $V_0 = 8$ KV, DLF = 90 %)

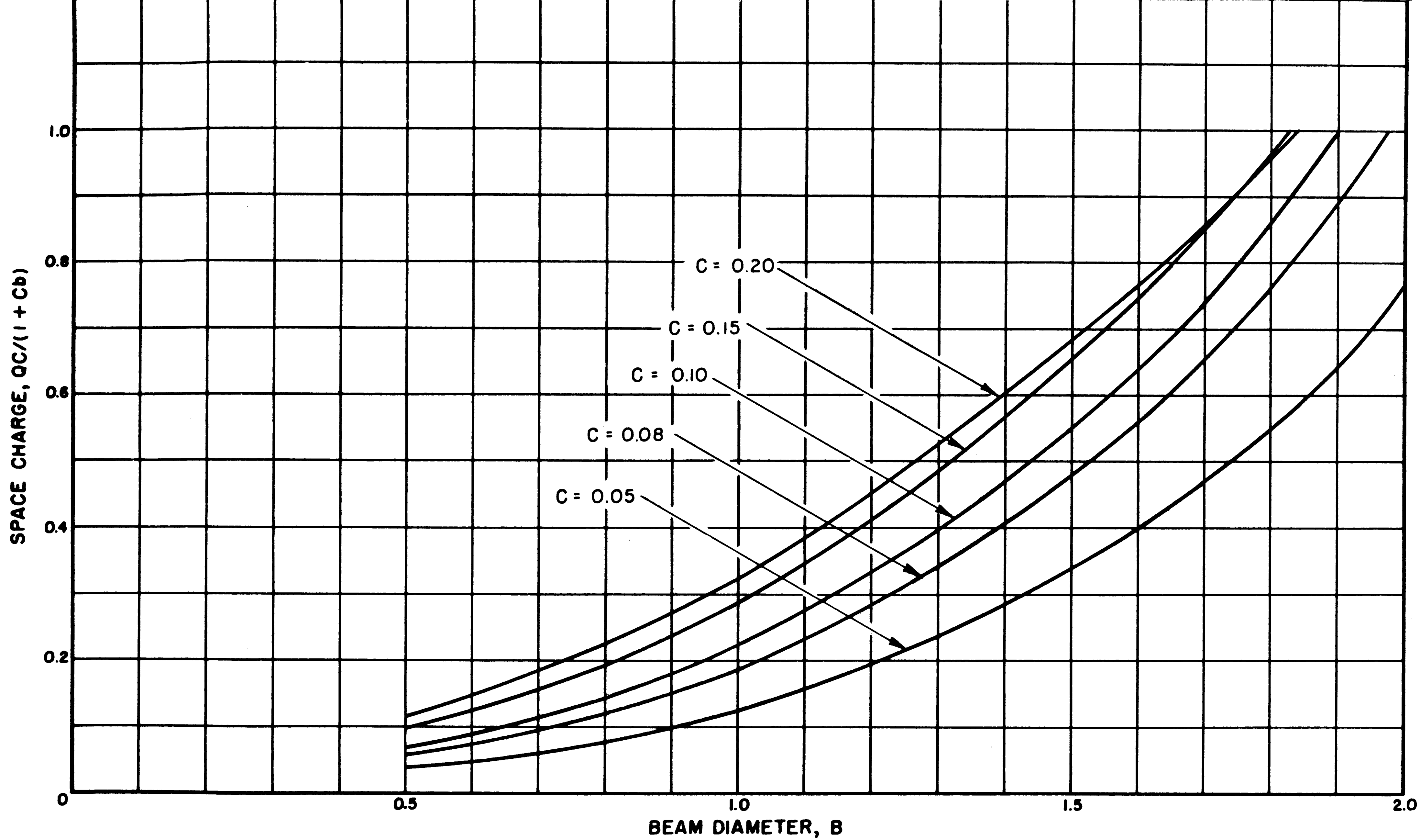


FIG. C.201 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.4$, $V_0 = 9$ KV, DLF = 90 %)

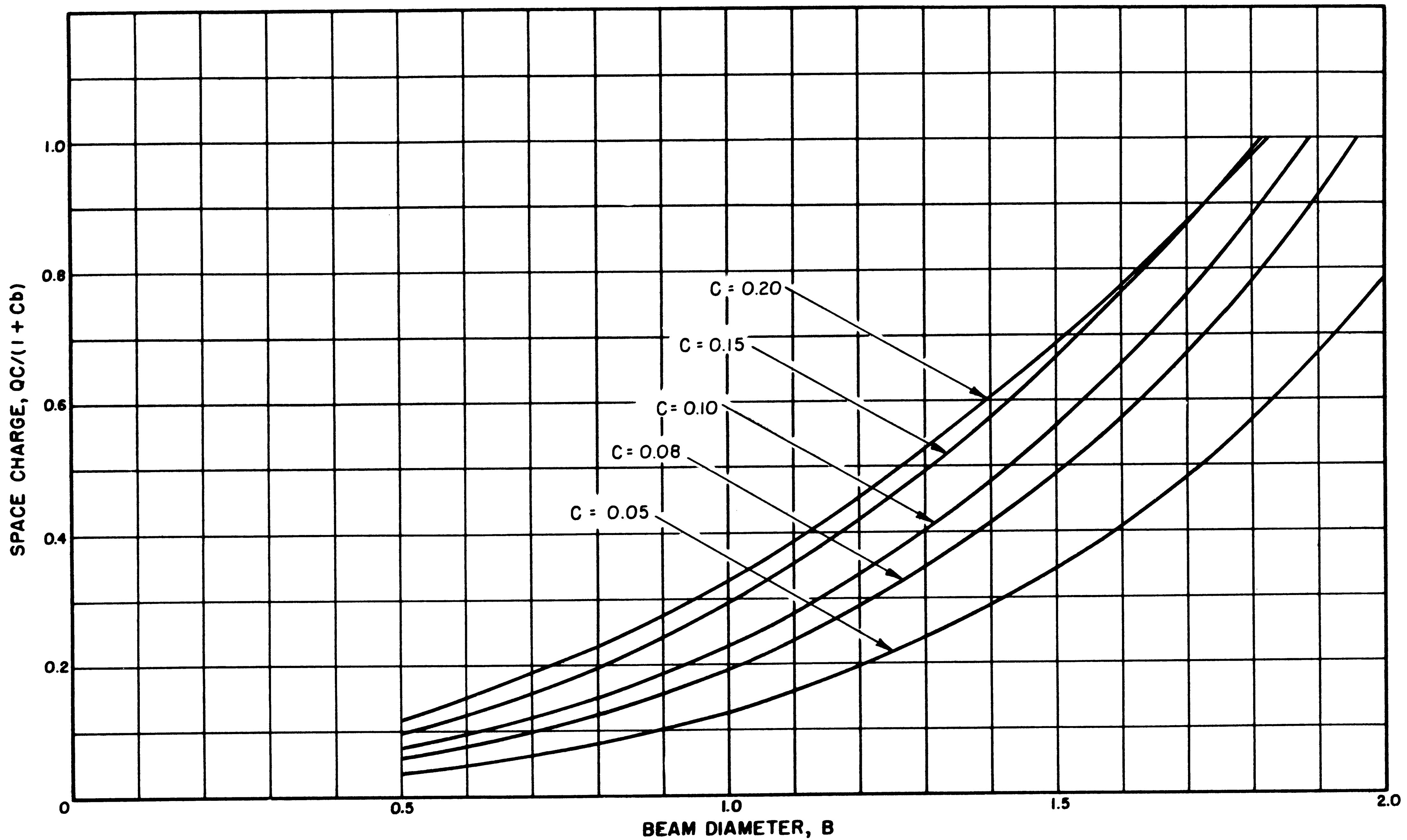


FIG. C.202 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.4$, $V_0 = 10$ KV, DLF = 90 %)

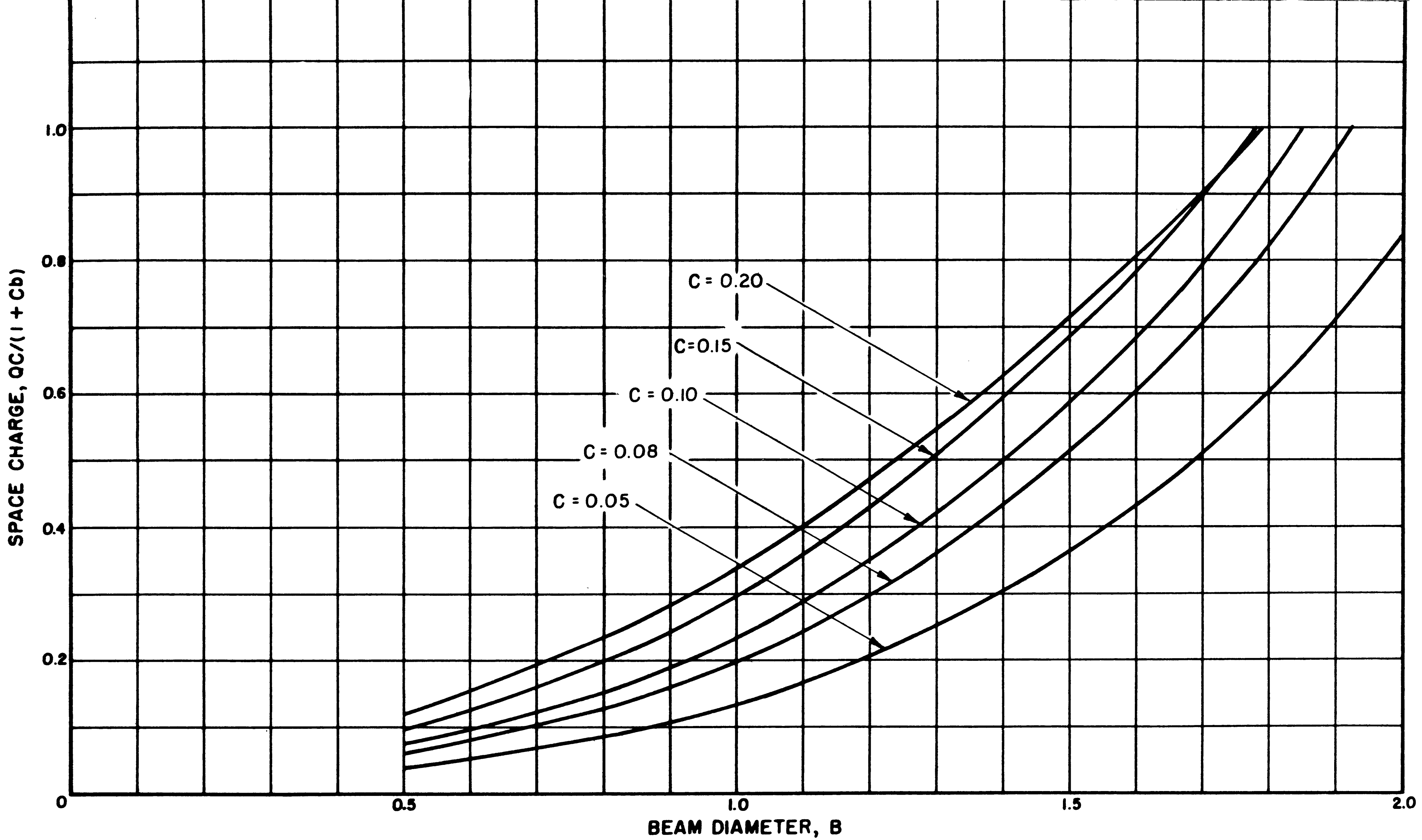


FIG. C.203 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.4$, $V_0 = 12$ KV, DLF = 90 %)

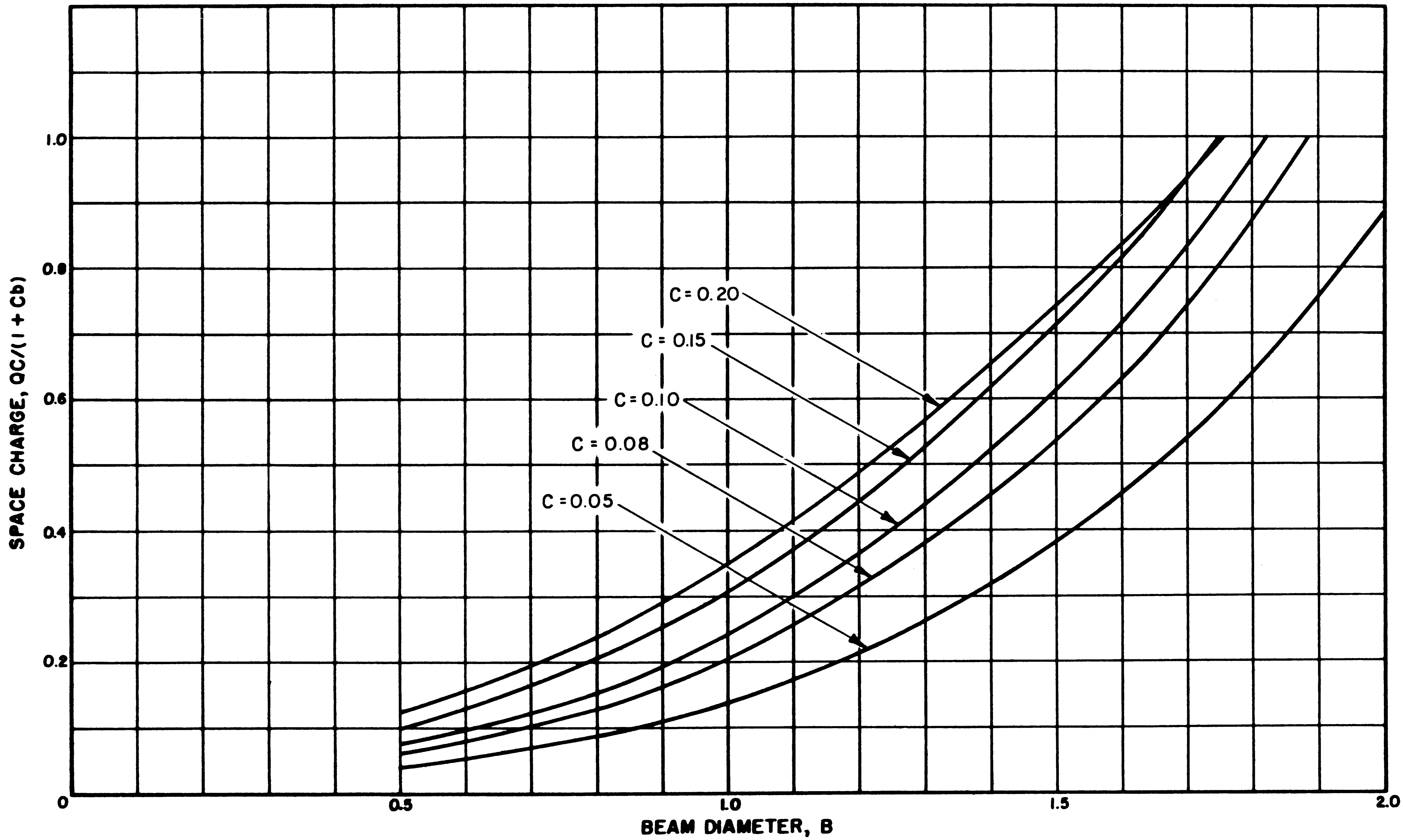


FIG. C.204 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.4$, $V_0 = 14$ KV, DLF = 90 %)

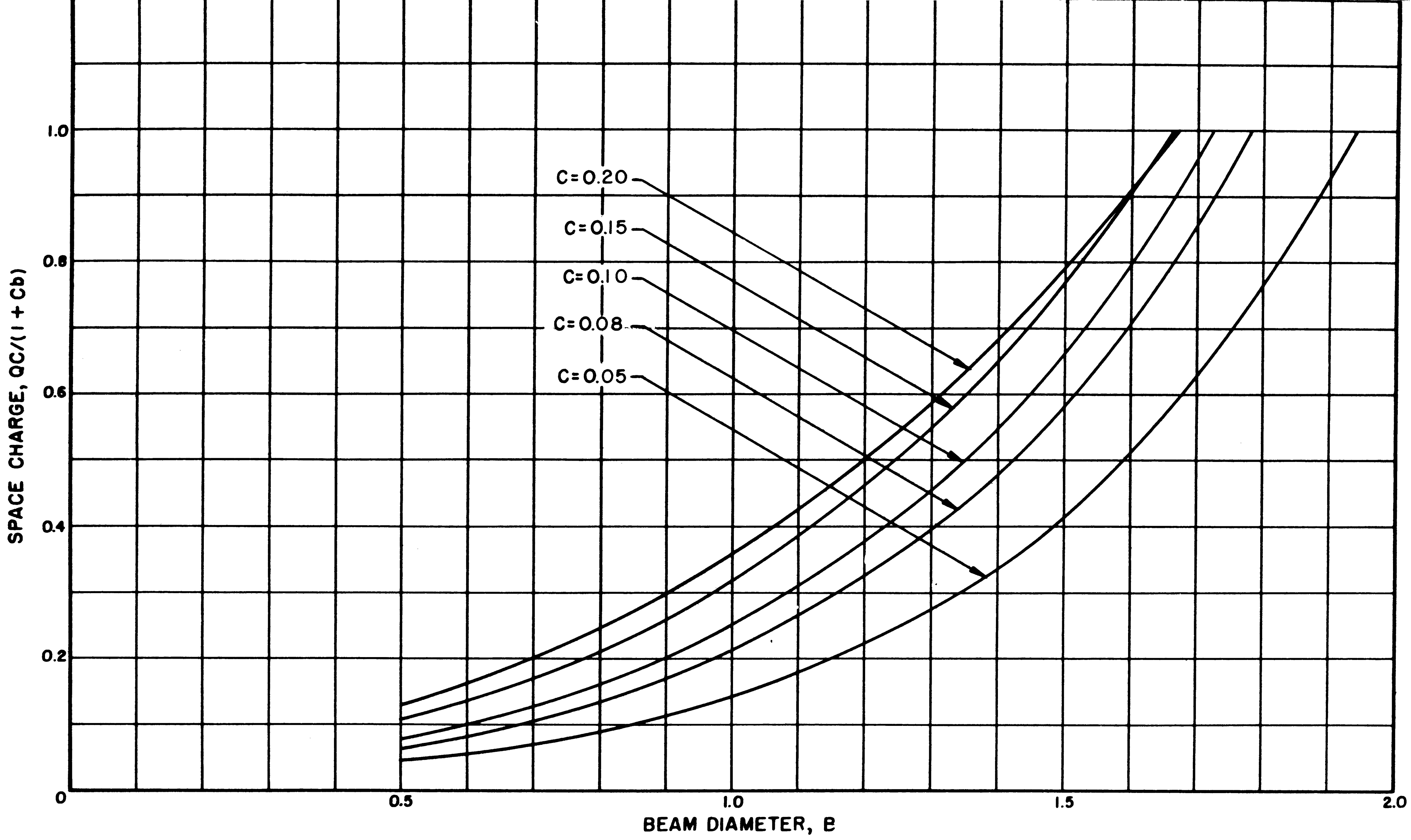


FIG. C.205 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.6$, $V_0 = 1$ KV, DLF = 90%)

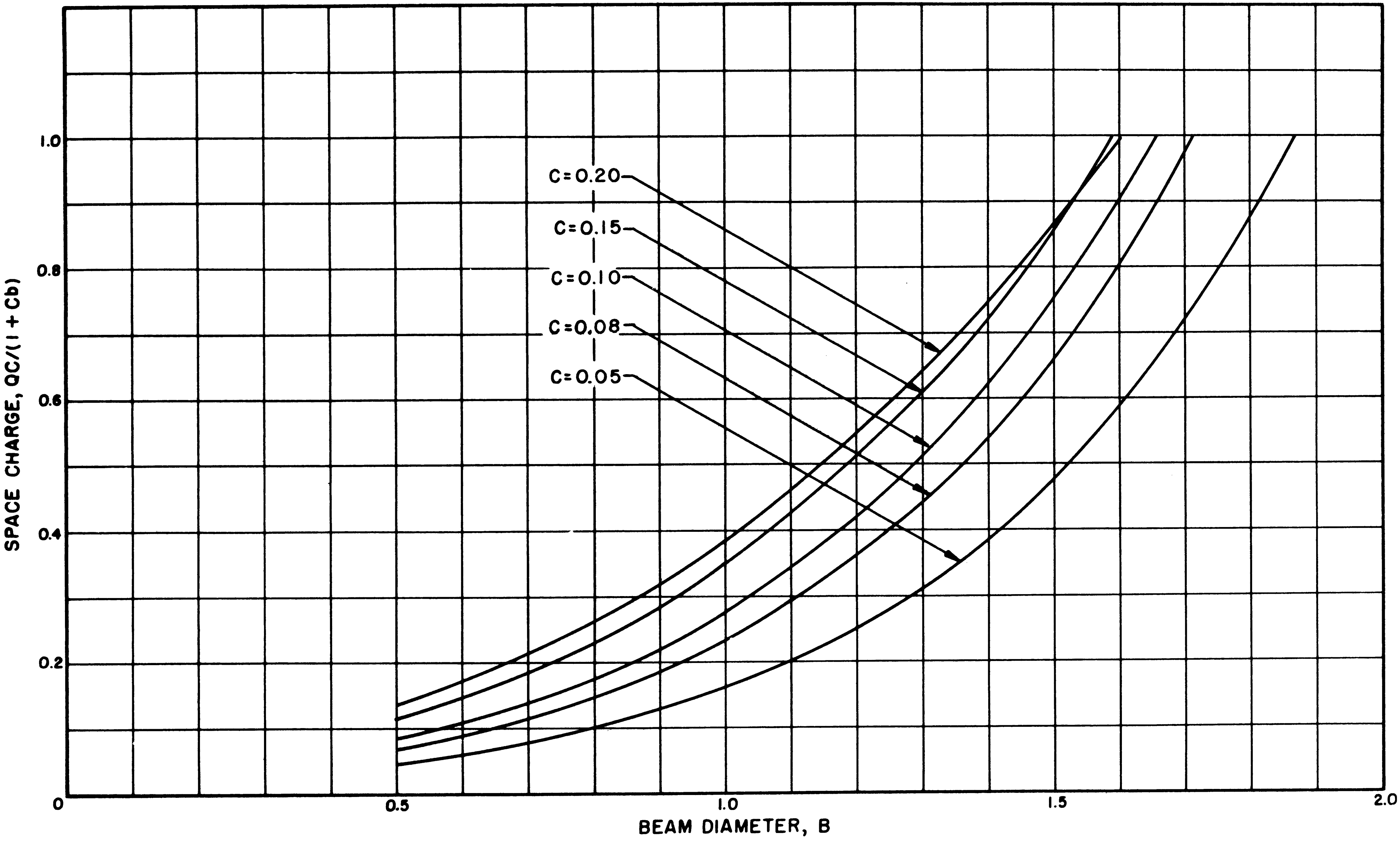


FIG. C.206 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.6$, $V_0 = 2$ KV. DLF = 90 %)

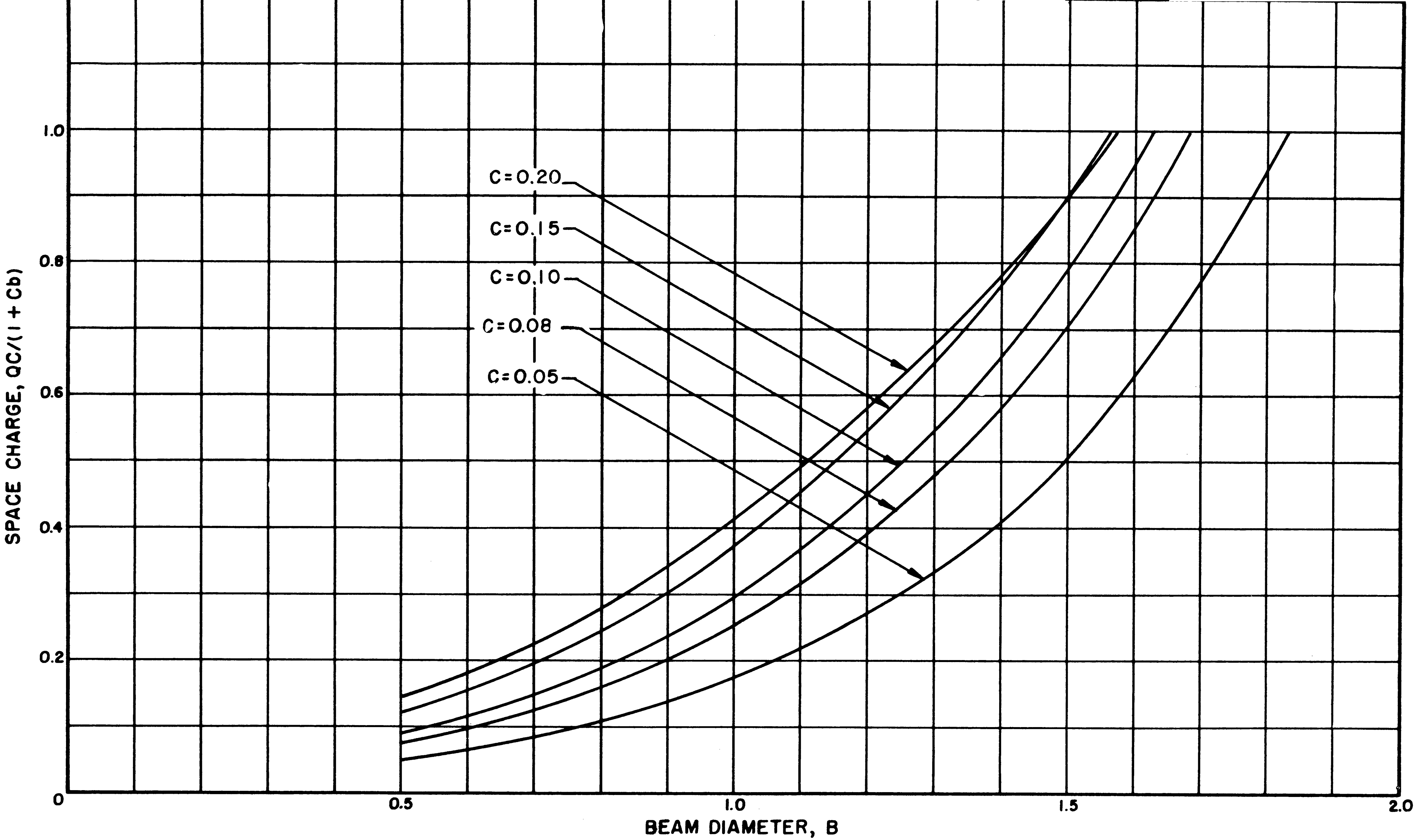


FIG. C.207 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.6$, $V_0 = 3$ KV, DLF = 90%)

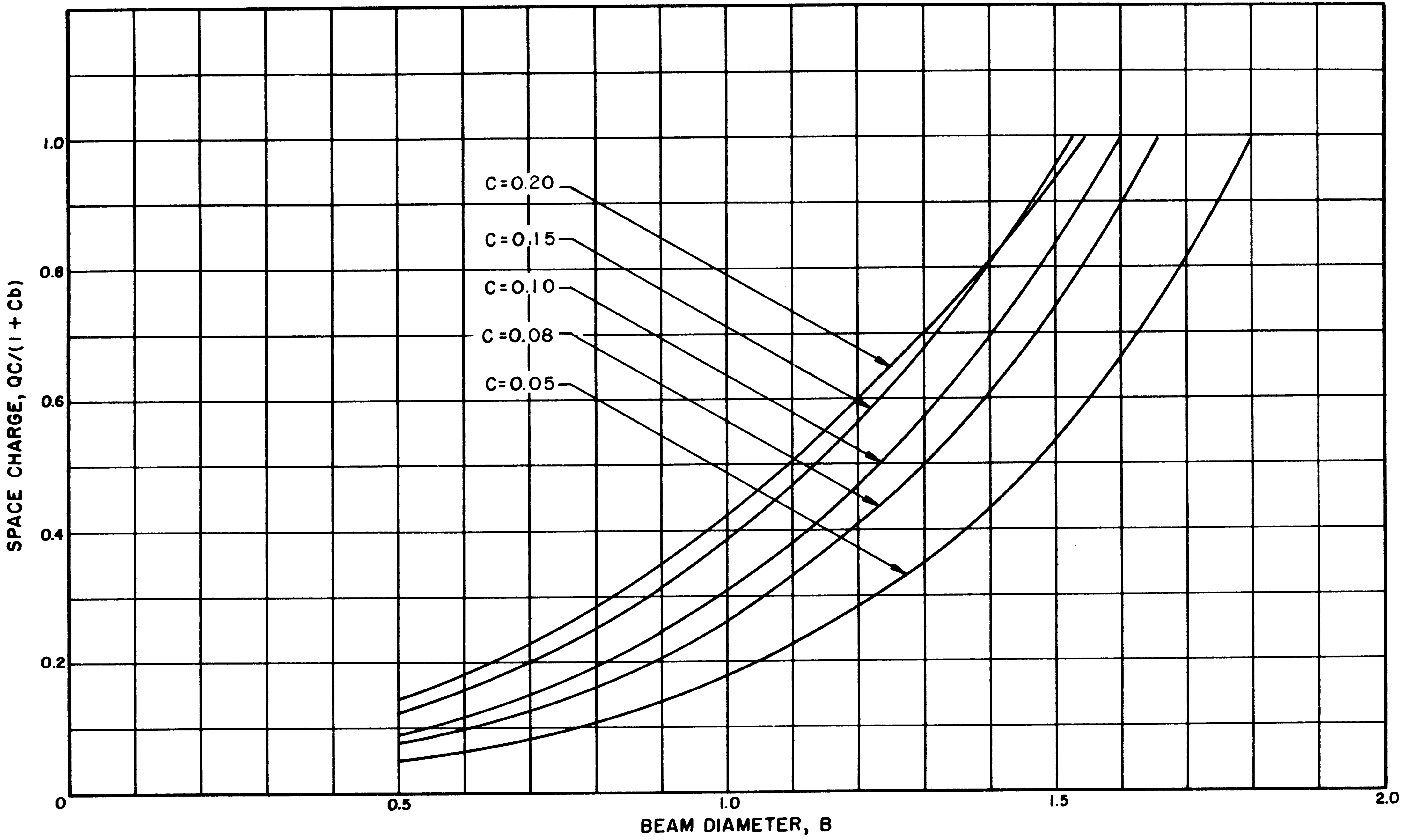


FIG. C.208 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.6$, $V_0 = 4$ KV, DLF = 90%)

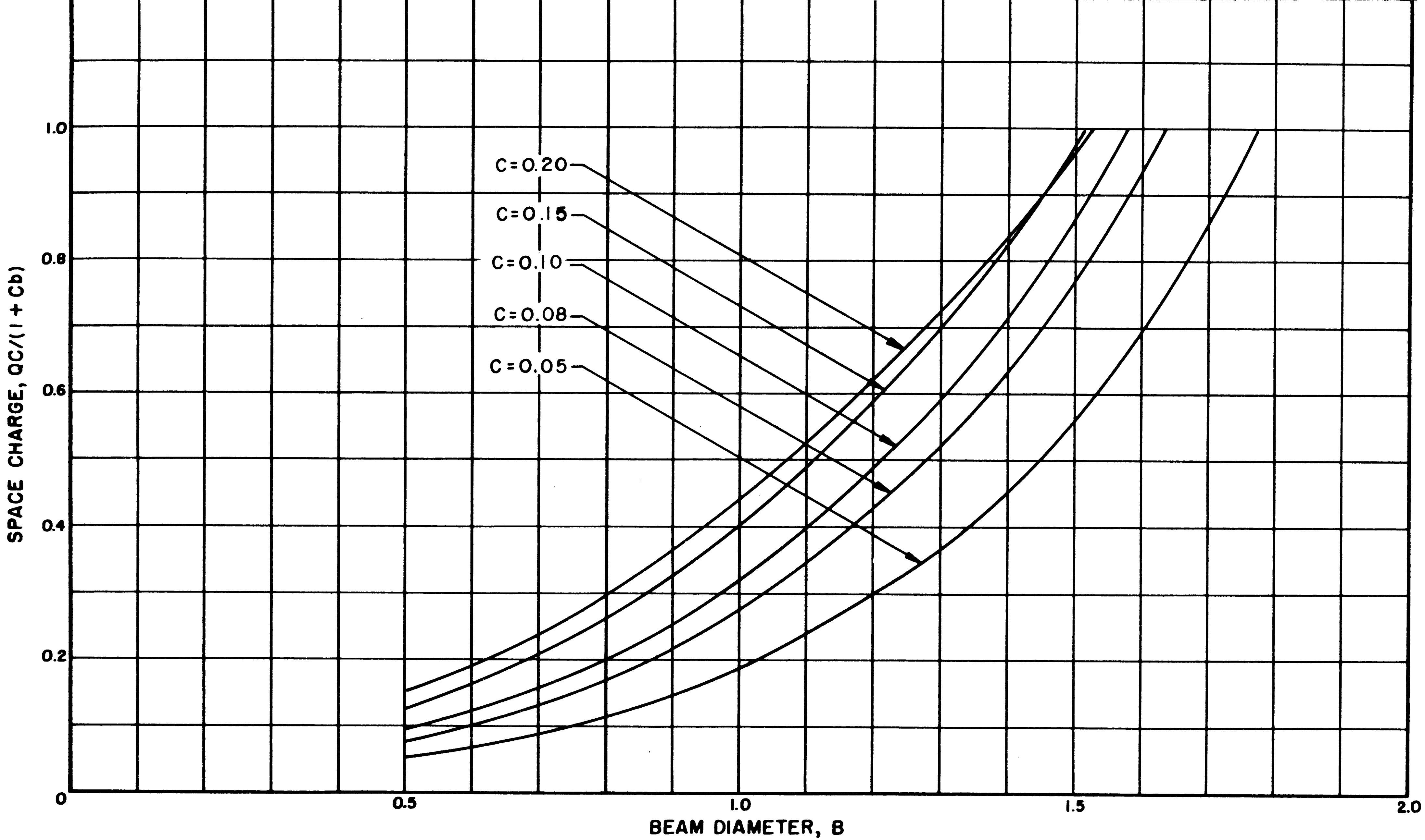


FIG. C.209 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.6$, $V_0 = 5$ KV, DLF = 90%)

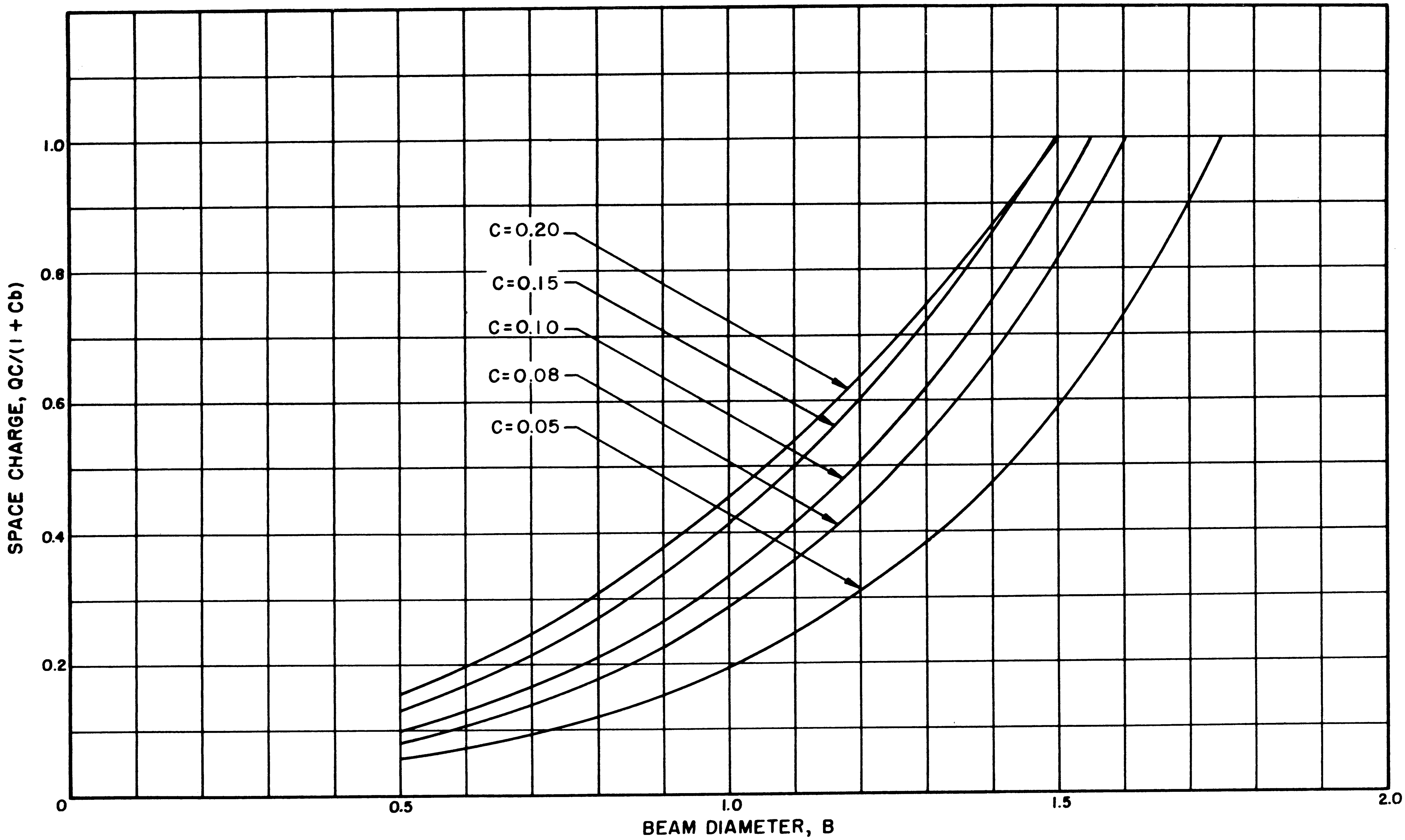


FIG. C.210 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.6$, $V_0 = 6$ KV, DLF = 90%)

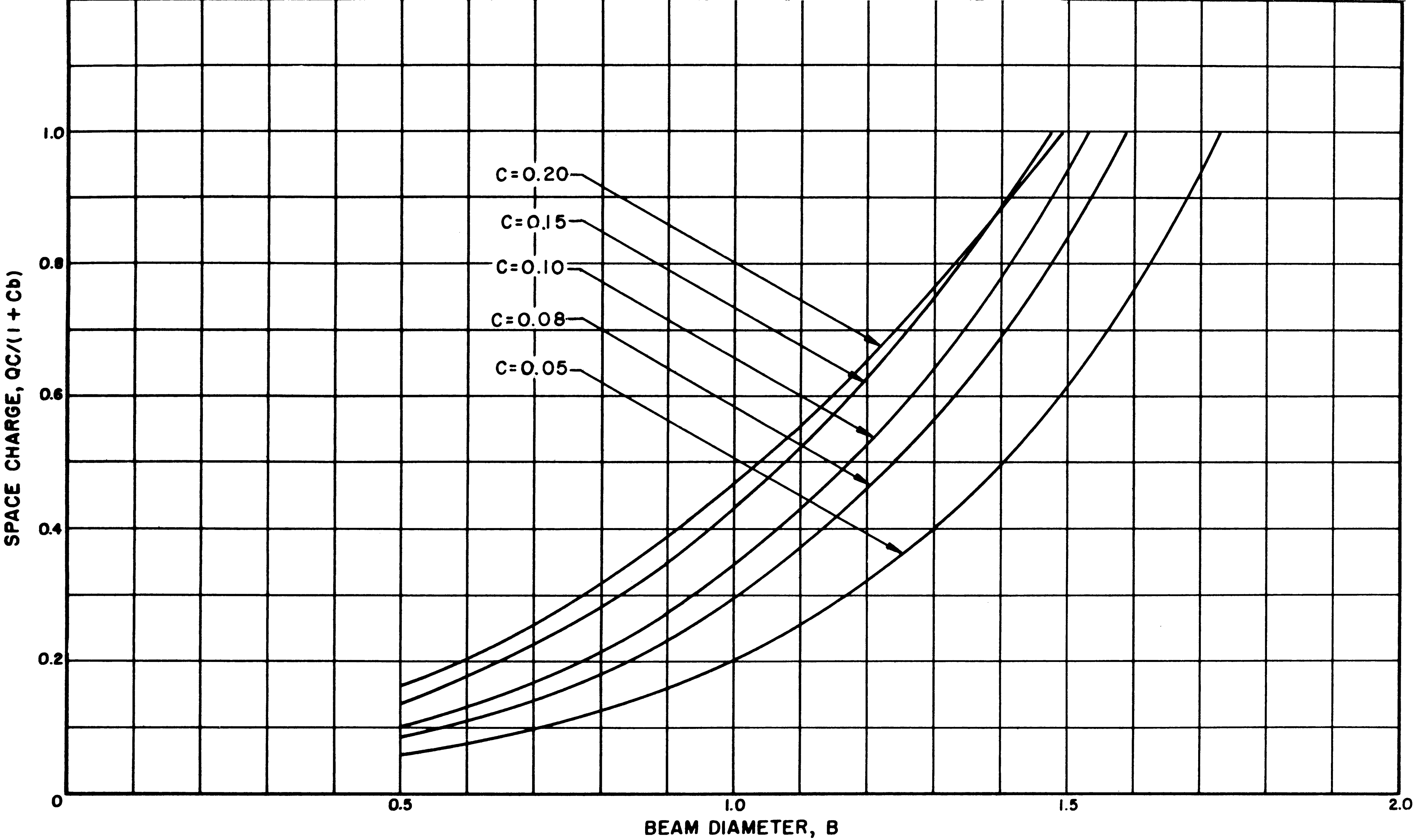


FIG. C.211 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.6$, $V_0 = 7$ KV, DLF = 90%)

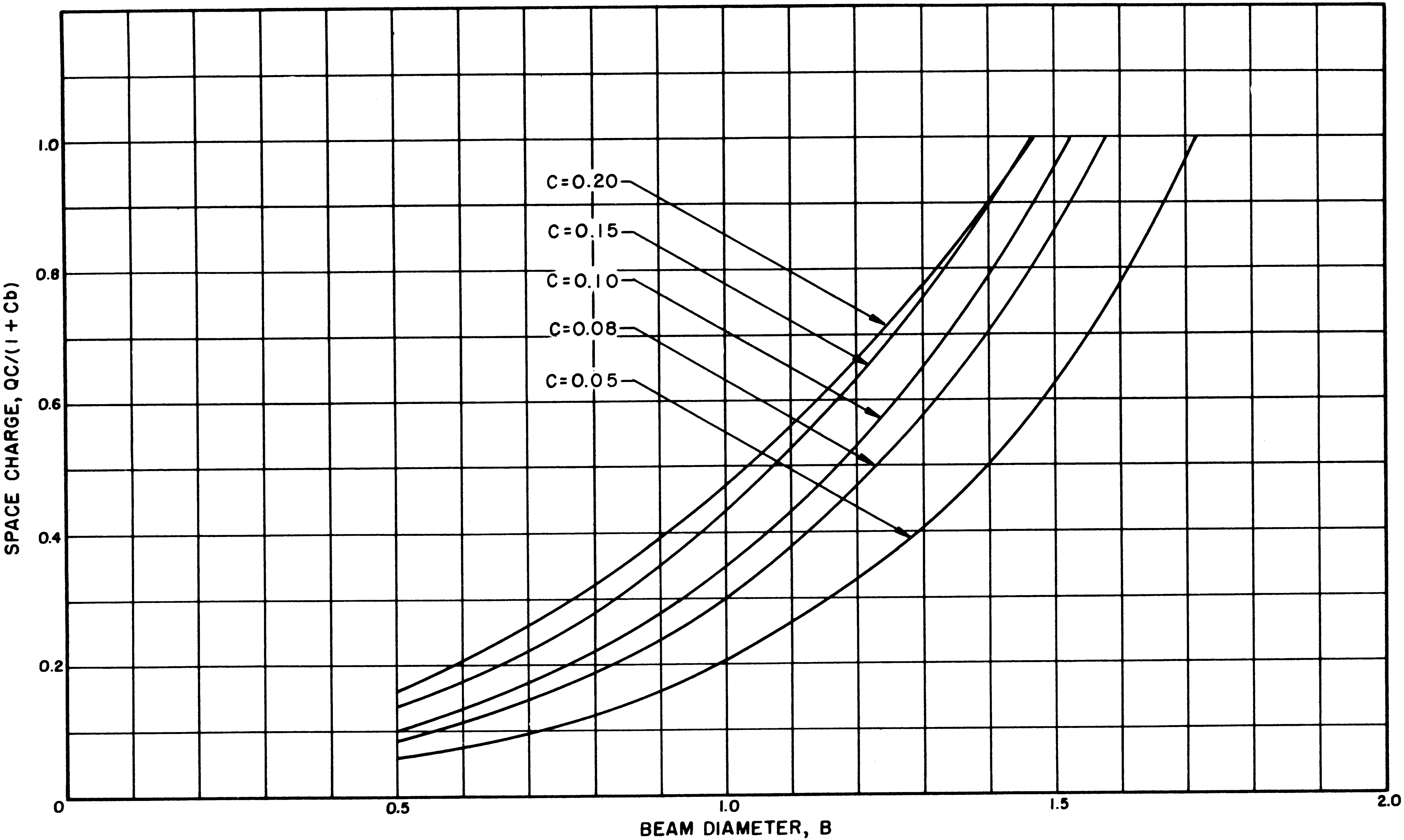


FIG. C.212 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' \doteq 1.6$, $V_0 = 8$ KV, DLF = 90%)

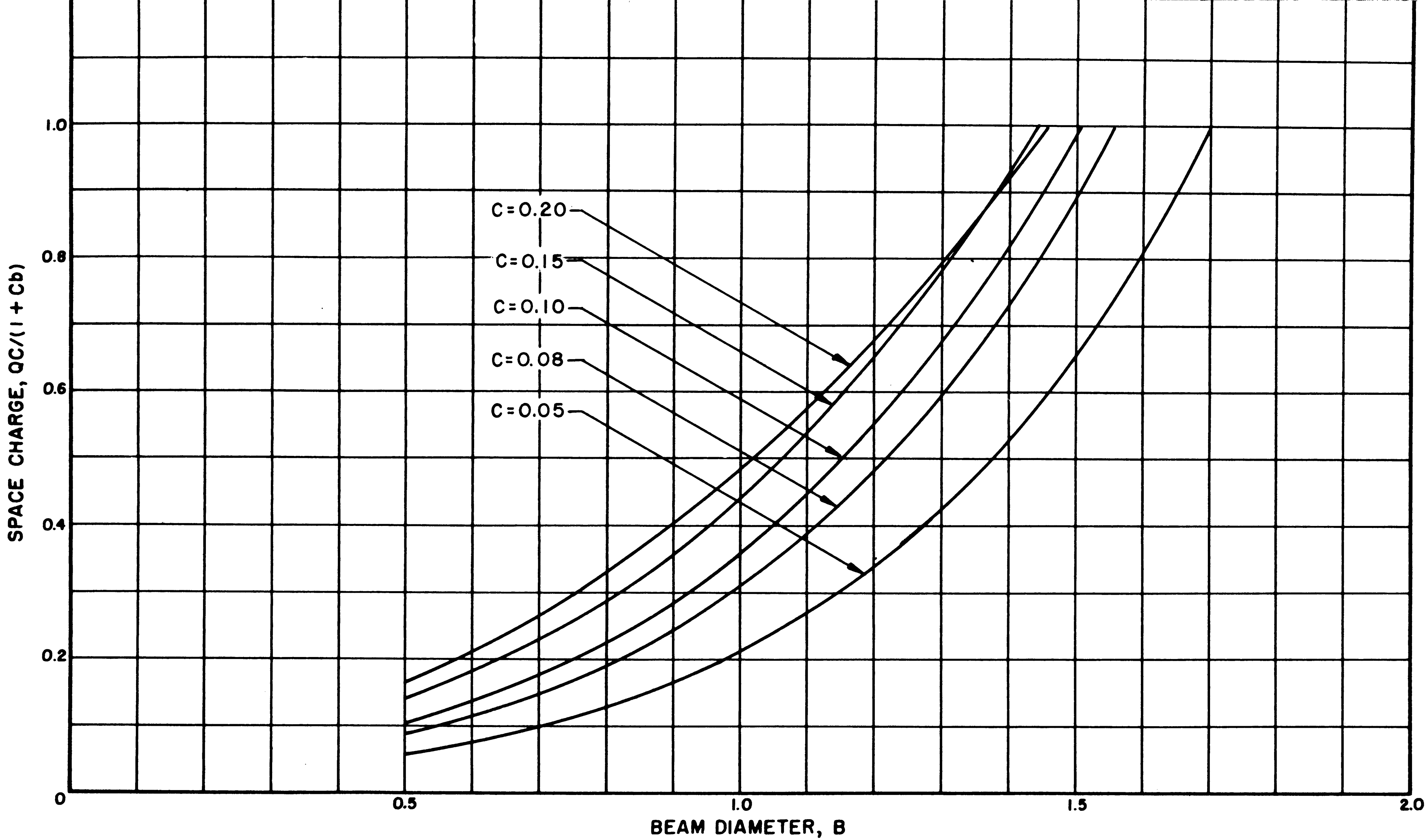


FIG. C.213 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER. ($a'/b' = 1.6$, $V_0 = 9$ KV, DLF = 90%)

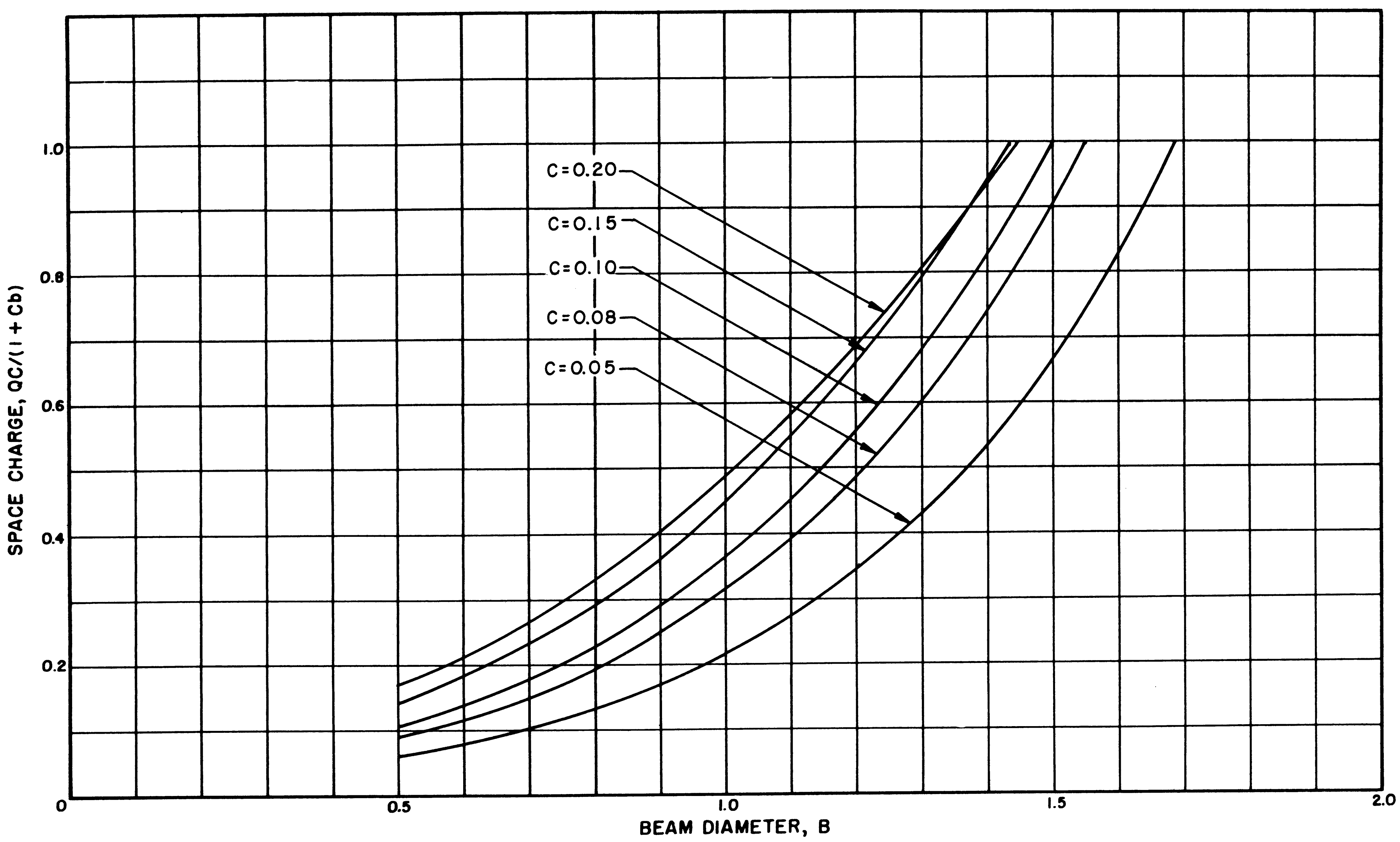


FIG. C.214 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.6$, $V_0 = 10$ KV, DLF = 90%)

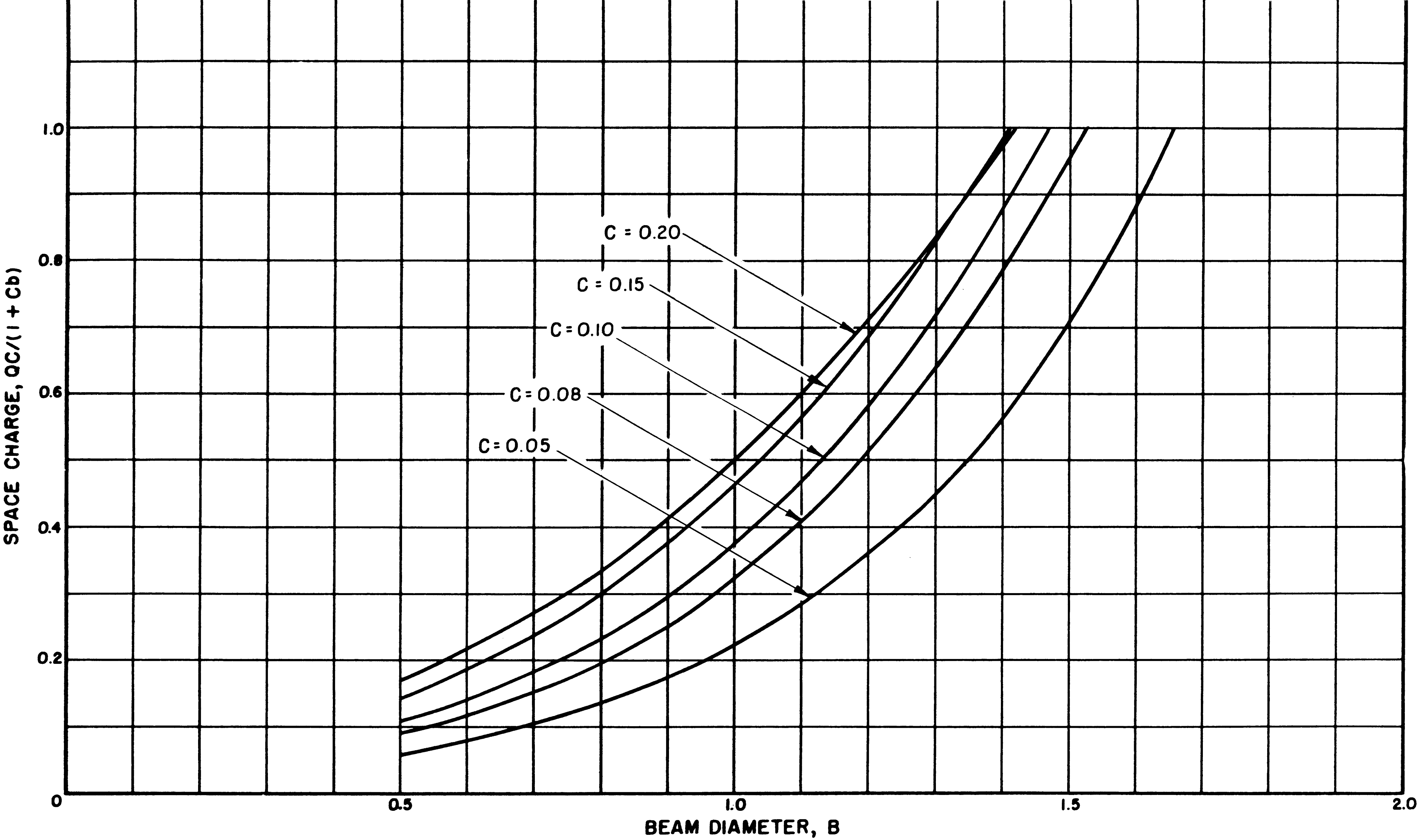


FIG. C.215 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.6$, $V_0 = 12$ KV, DLF = 90 %)

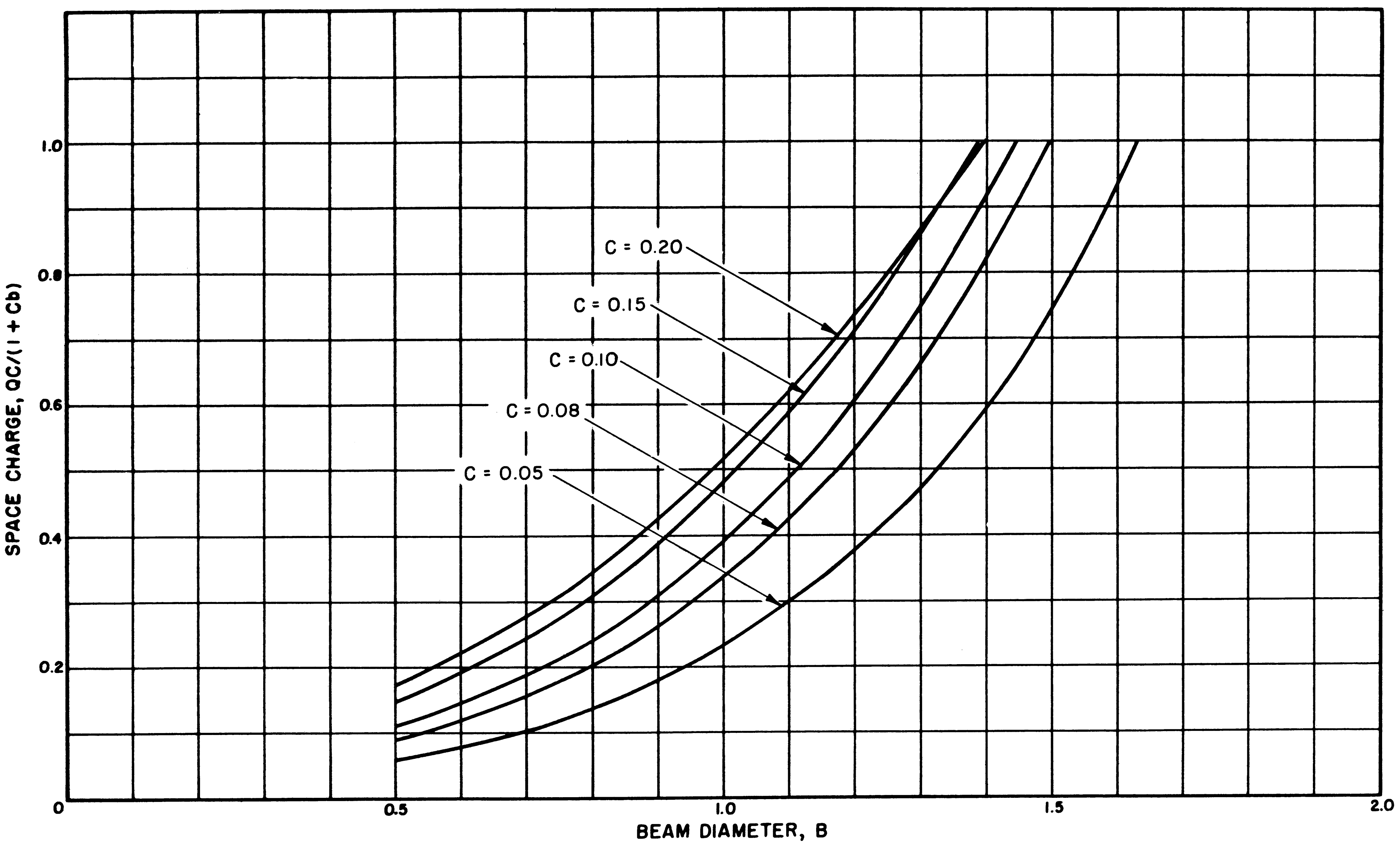


FIG. C.216 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.6$, $V_0 = 14$ KV. DLF = 90 %)

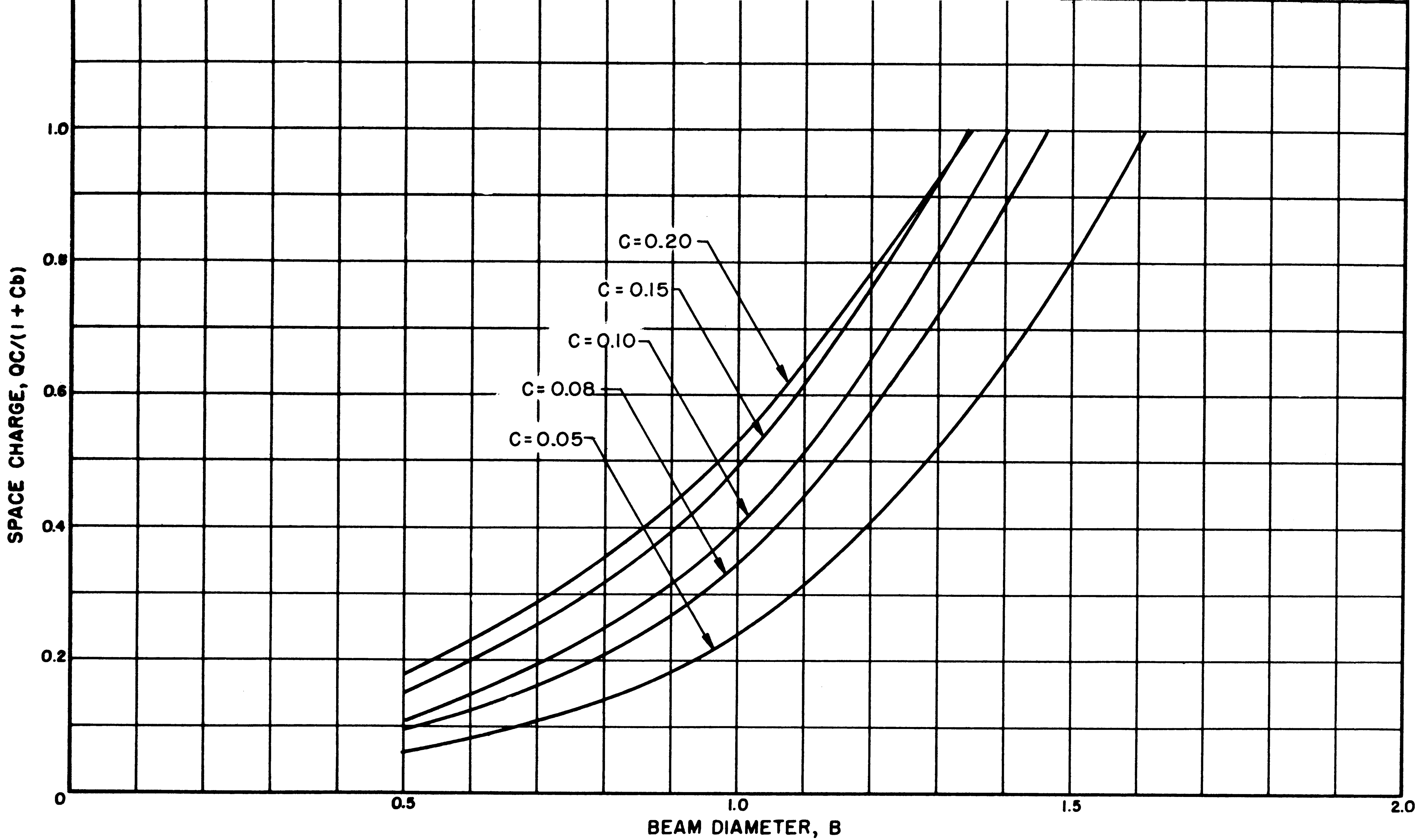


FIG. C.217 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.8$, $V_0 = 1$ KV, DLF = 90 %)

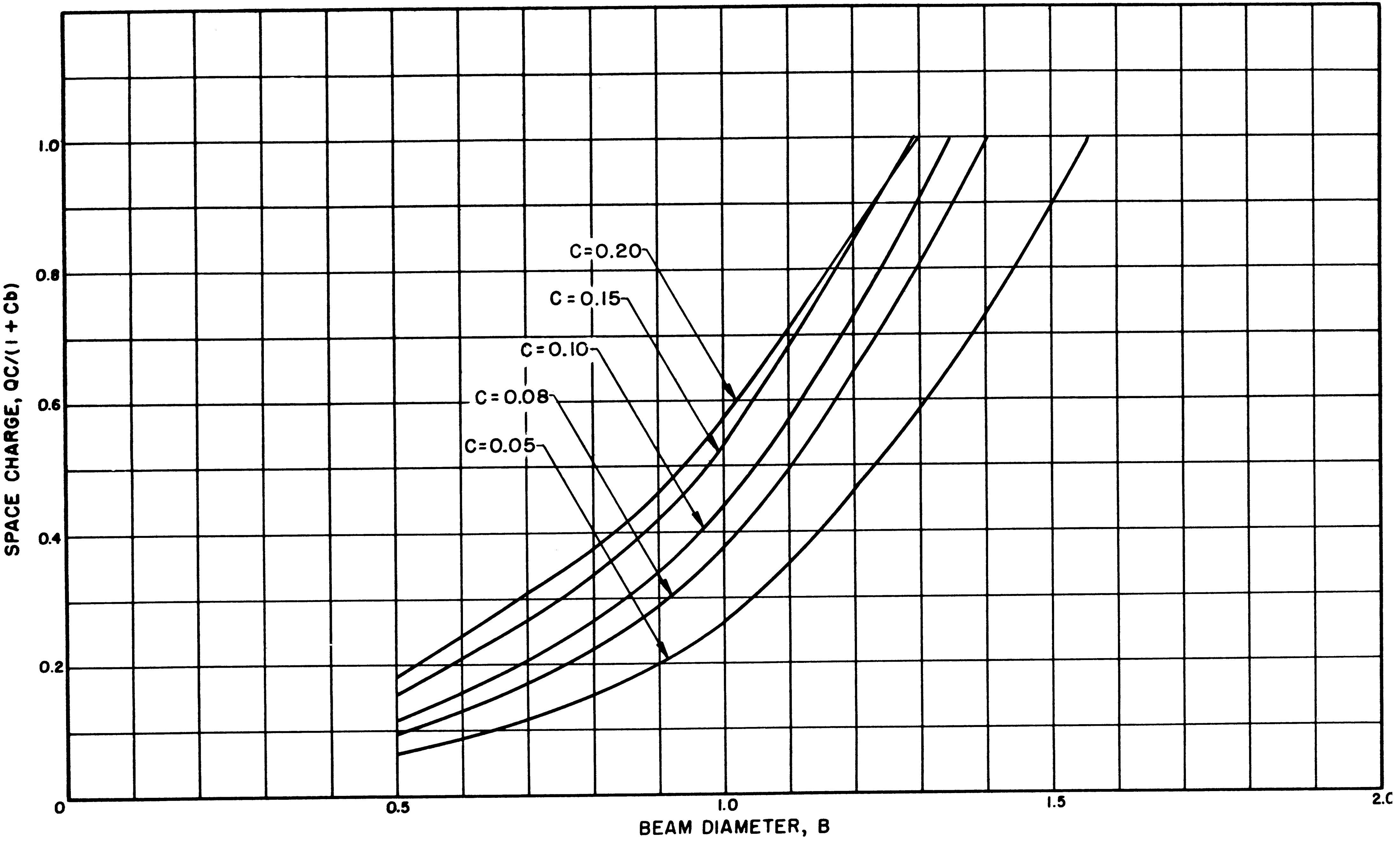


FIG. C.218 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.8$, $V_0 = 2KV$, DLF = 90%)

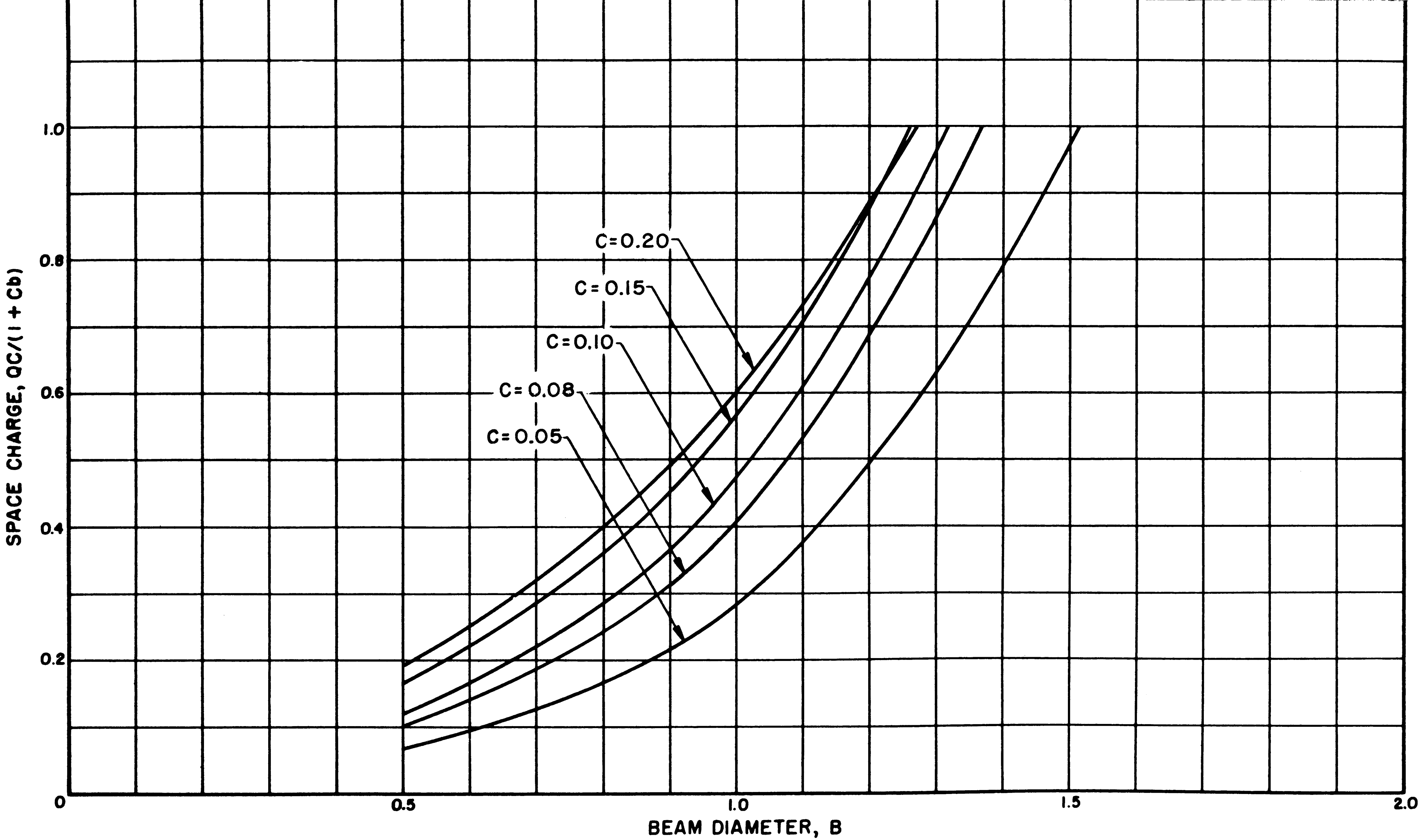


FIG. C.219 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.8$, $V_0 = 3$ KV, DLF = 90 %)

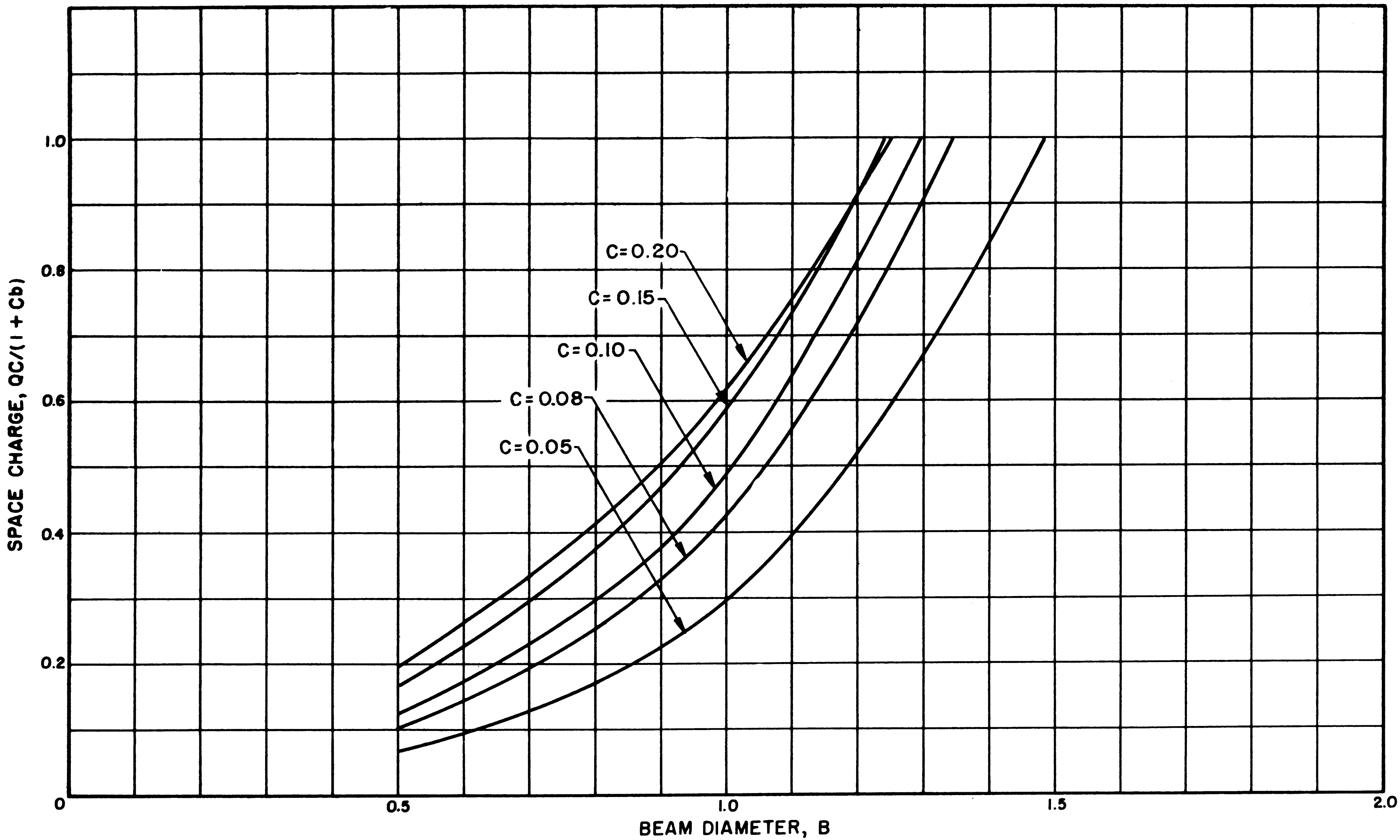


FIG. C.220 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER. ($a'/b' = 1.8$, $V_0 = 4$ KV. DLF = 90%)

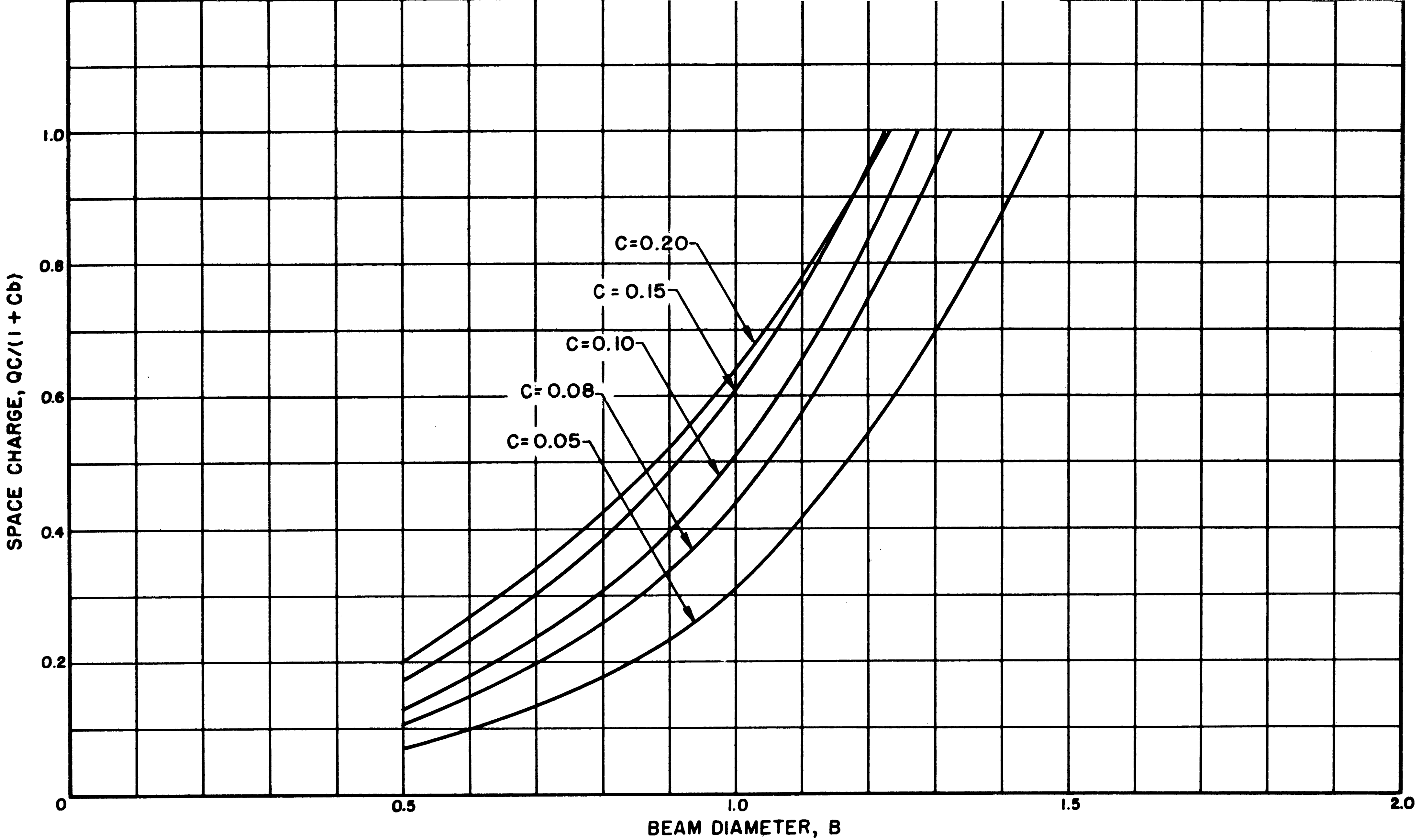


FIG. C.221 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.8$, $V_0 = 5$ KV, DLF = 90%)

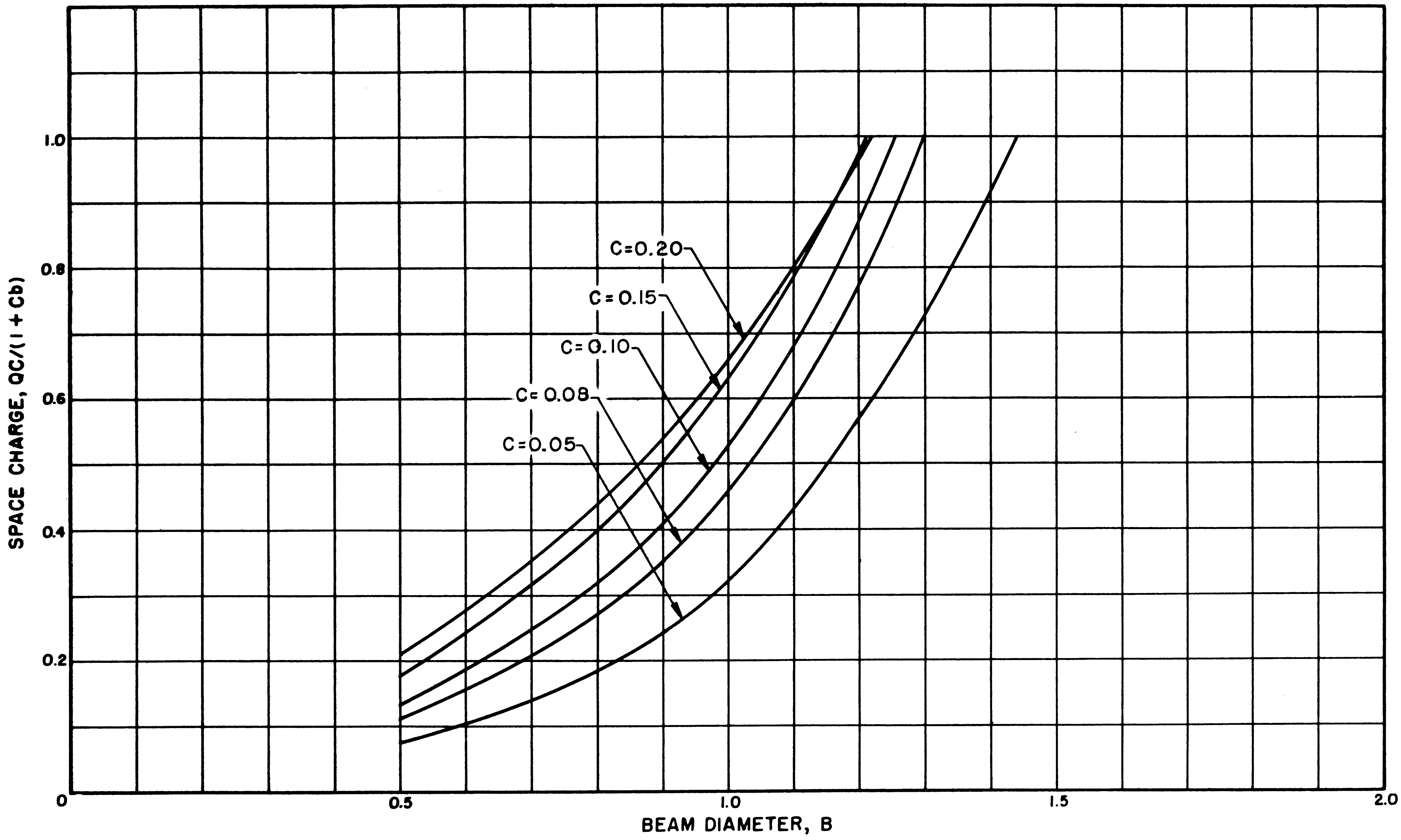


FIG. C.222 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.8$, V_0 = 6 KV, DLF = 90%)

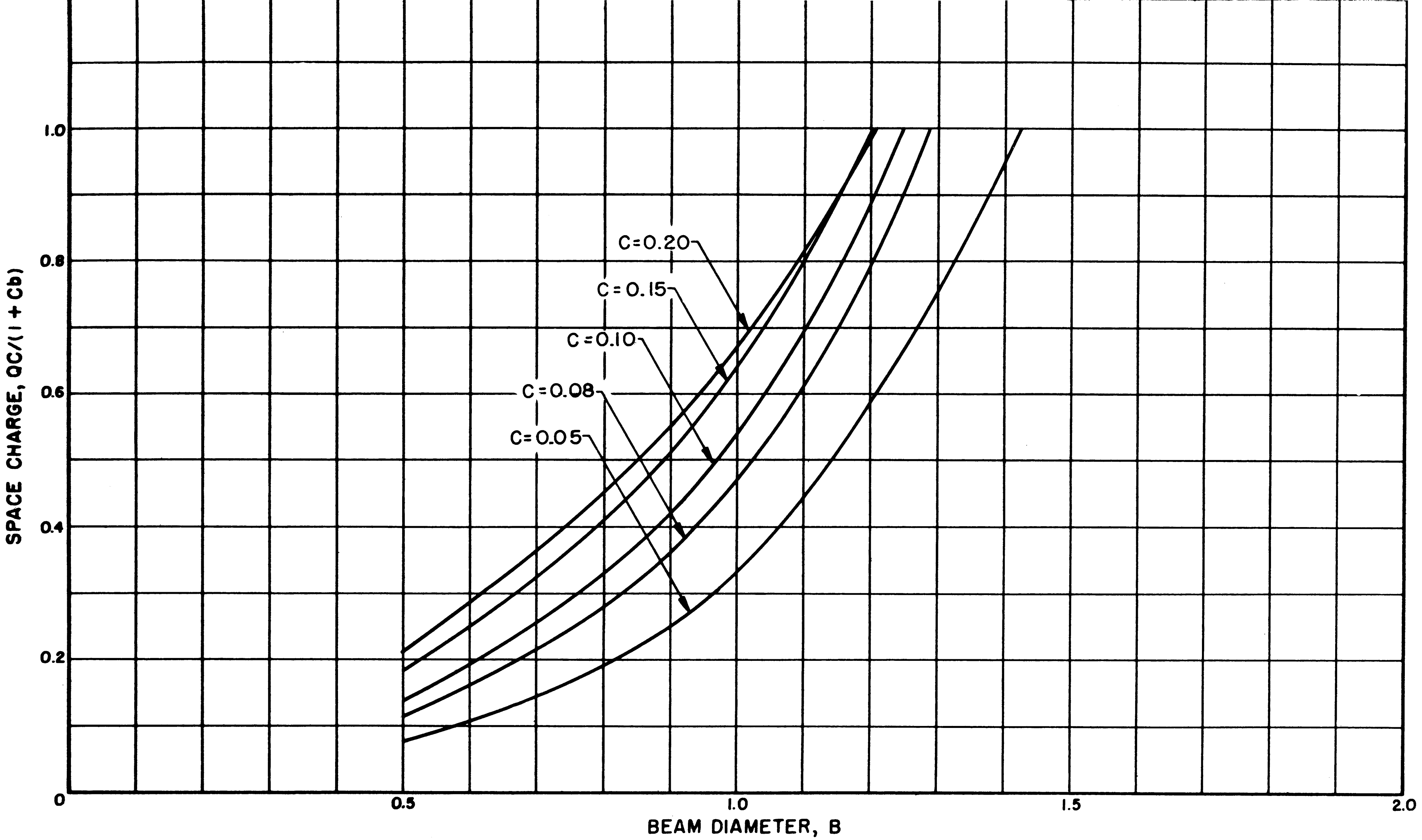


FIG. C.223 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.8$, $V_0 = 7$ KV, DLF = 90%)

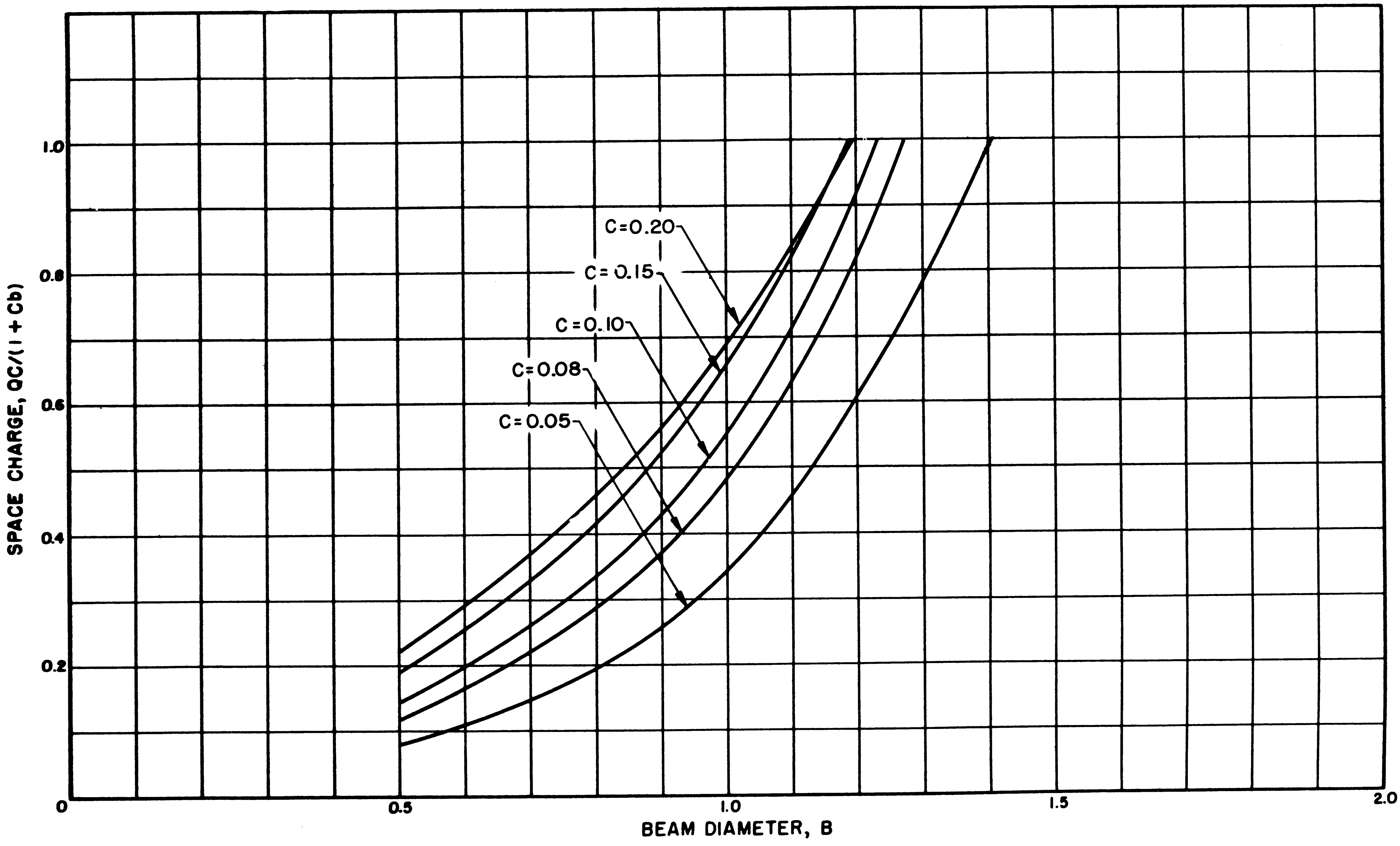


FIG. C.224 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.8$, $V_0 = 8$ KV, DLF = 90%)

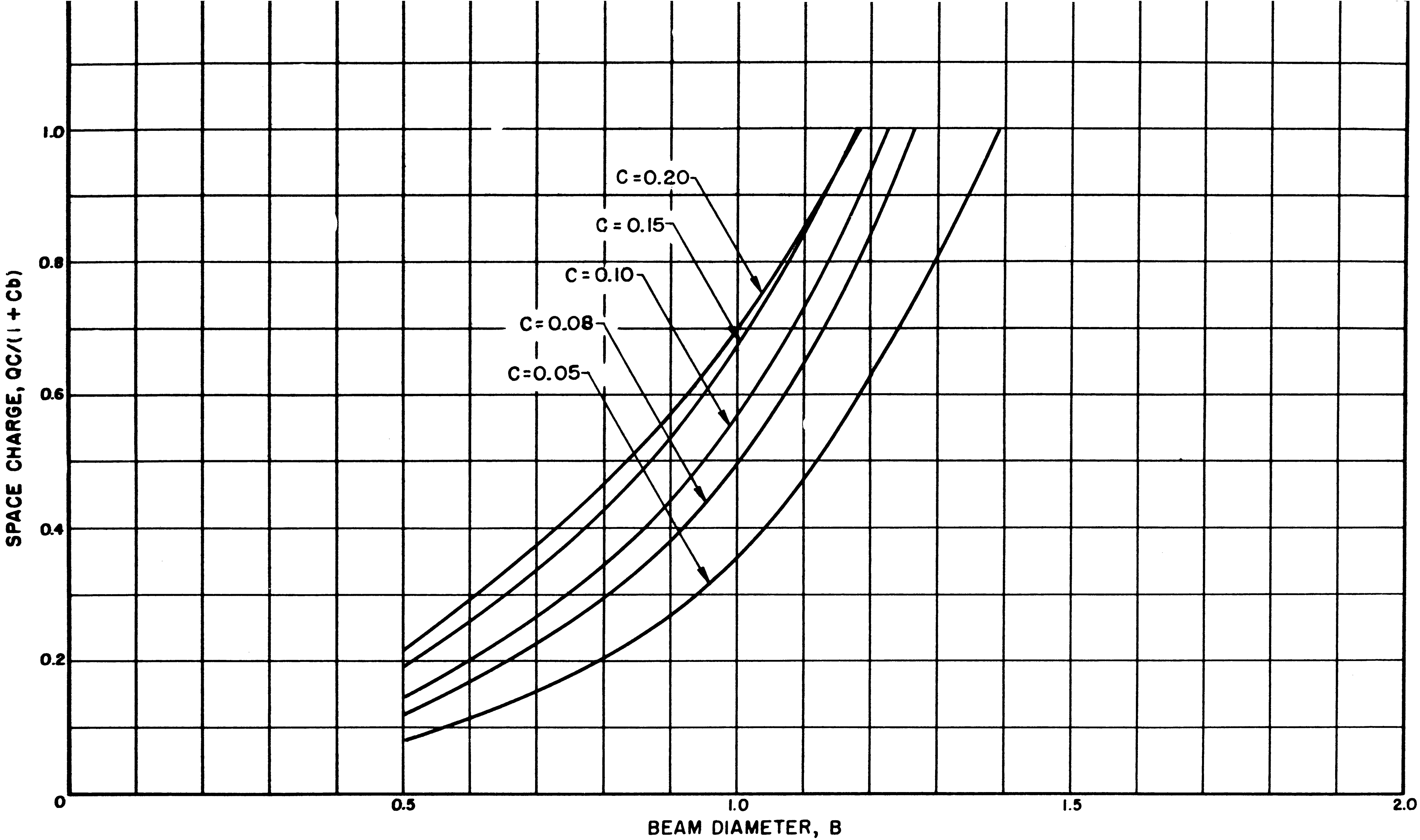


FIG. C.225 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER. ($a'/b' = 1.8$, $V_0 = 9$ KV, DLF = 90%)

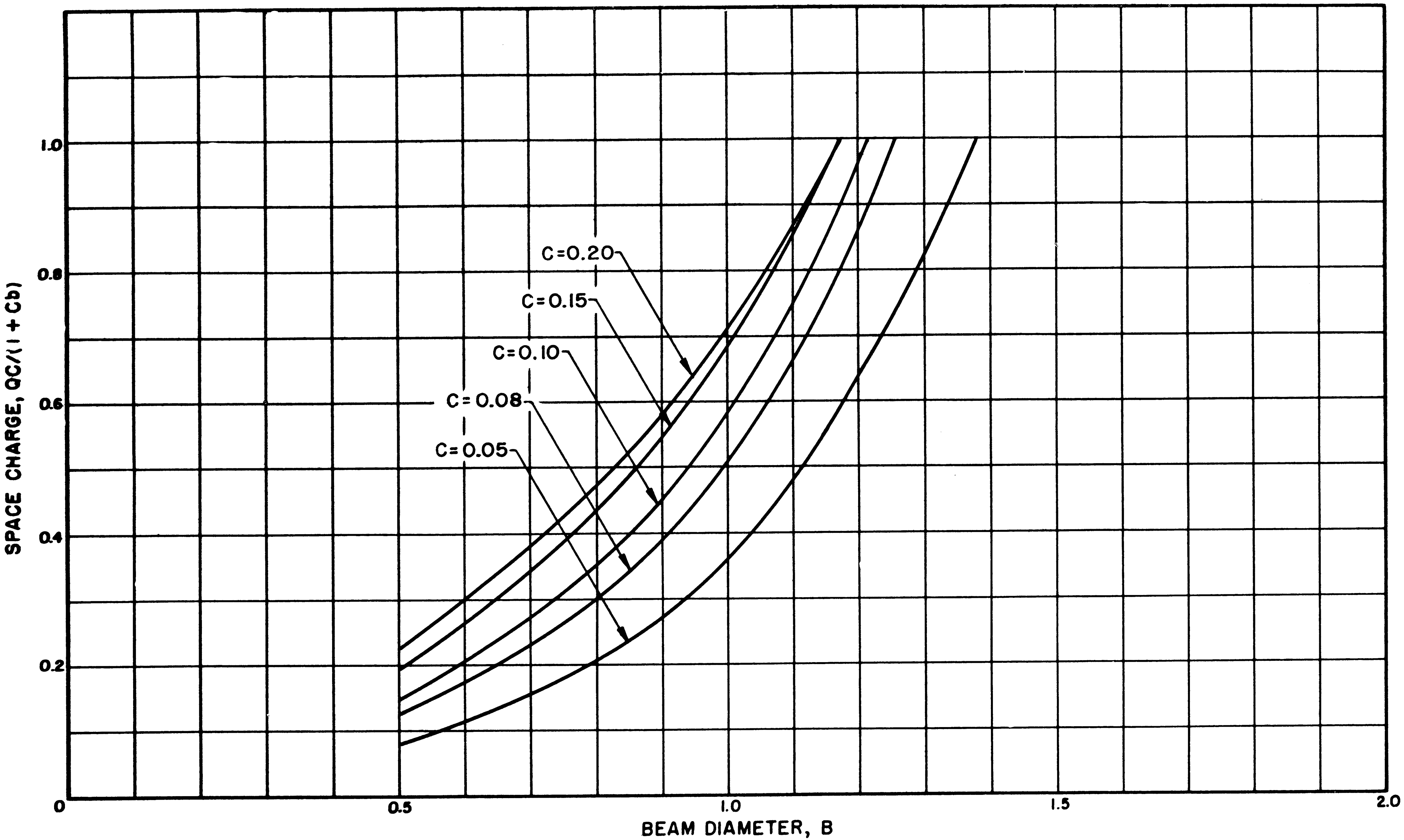


FIG. C.226 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.8$, $V_0 = 10$ KV, DLF = 90%)

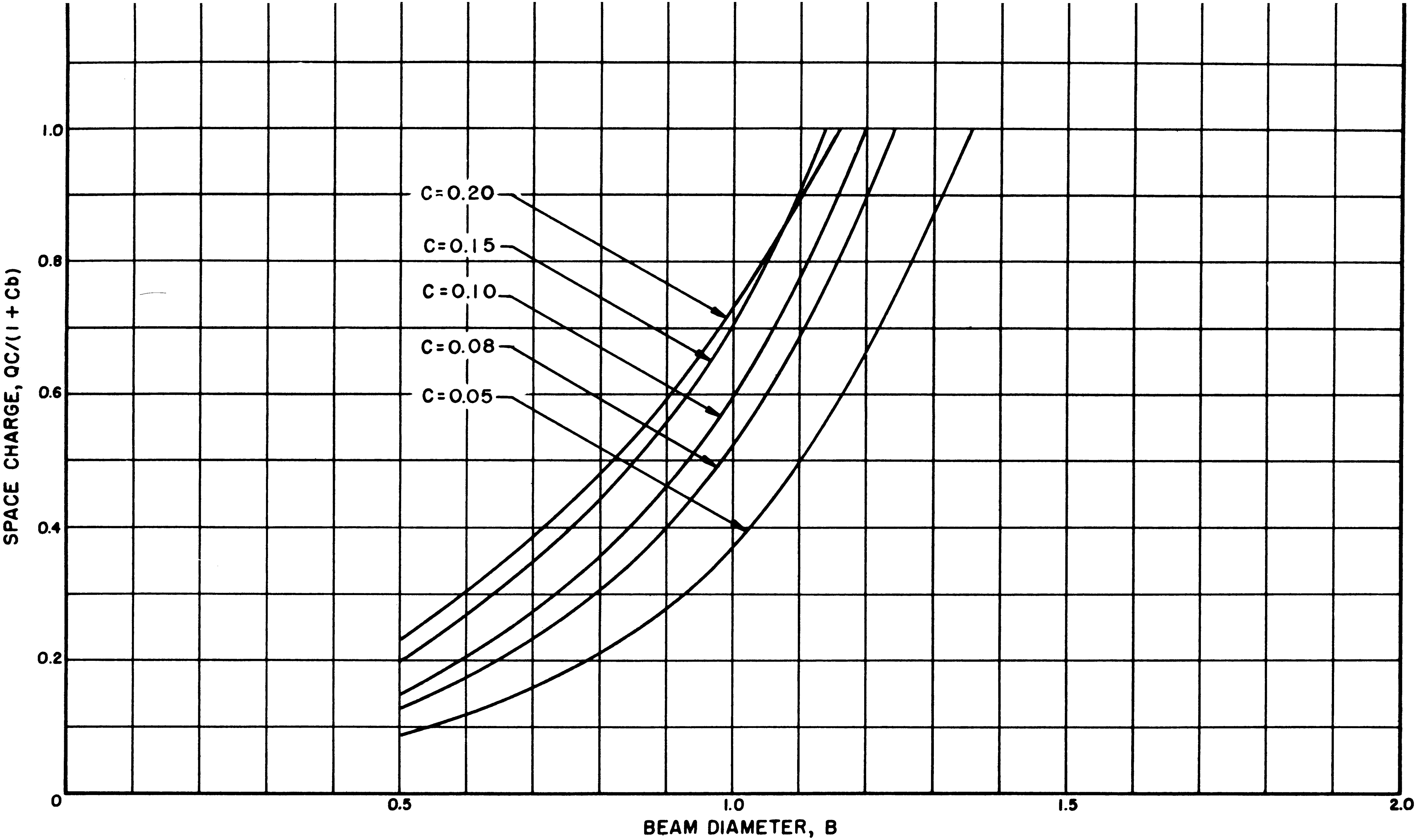


FIG. C.227 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.8$, $V_0 = 12$ KV, DLF = 90%)

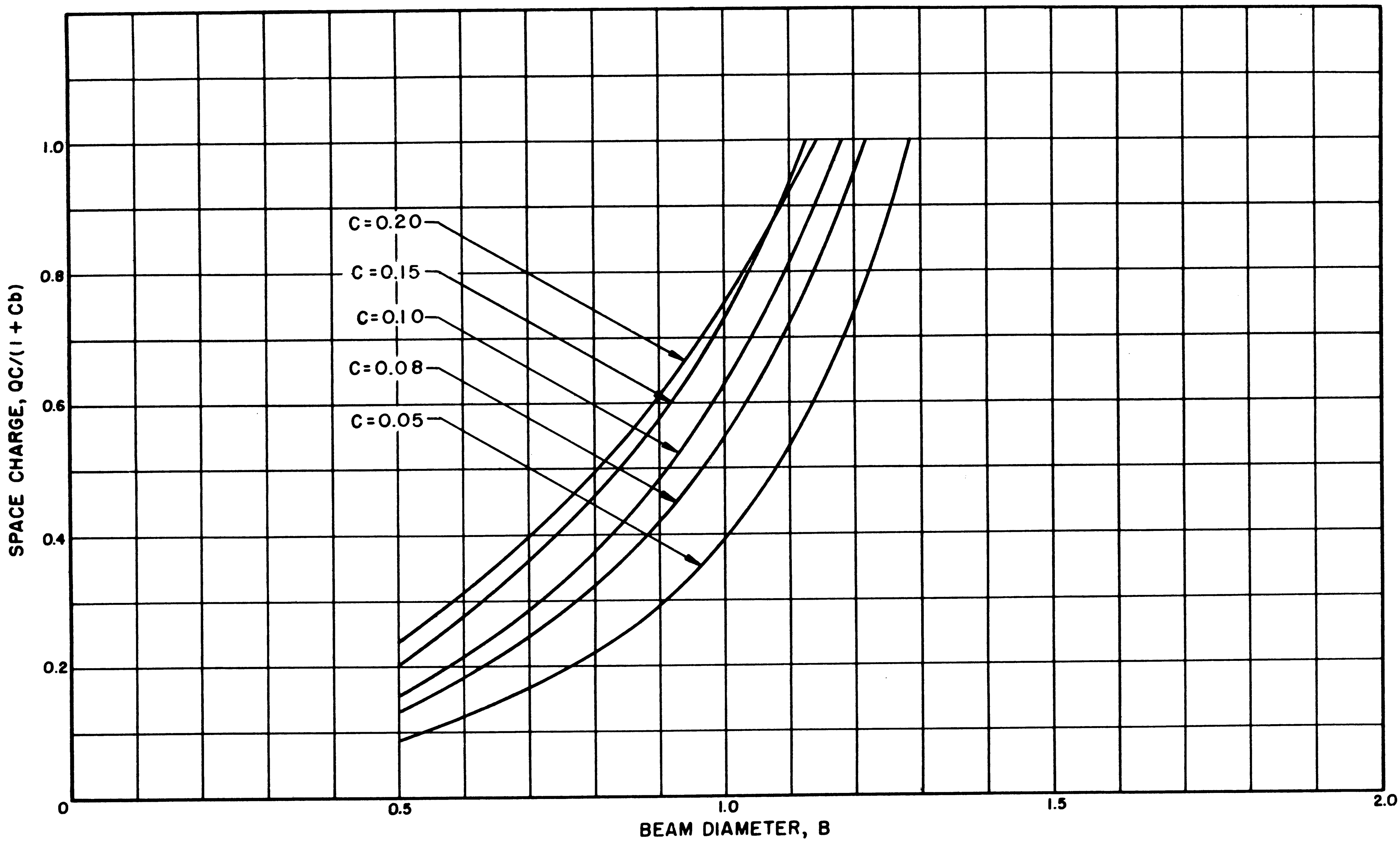


FIG. C.228 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER. ($a'/b' = 1.8$, $V_0 = 14$ KV, DLF = 90%)

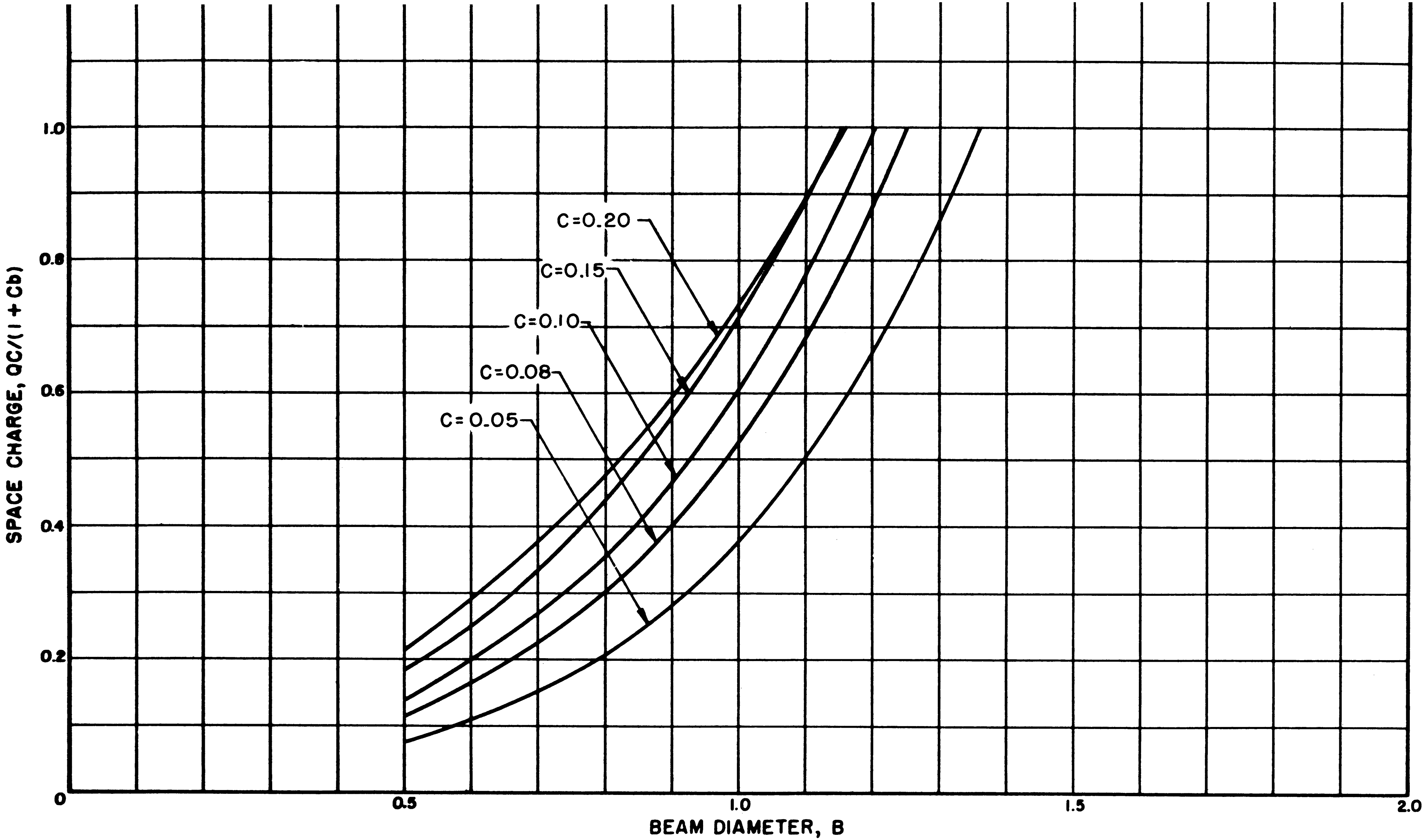


FIG. C.229 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 2.0$, $V_0 = 1$ KV, DLF = 90 %)

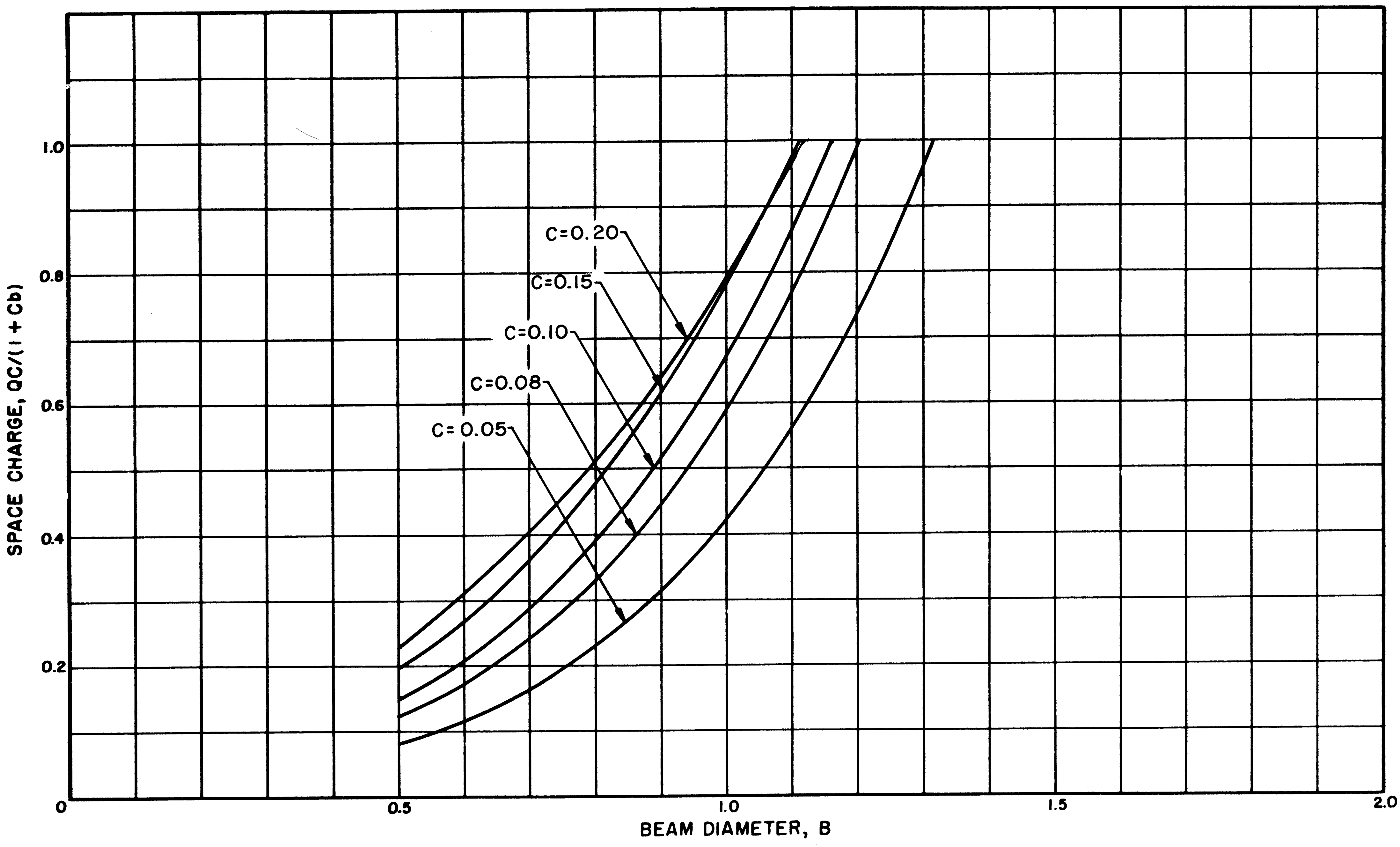


FIG. C.230 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 2.0$, V_0 = 2 KV, DLF = 90%)

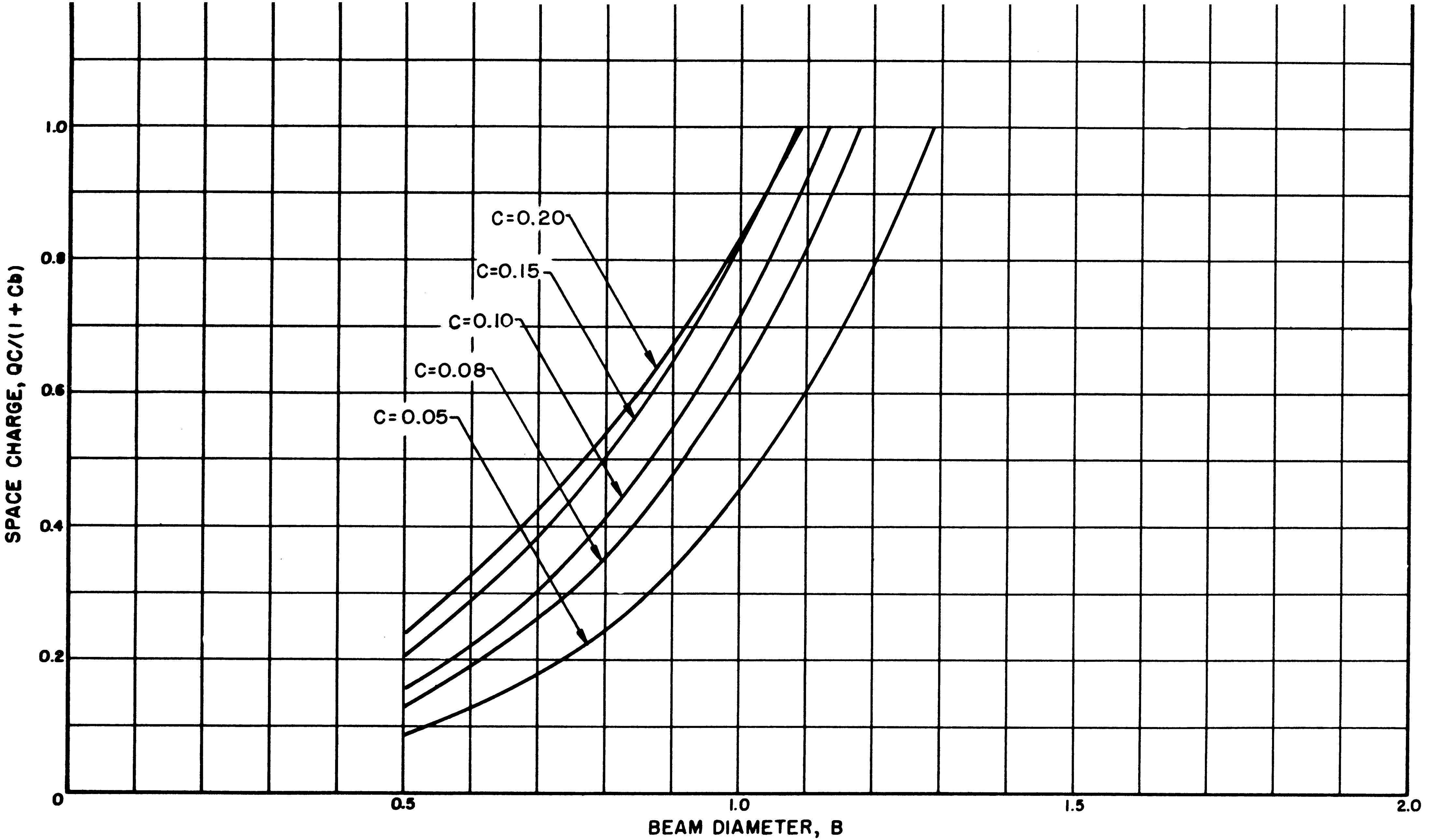


FIG. C.231 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 2.0$, $V_0 = 3$ KV, DLF = 90%)

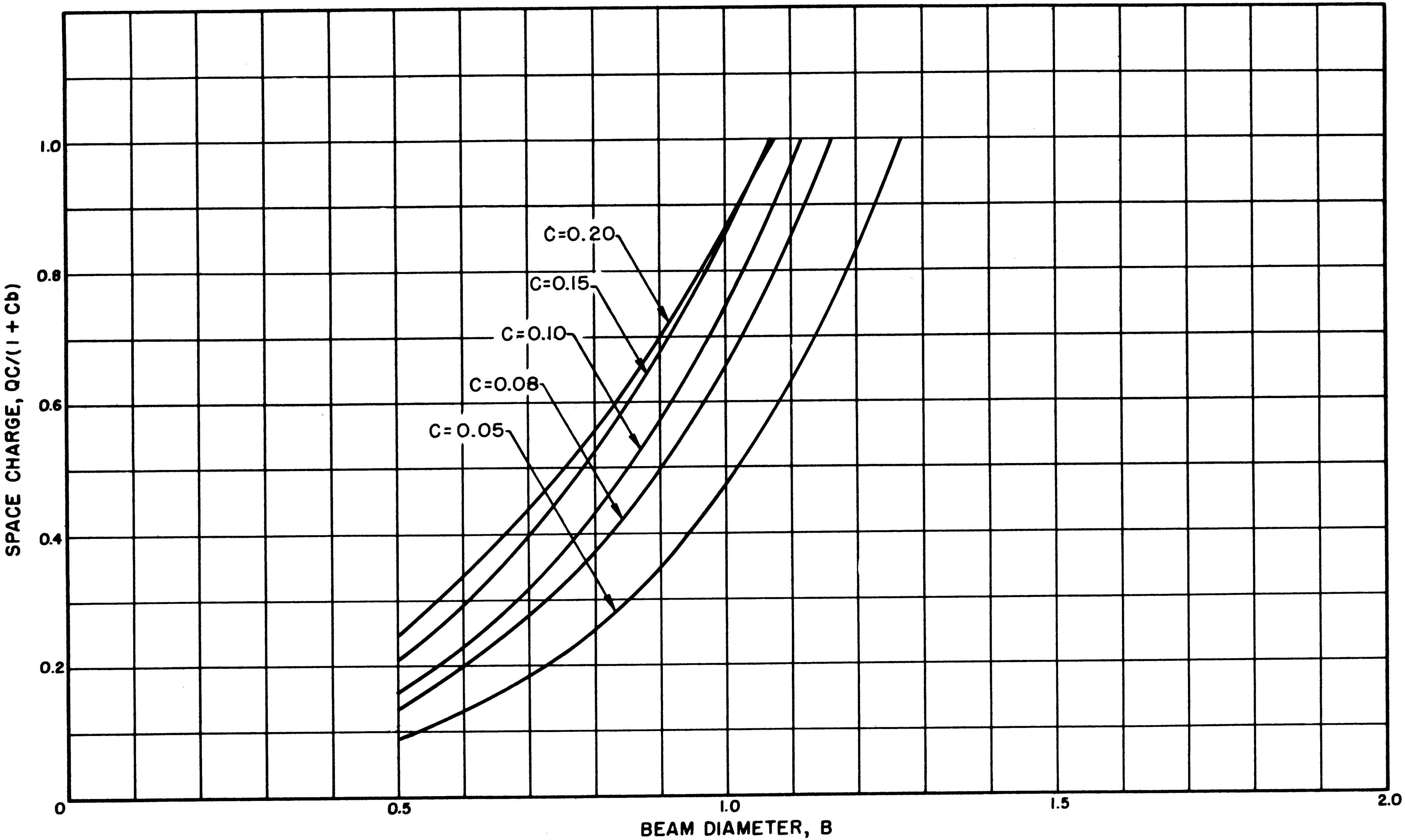


FIG. C.232 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b'=2.0$, $V_0 = 4$ KV, DLF = 90%)

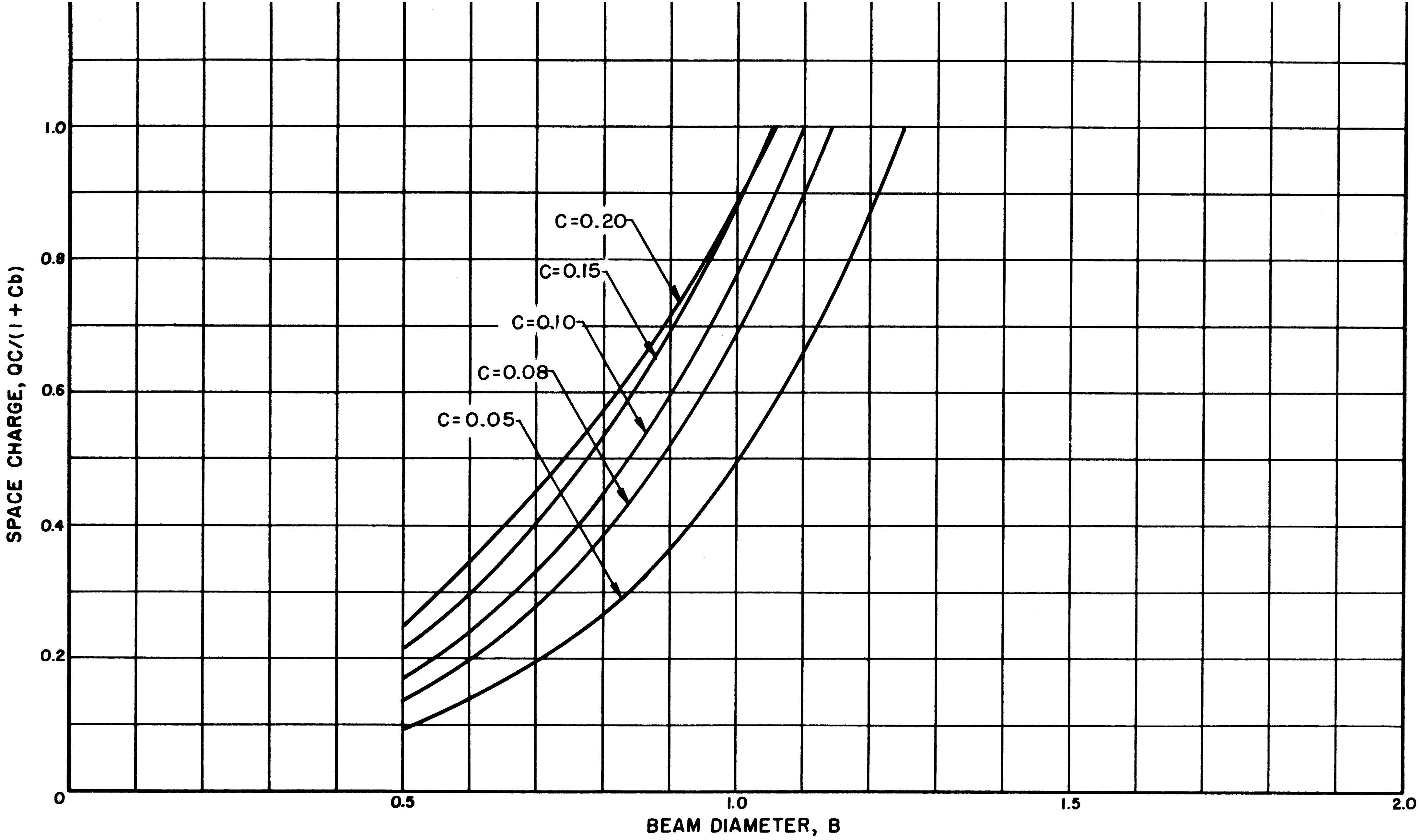


FIG. C.233 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER. ($a'/b' = 2.0$, $V_0 = 5$ KV, DLF = 90 %)

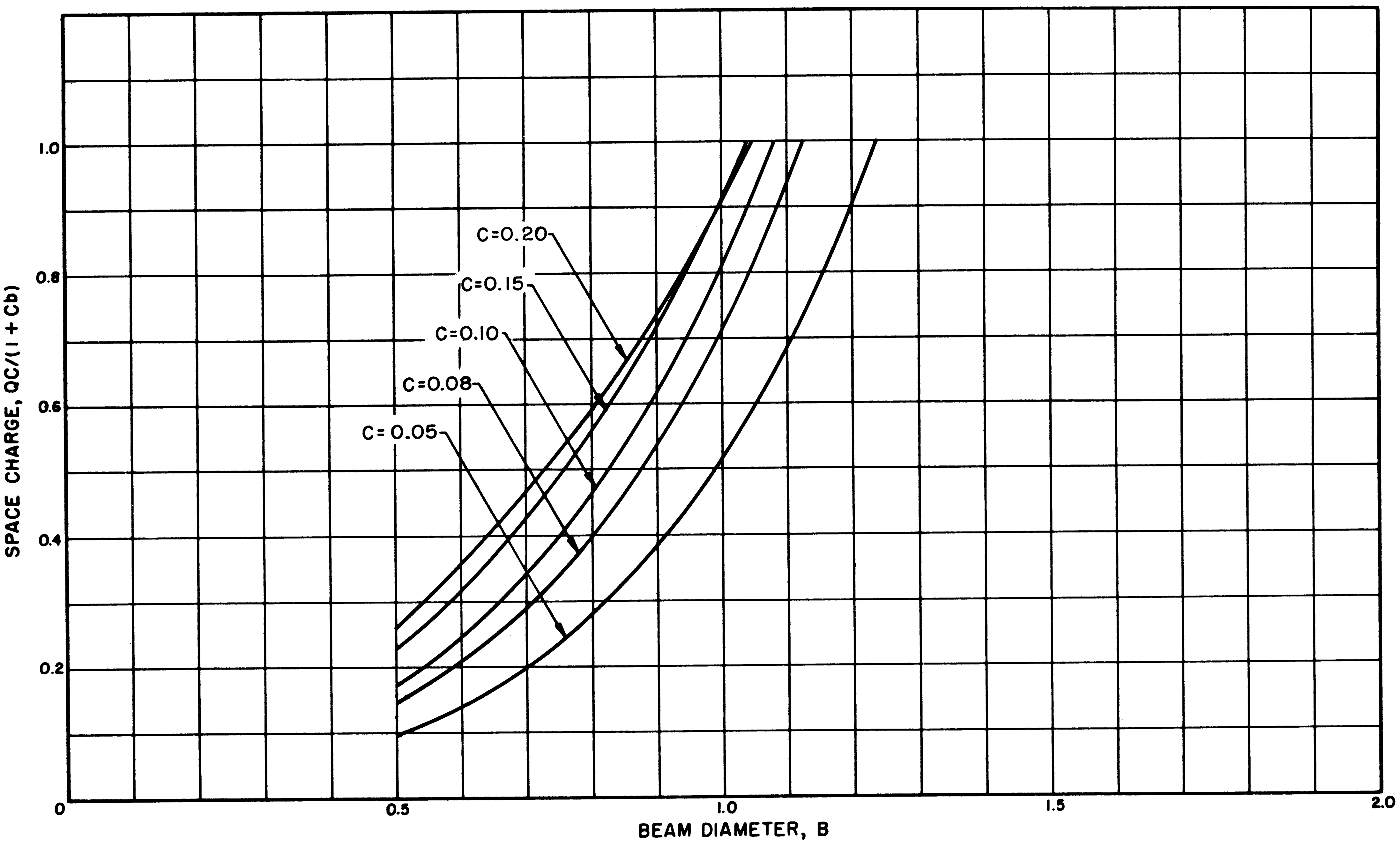


FIG. C.234 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 2.0$, V_0 = 6 KV, DLF = 90%)

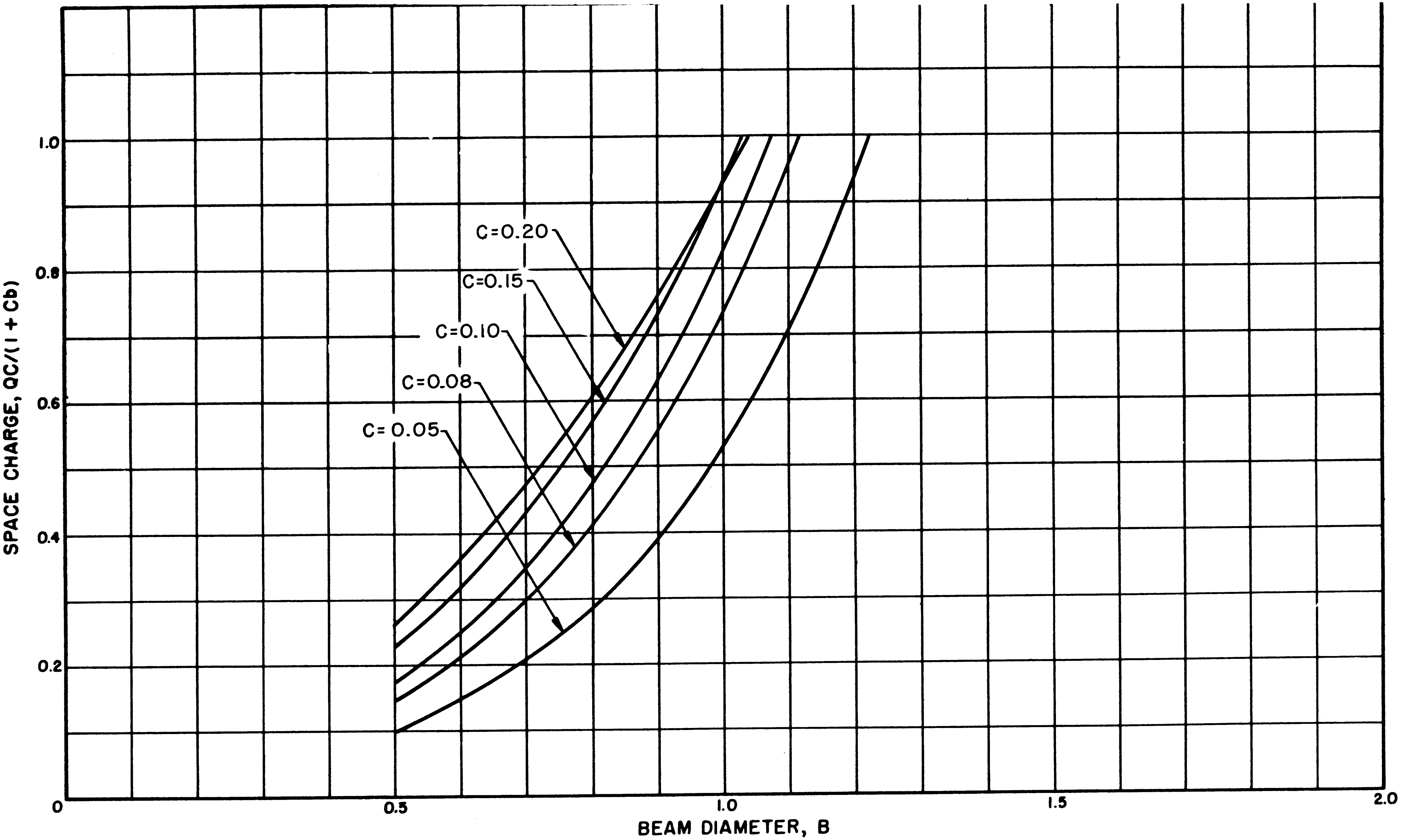


FIG. C.235 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 2.0, V_0 = 7$ KV, DLF = 90 %)

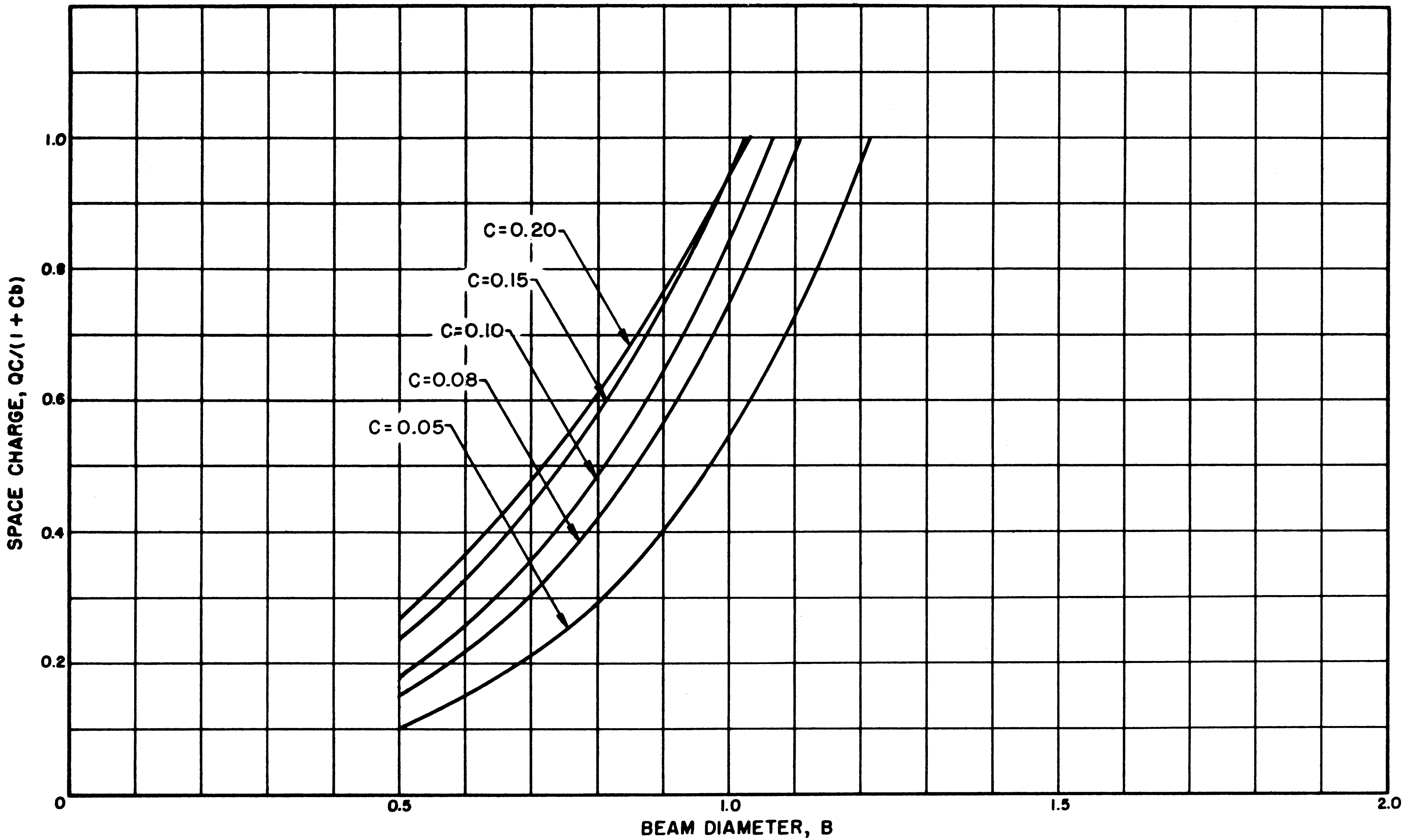


FIG. C.236 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 2.0$, $V_0 = 8$ KV, DLF = 90%)

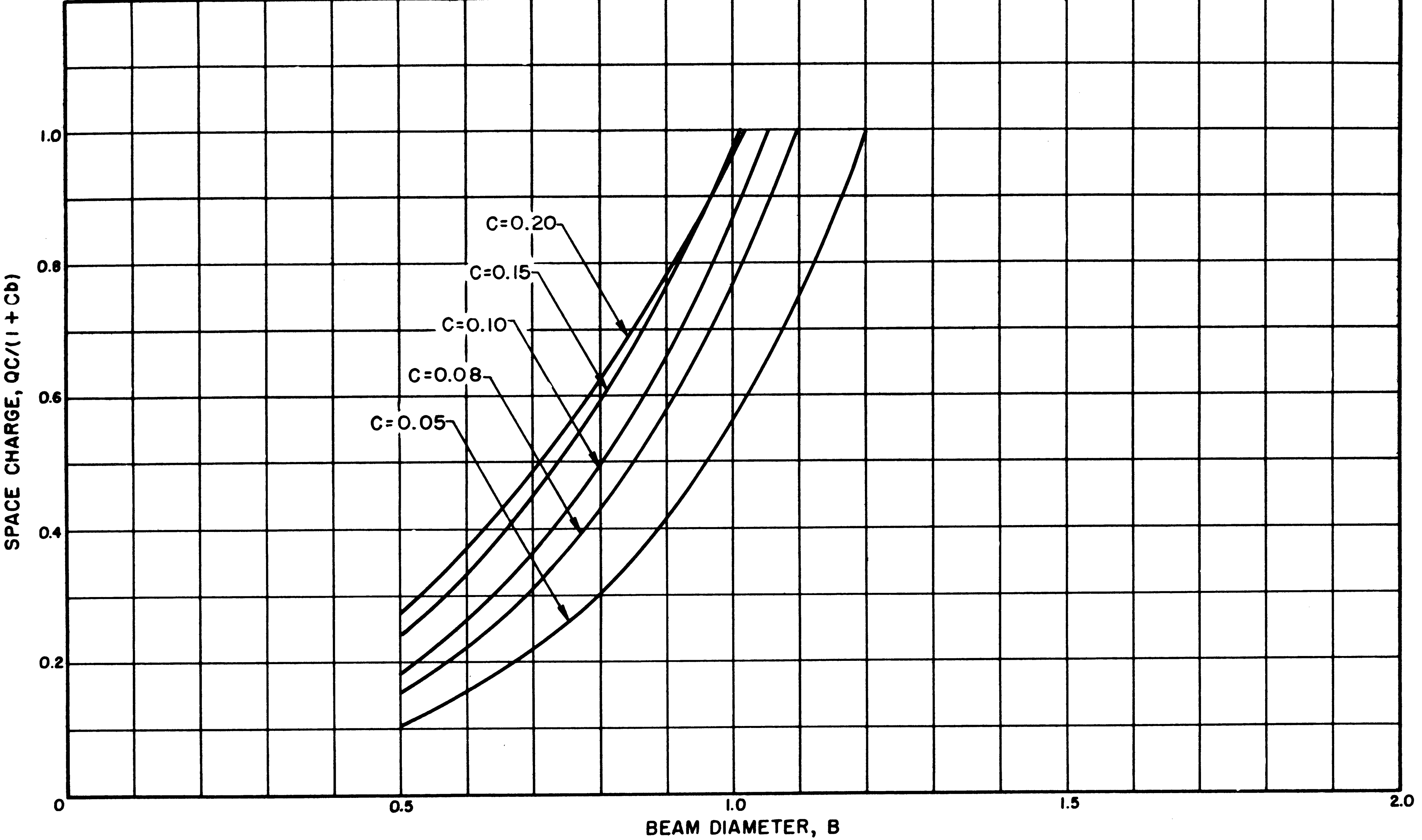


FIG. C.237 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 2.0$, $V_0 = 9$ KV, DLF = 90%)

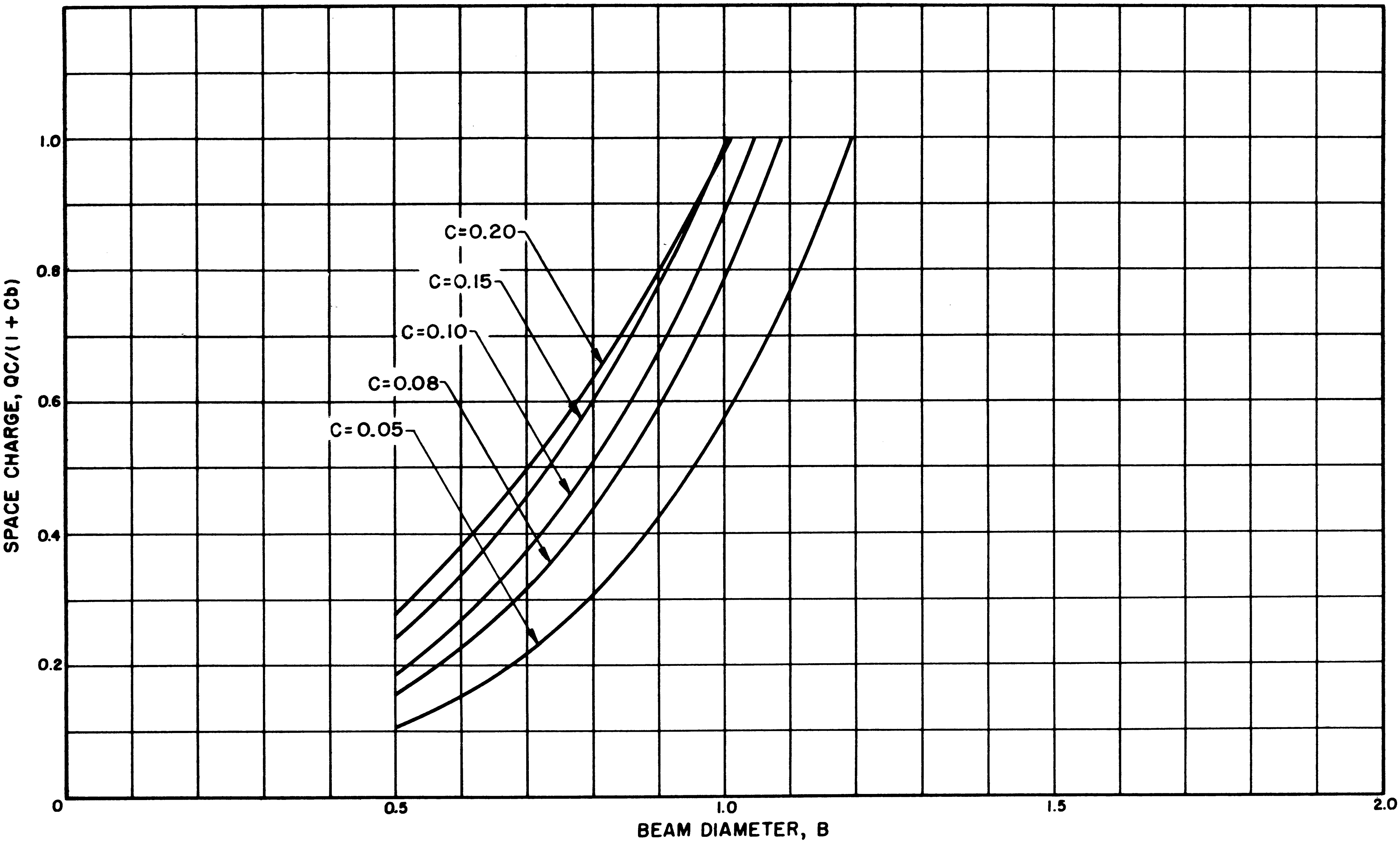


FIG. C.238 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 2.0$, $V_0 = 10$ KV, DLF = 90%)

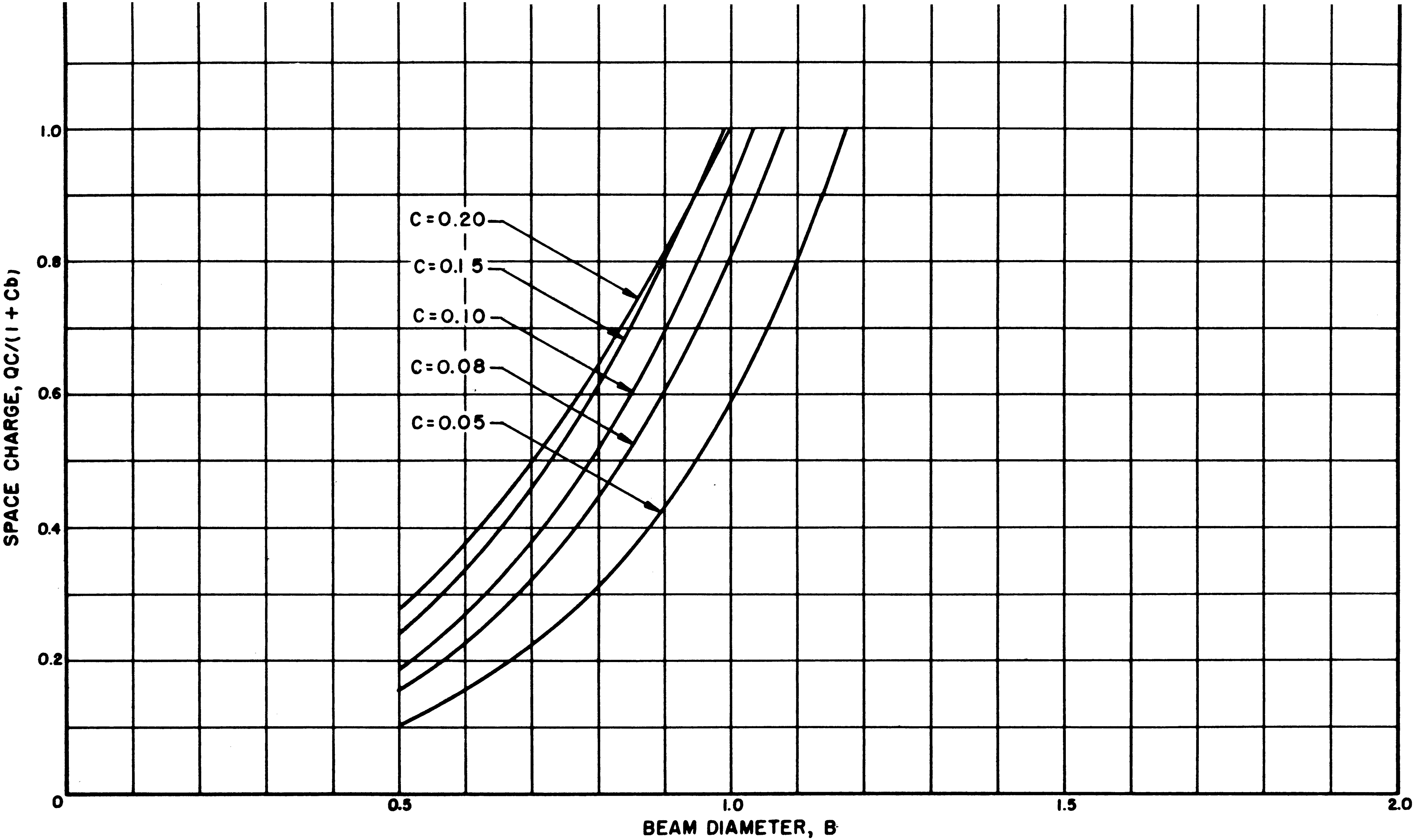


FIG. C.239 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 2.0$, $V_0 = 12$ KV, DLF = 90%)

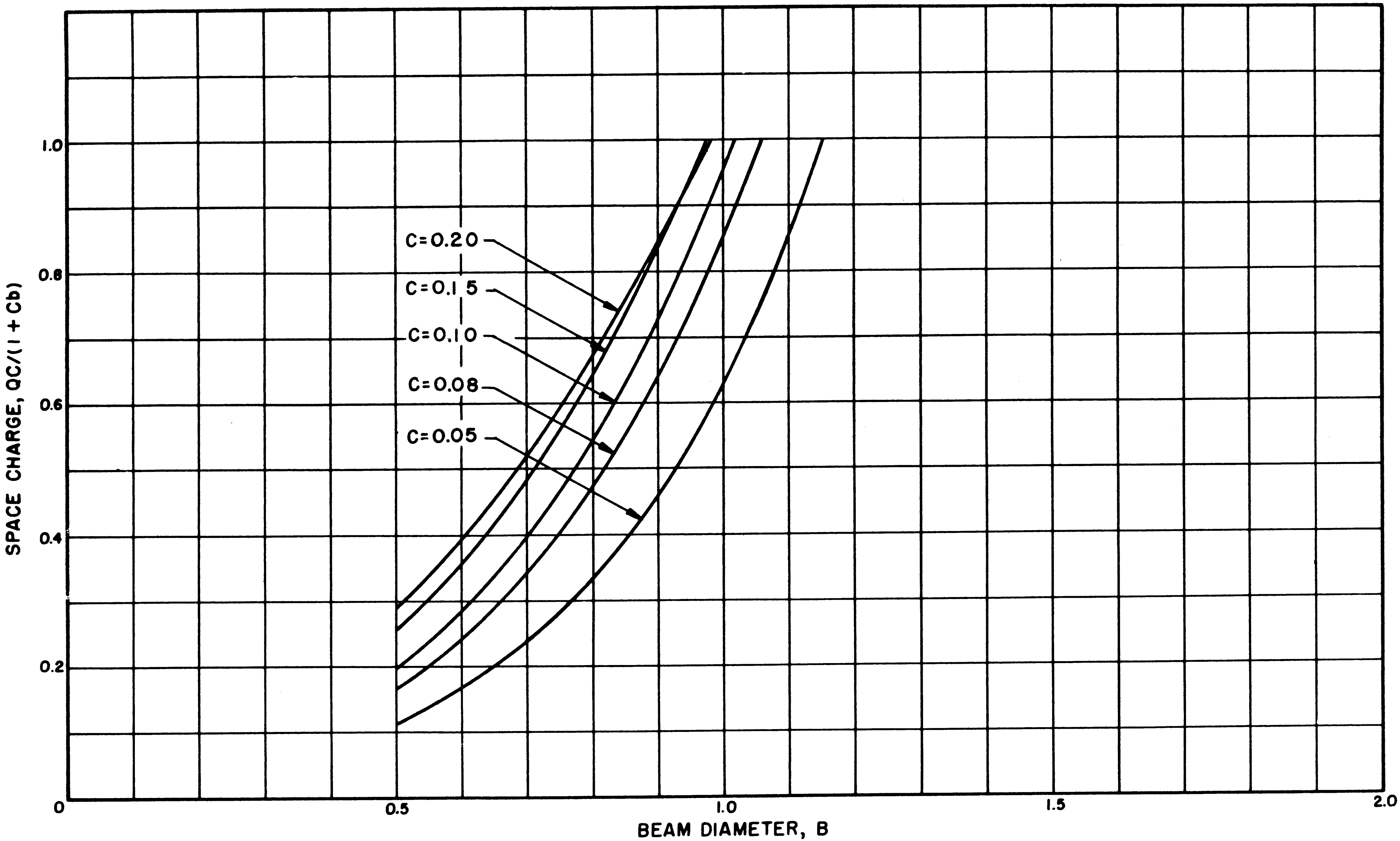


FIG. C.240 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 2.0$, $V_0 = 14$ KV, DLF = 90%)

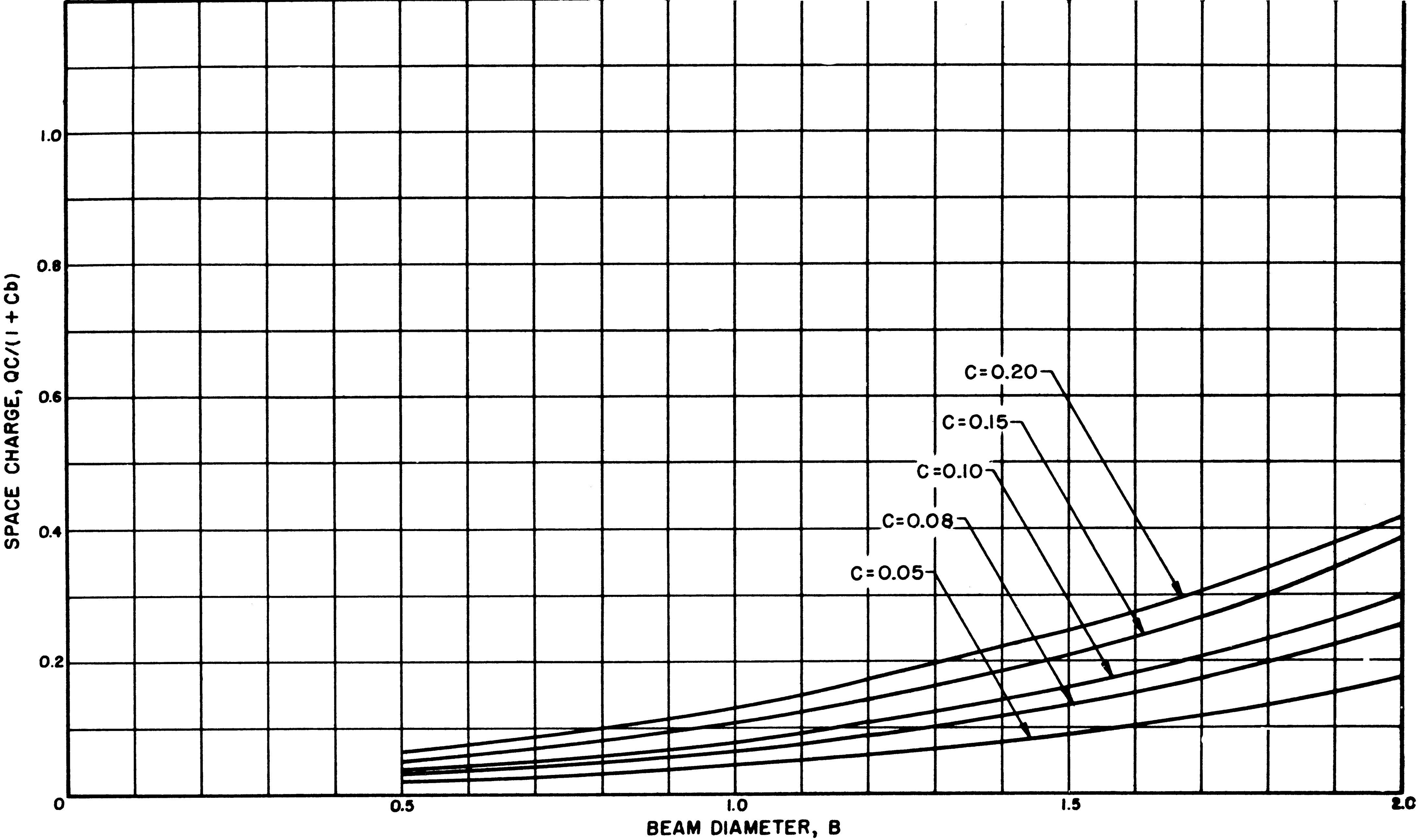


FIG. C.241 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b'=1.2$, $V_0 = 1$ KV, DLF = 95%)

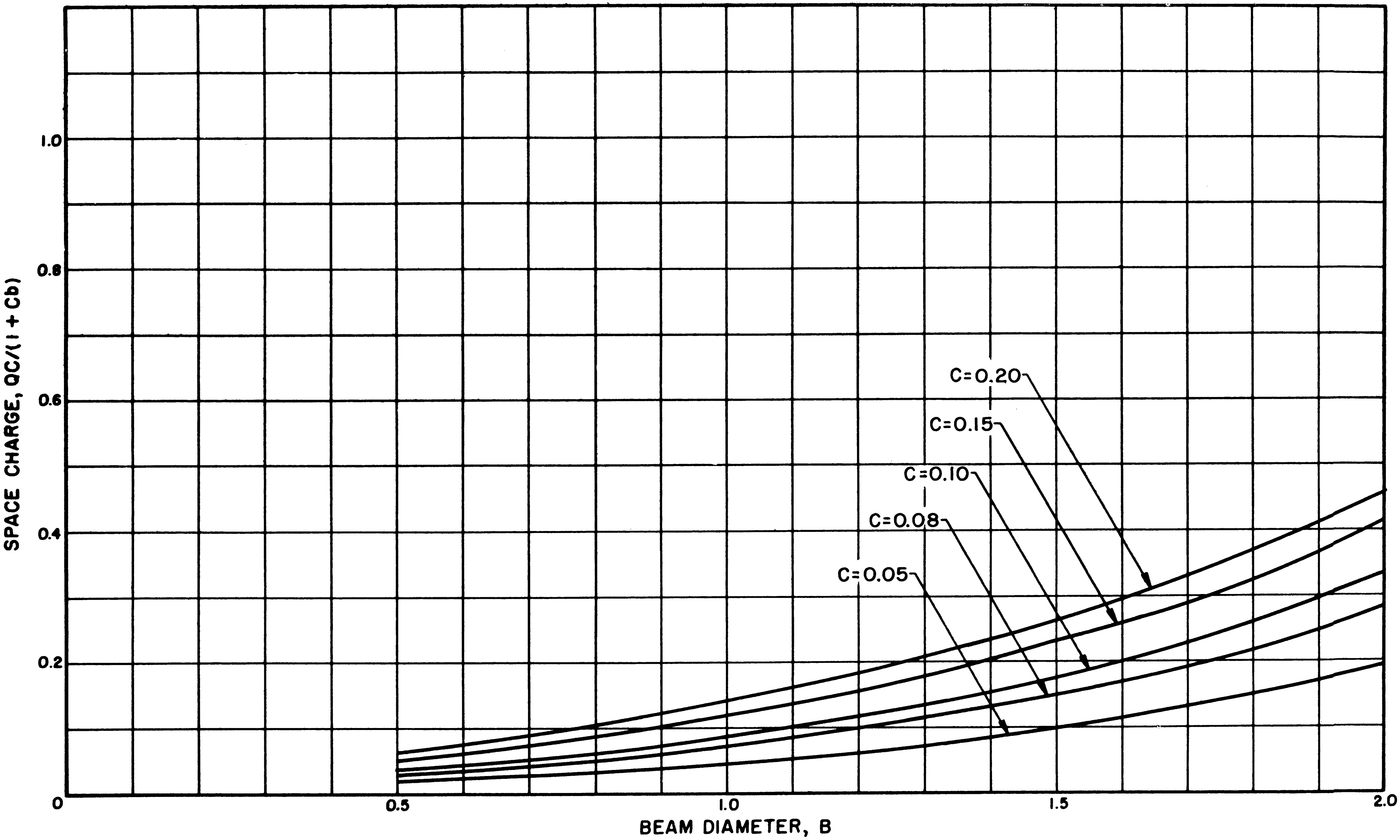


FIG. C.242 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.2$, $V_0 = 2$ KV, DLF = 95%)

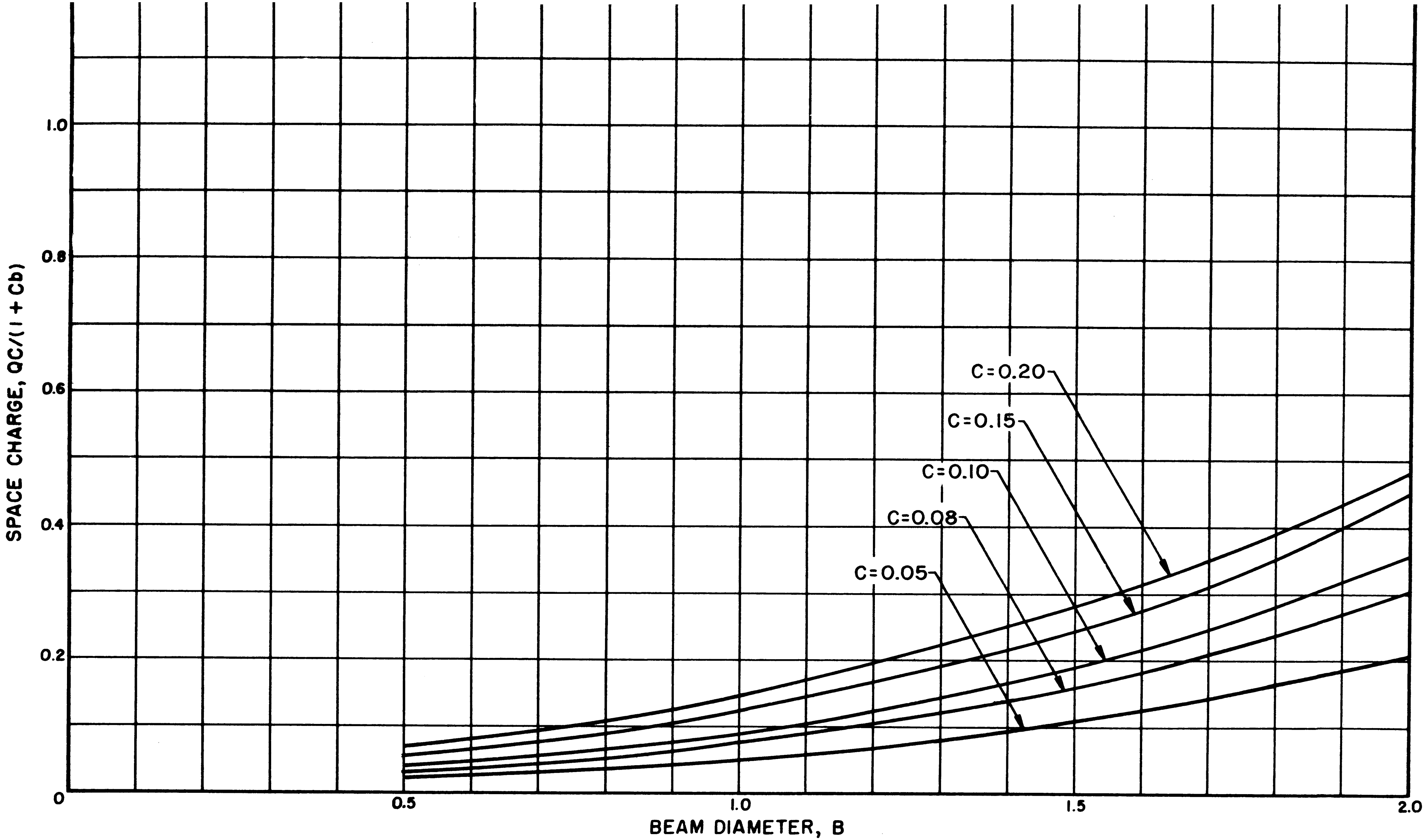


FIG. C.243 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.2$, $V_0 = 3$ KV, DLF = 95%)

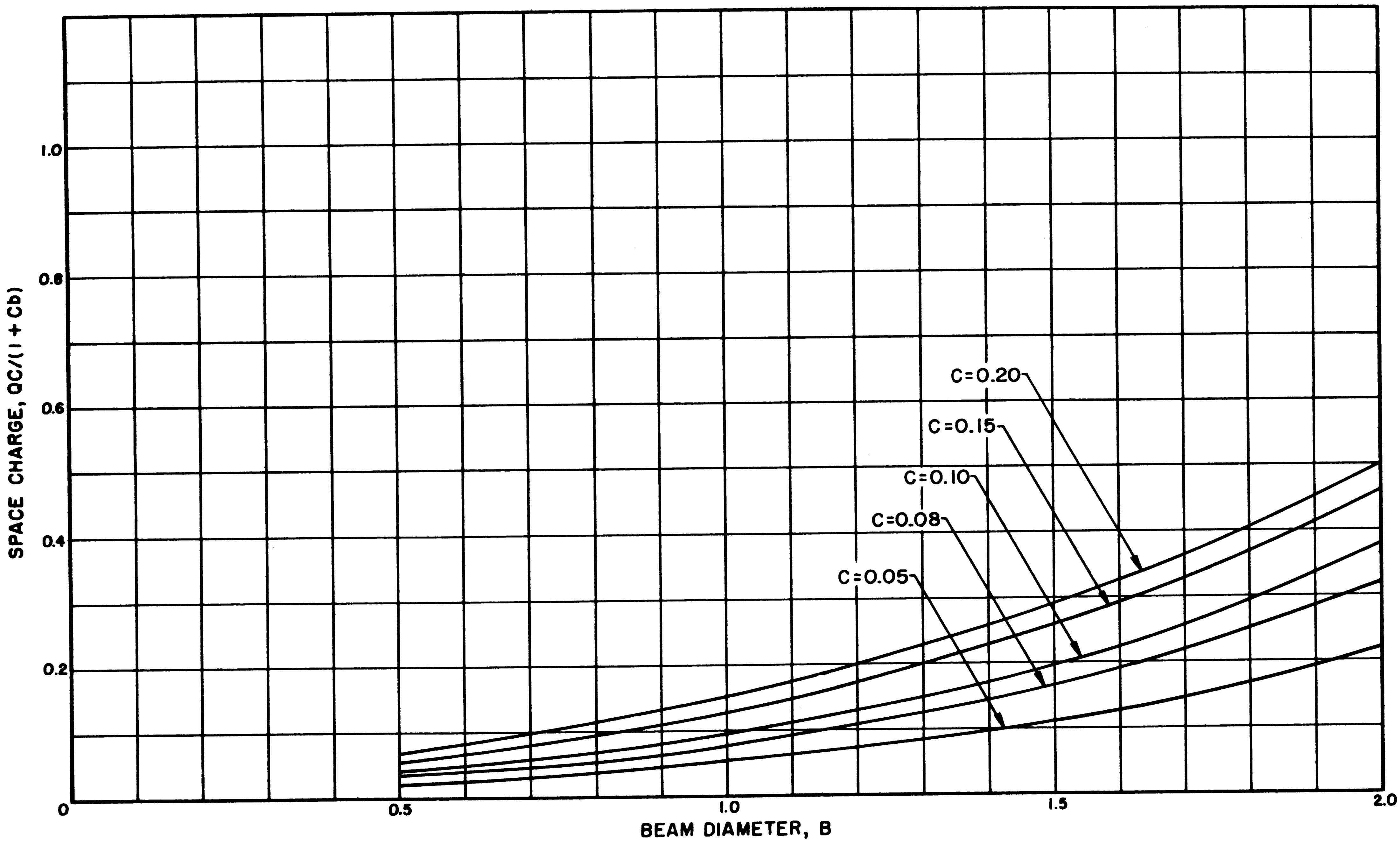


FIG. C.244 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
$(a'/b' = 1.2,\ V_0 = 4\ \text{KV},\ \text{DLF} = 95\%)$

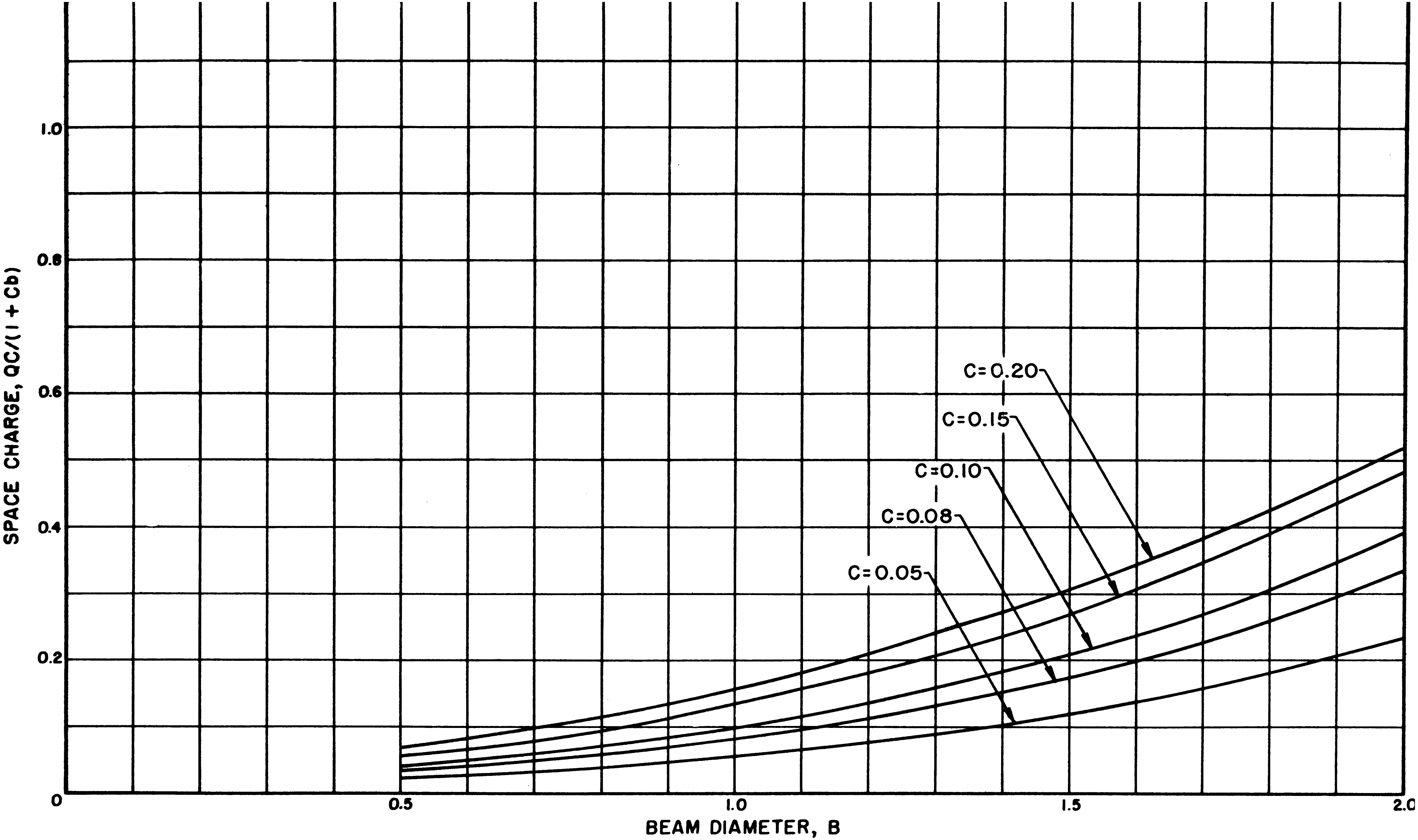


FIG. C.245 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER. ($a'/b' = 1.2$, $V_0 = 5$ KV, DLF = 95%)

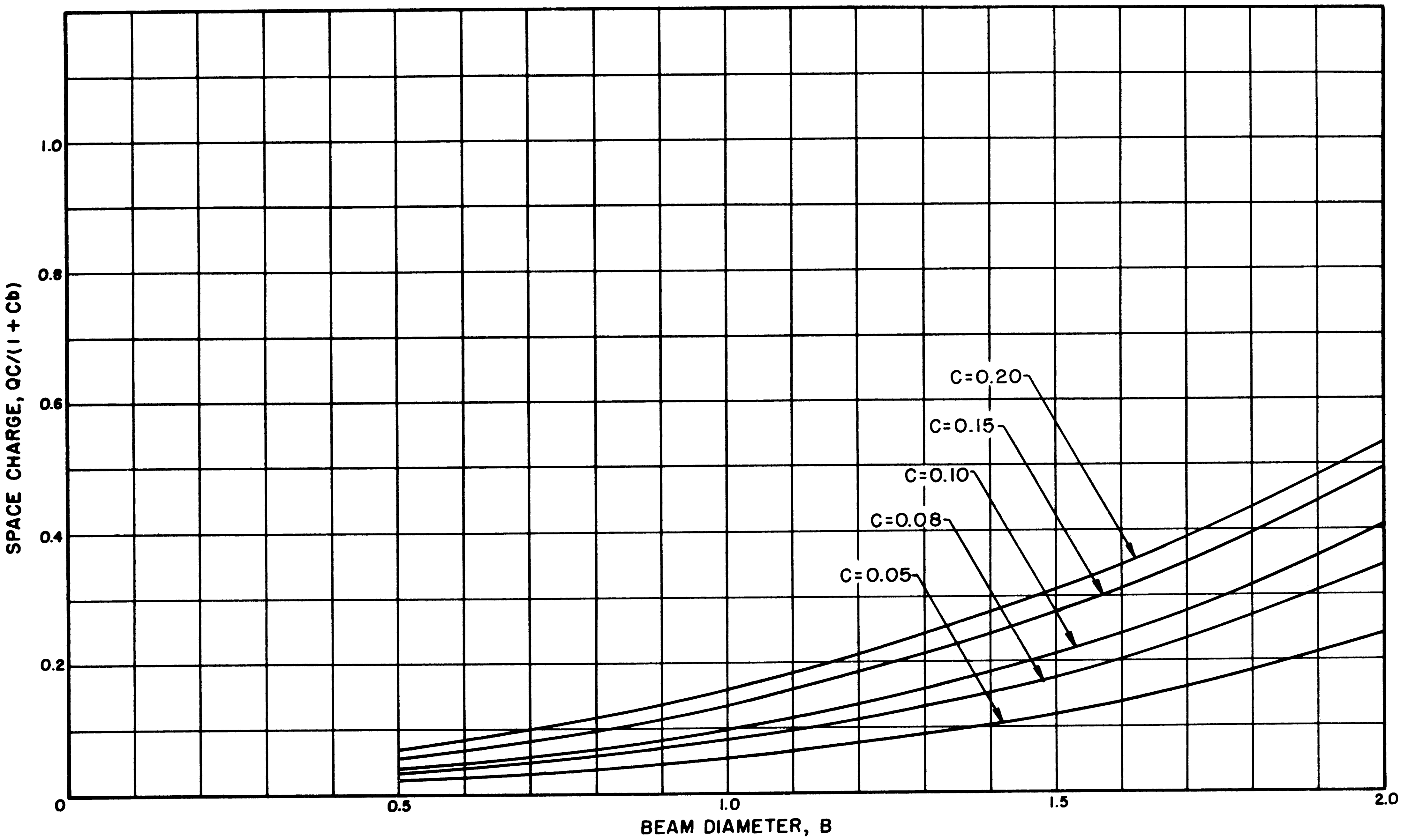


FIG. C.246 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER. ($a'/b' = 1.2$, $V_0 = 6$ KV, DLF = 95%)

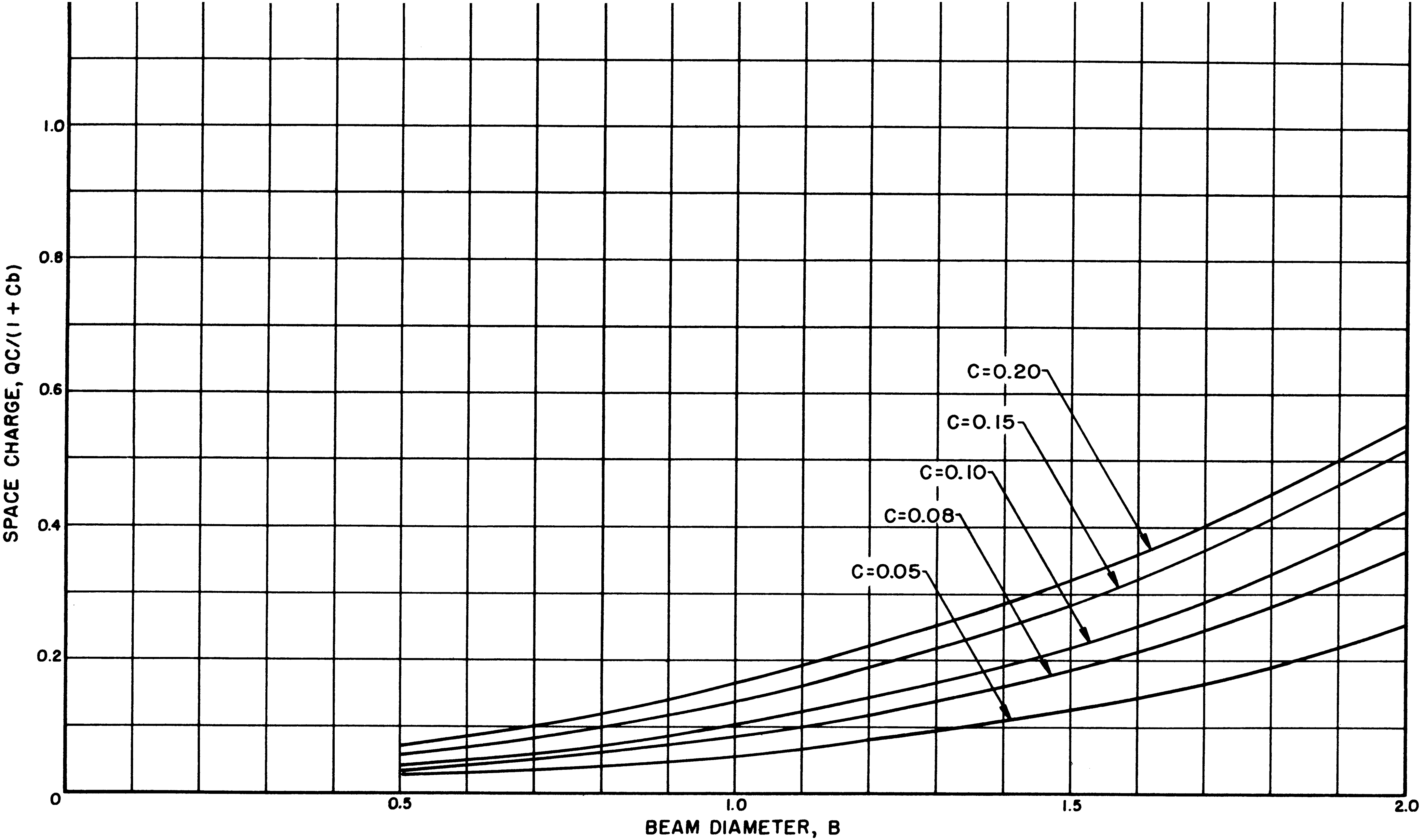


FIG. C.247 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.2$, $V_0 = 7$ KV, DLF = 95%)

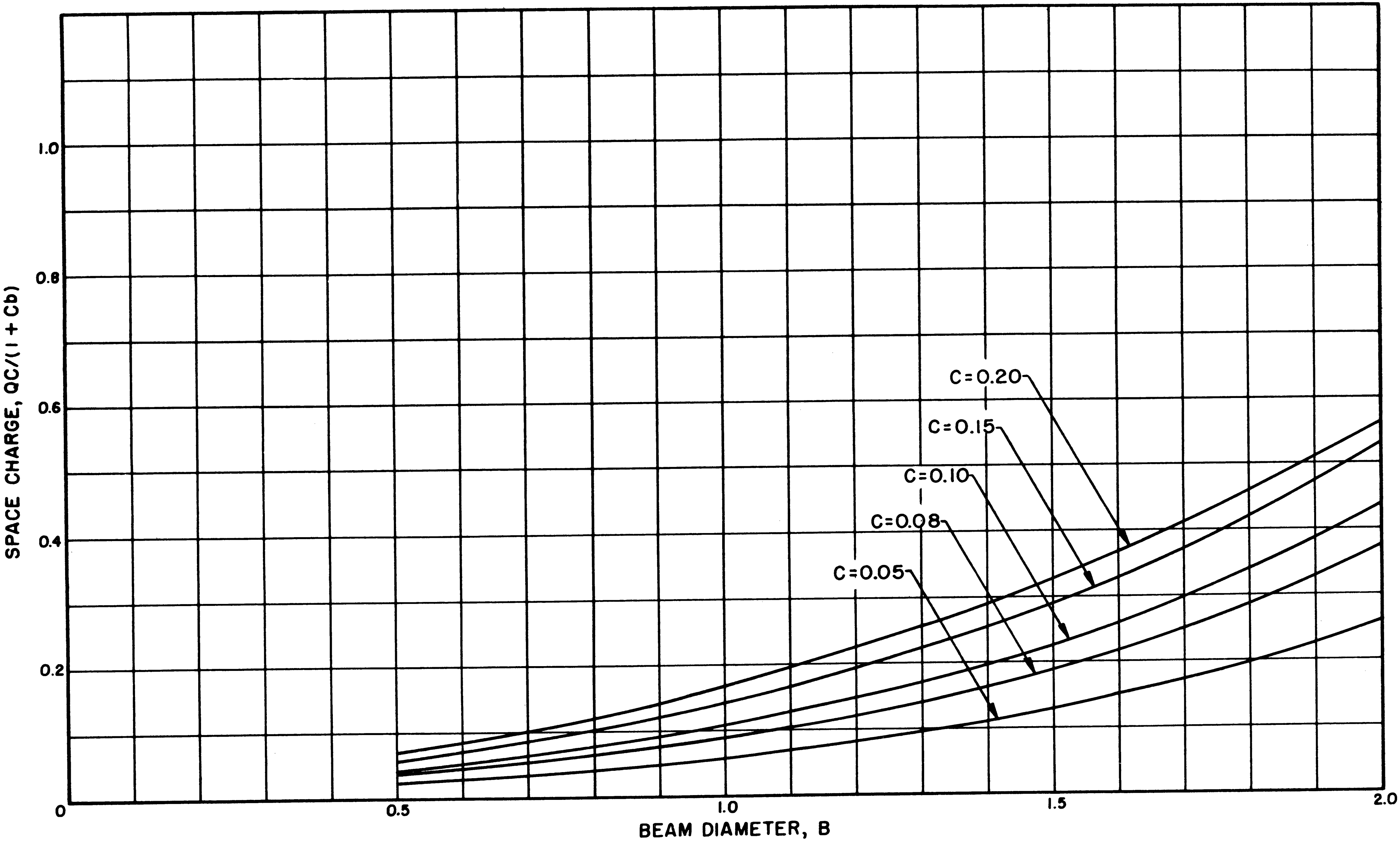


FIG. C.248 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
(a'/b' = 1.2 V_0 = 8 KV D.F. = 95%)

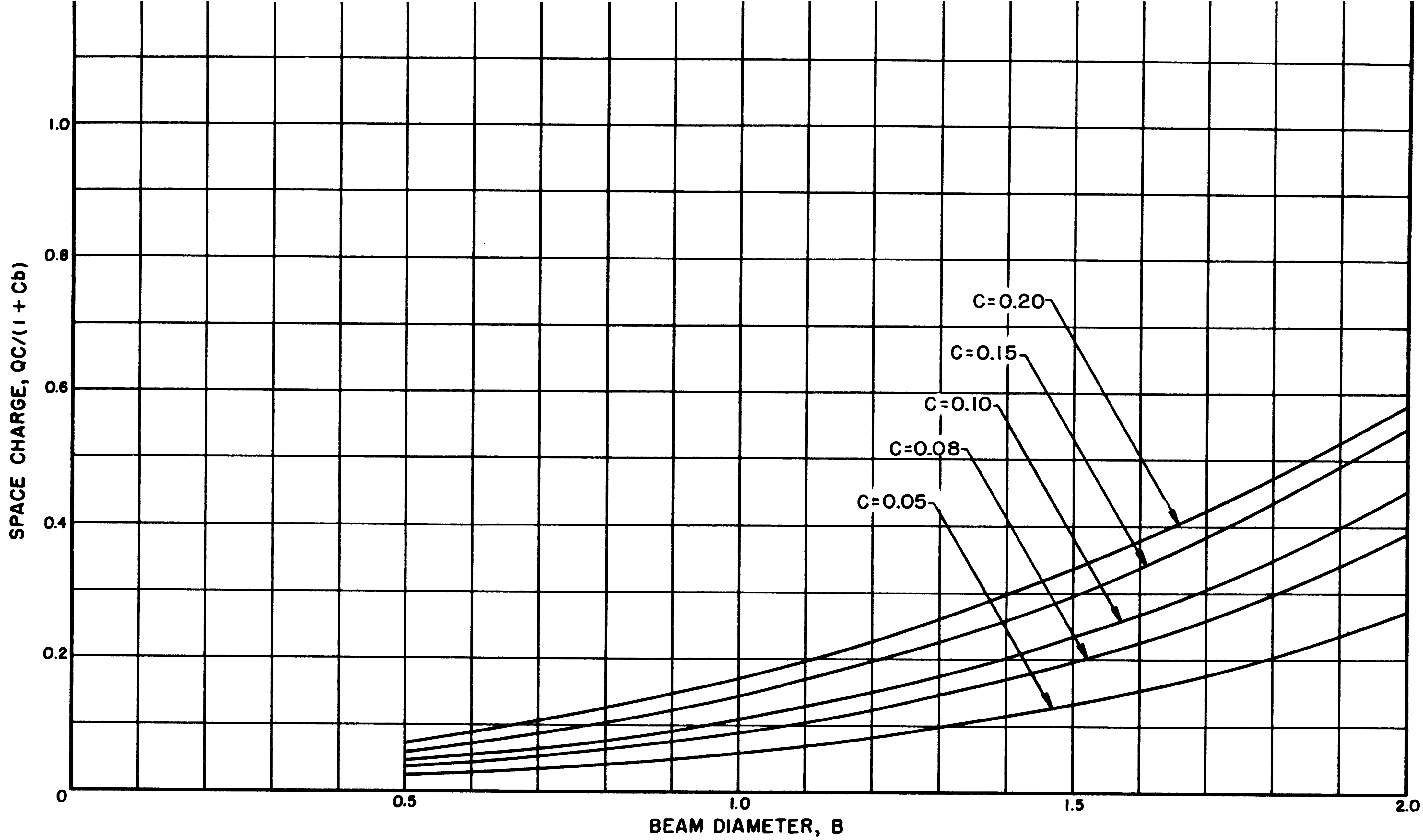


FIG. C.249 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.2$, $V_0 = 9$ KV, DLF = 95%)

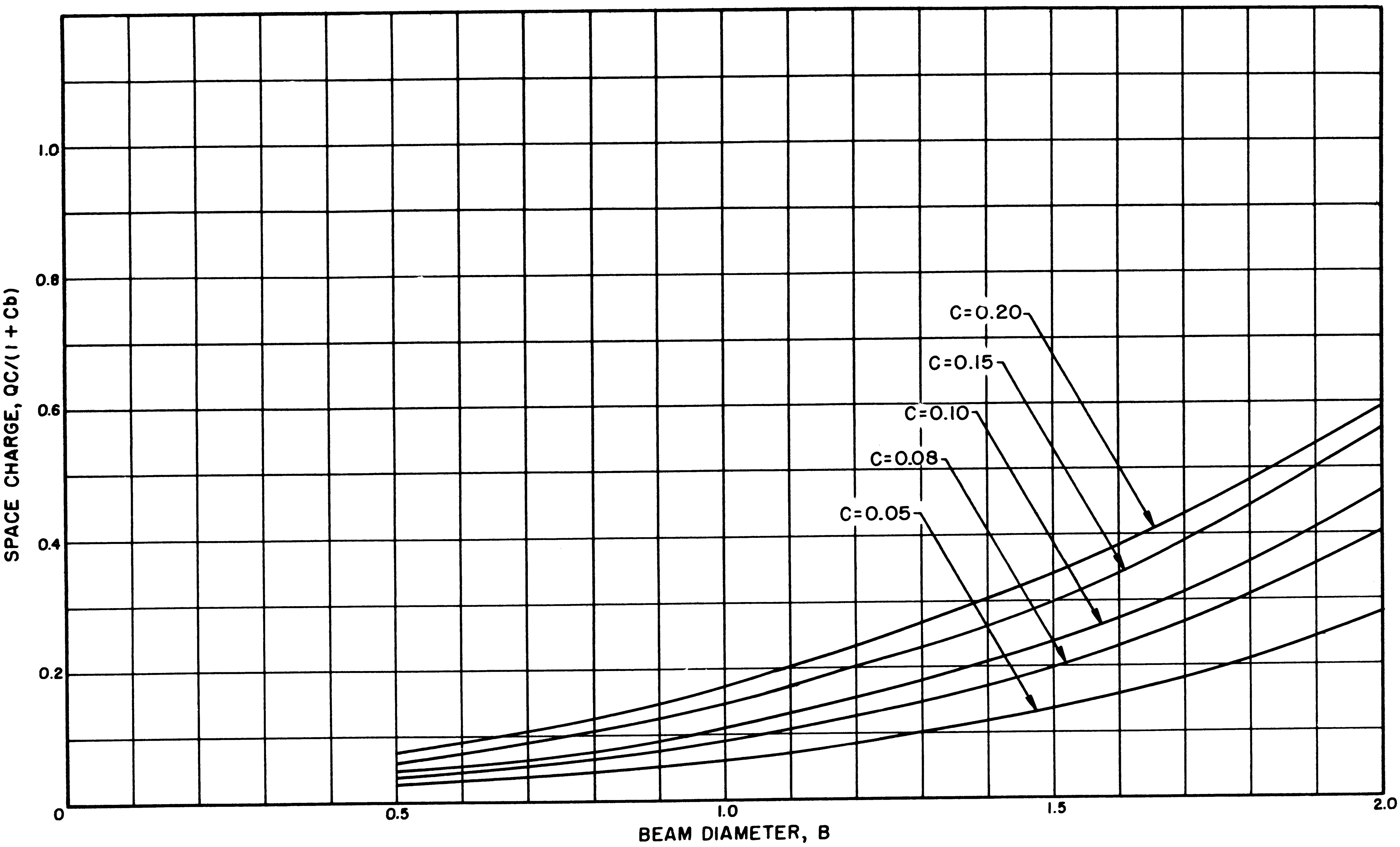


FIG. C.250 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.2$, $V_0 = 10$ KV, DLF = 95%)

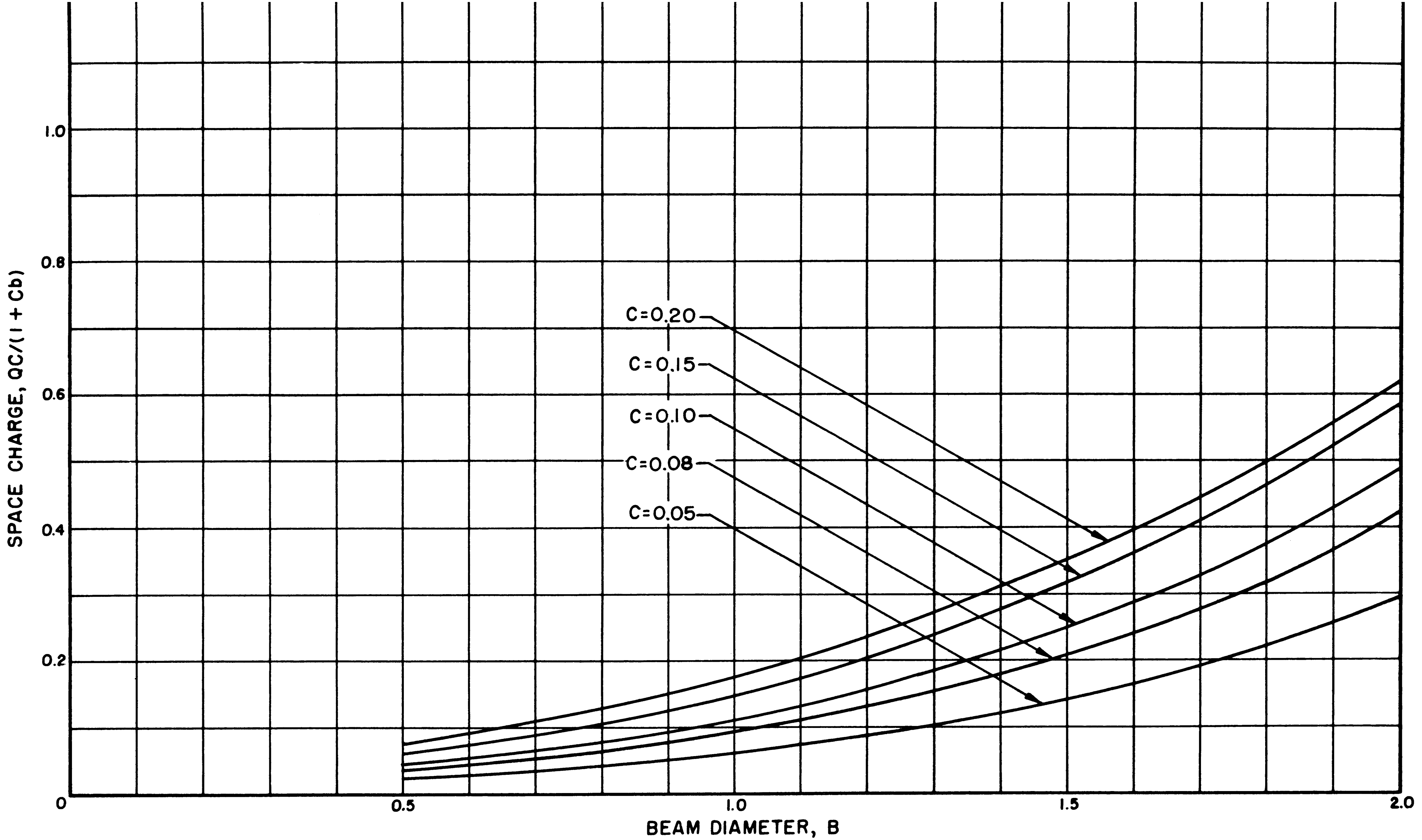


FIG. C.251 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b'=1.2$, $V_0=12KV$, DLF = 95%)

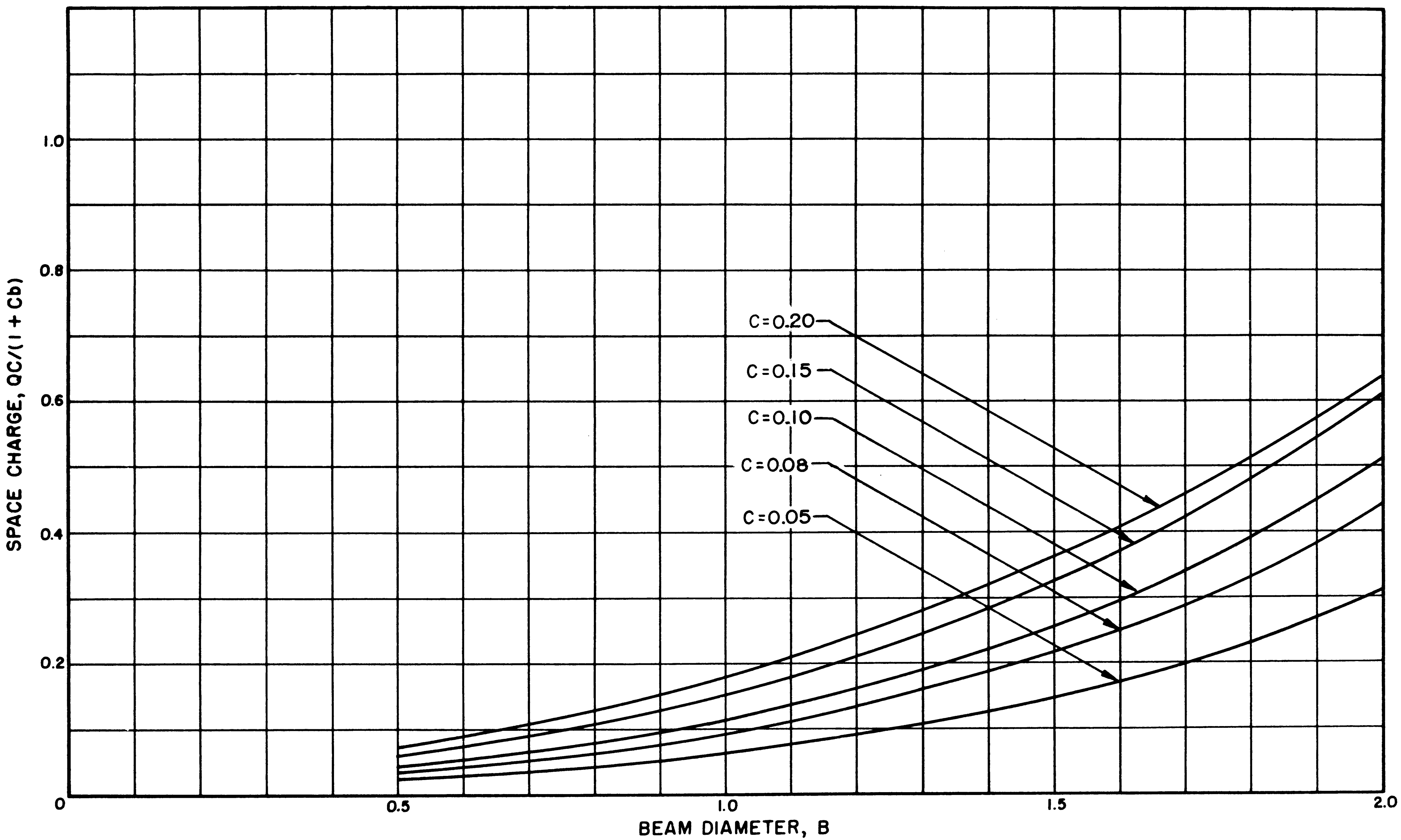


FIG. C.252 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.2$, $V_o = 14$ KV, DLF = 95 %)

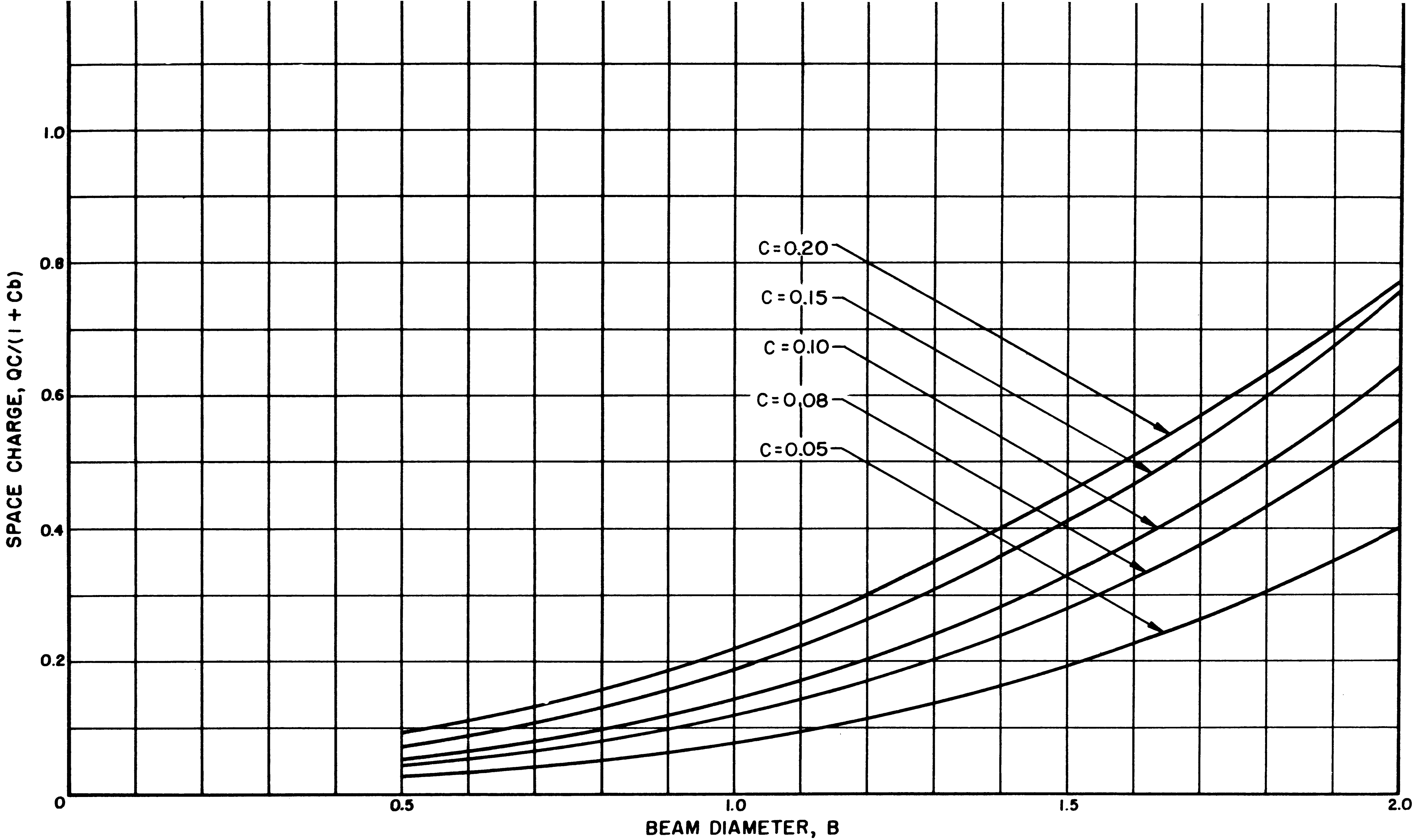


FIG. C. 253 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
(a'/b' = 1.4, V_0 = 1 KV, DLF = 95%)

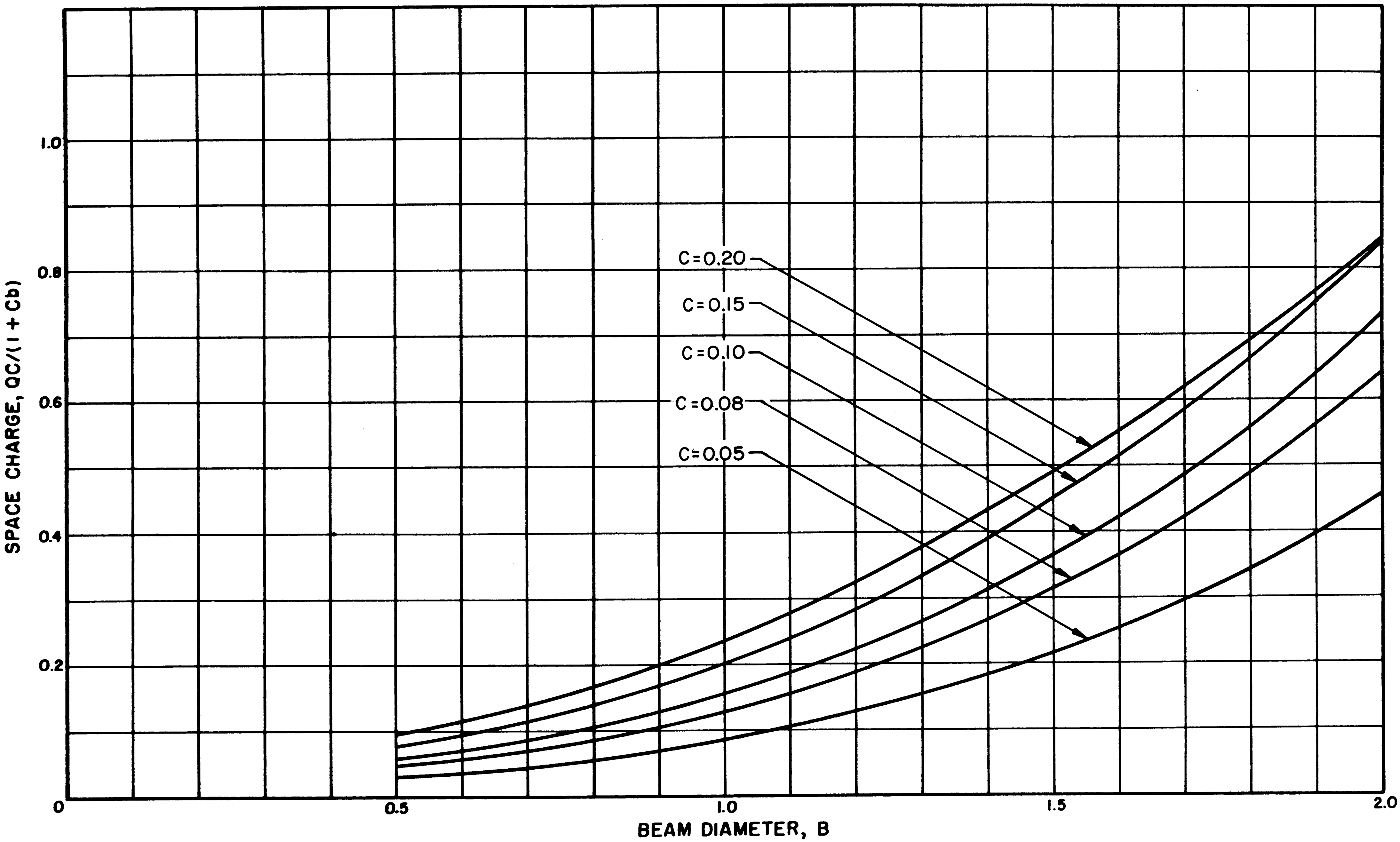


FIG. C.254 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.4$, V_0 = 2 KV, DLF = 95%)

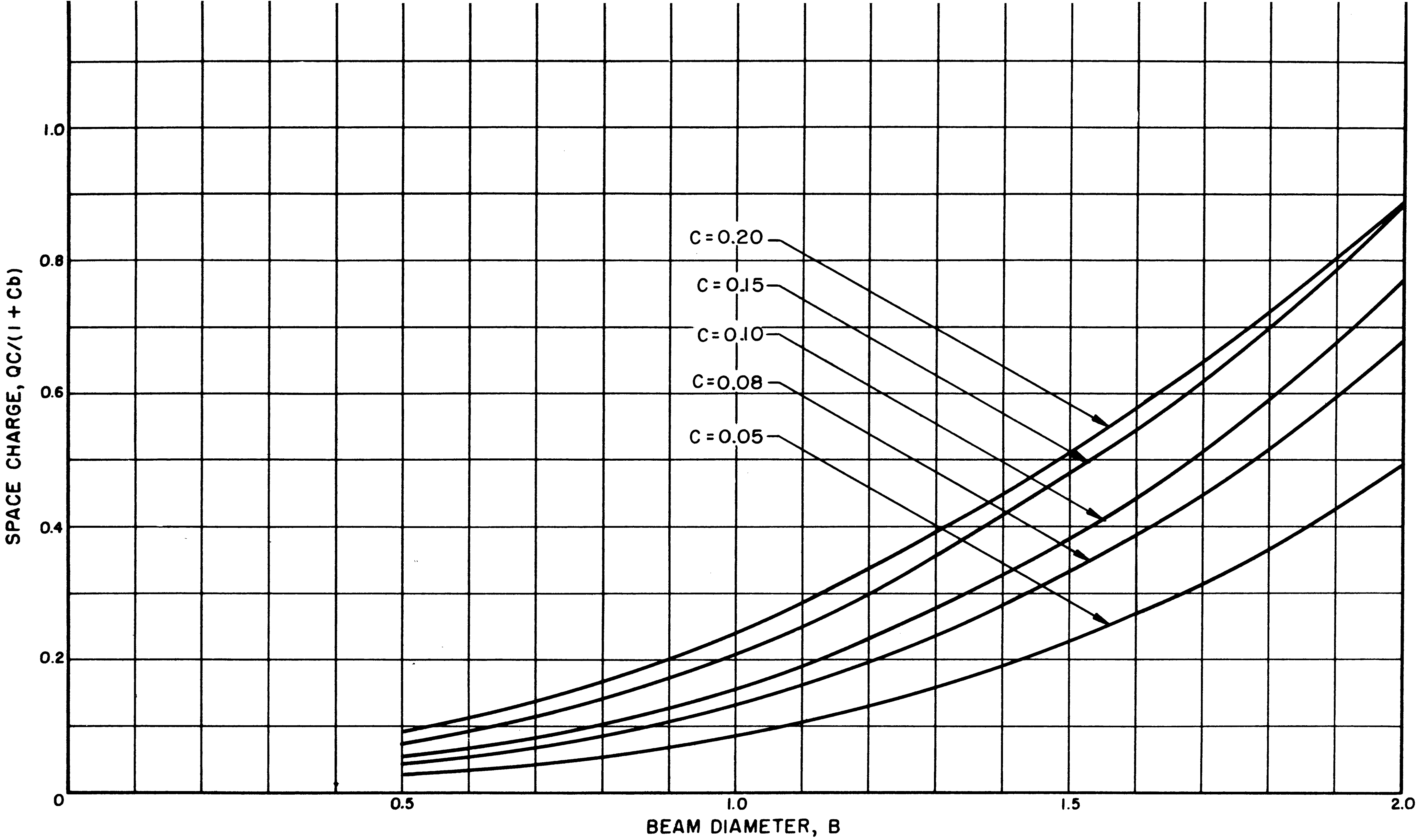


FIG. C.255 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER. ($a'/b' = 1.4$, $V_0 = 3$ KV, DLF = 95 %)

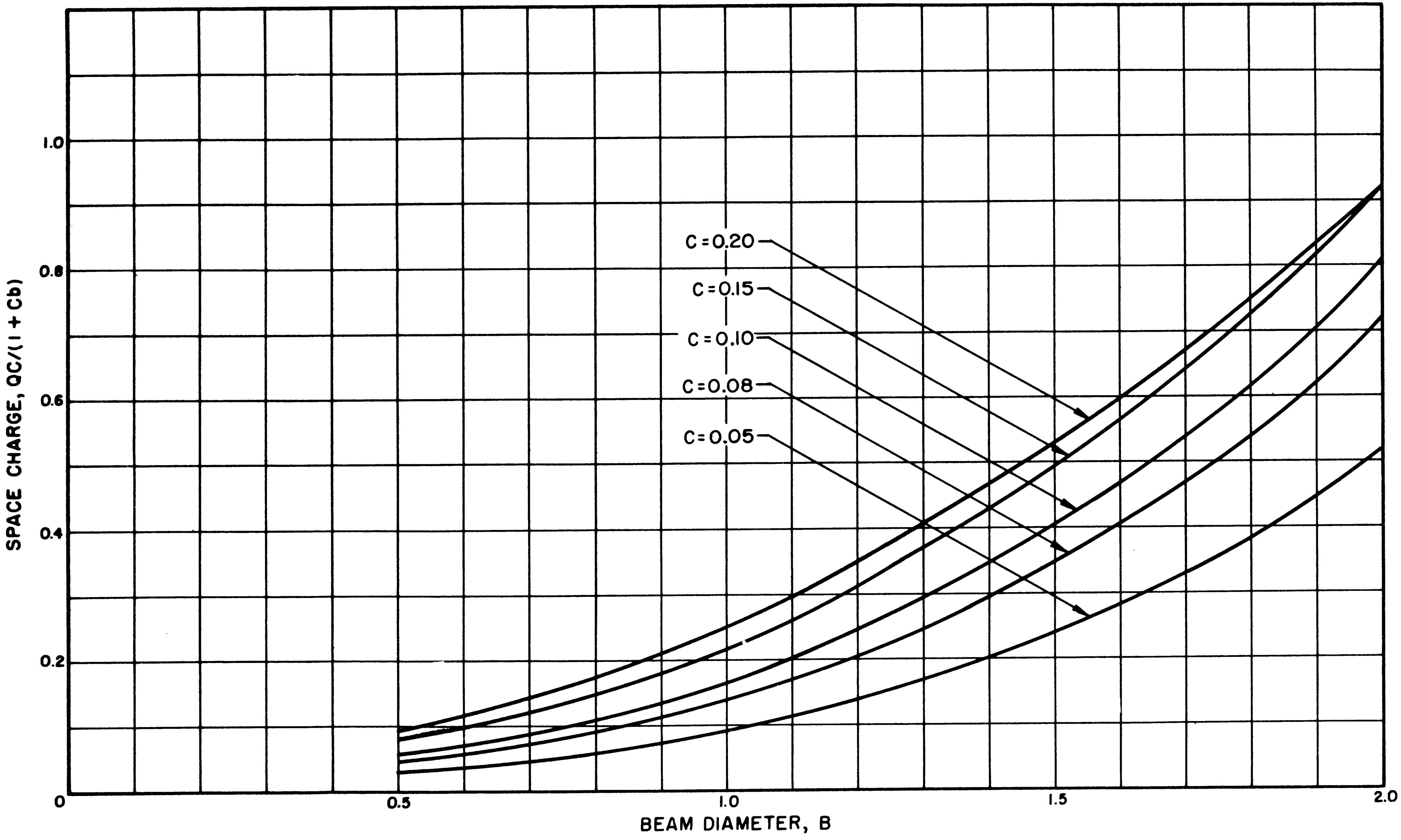


FIG. C.256 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.4$, $V_0 = 4$ KV, DLF = 95%)

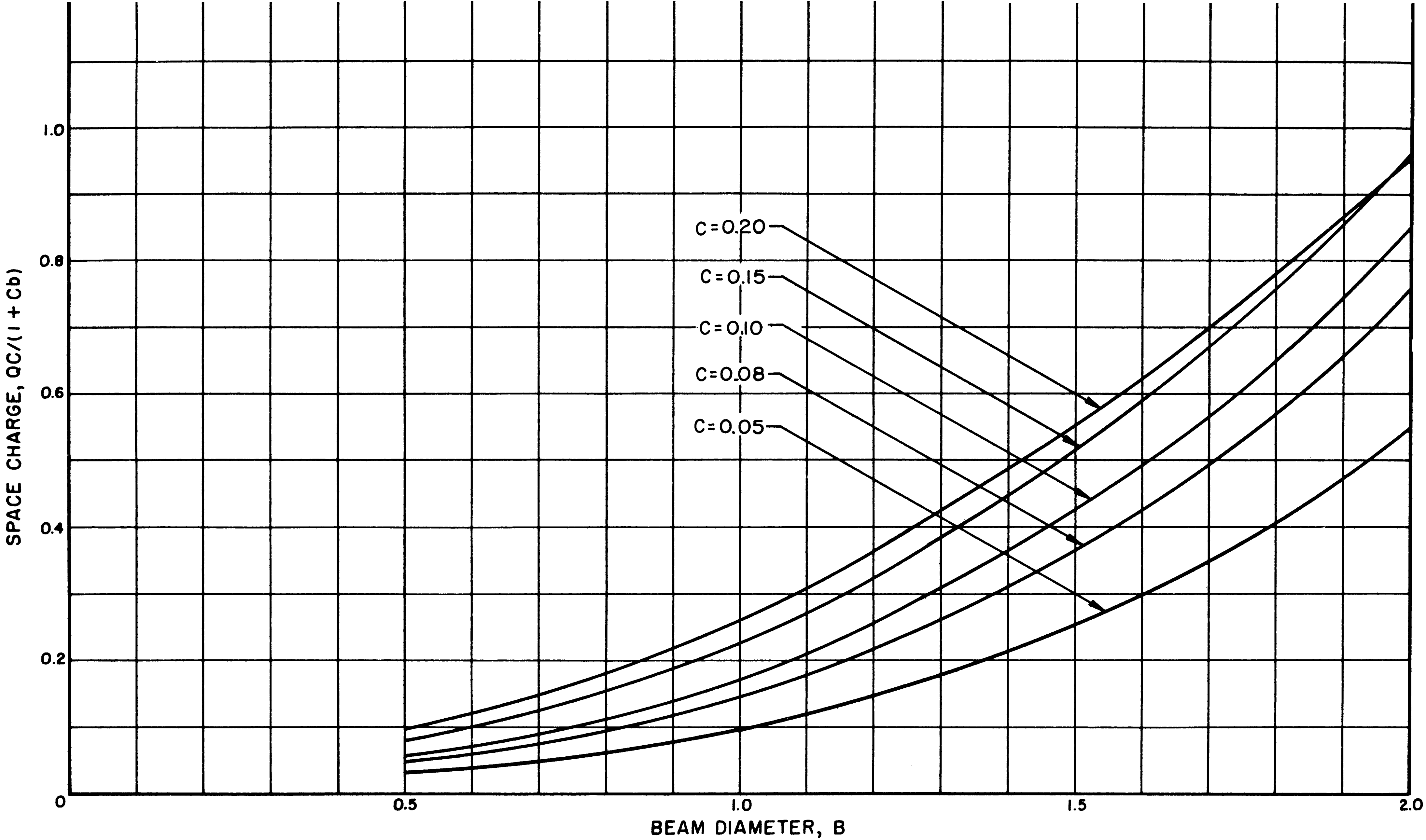


FIG. C.257 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.4$, $V_0 = 5$ KV, DLF = 95%)

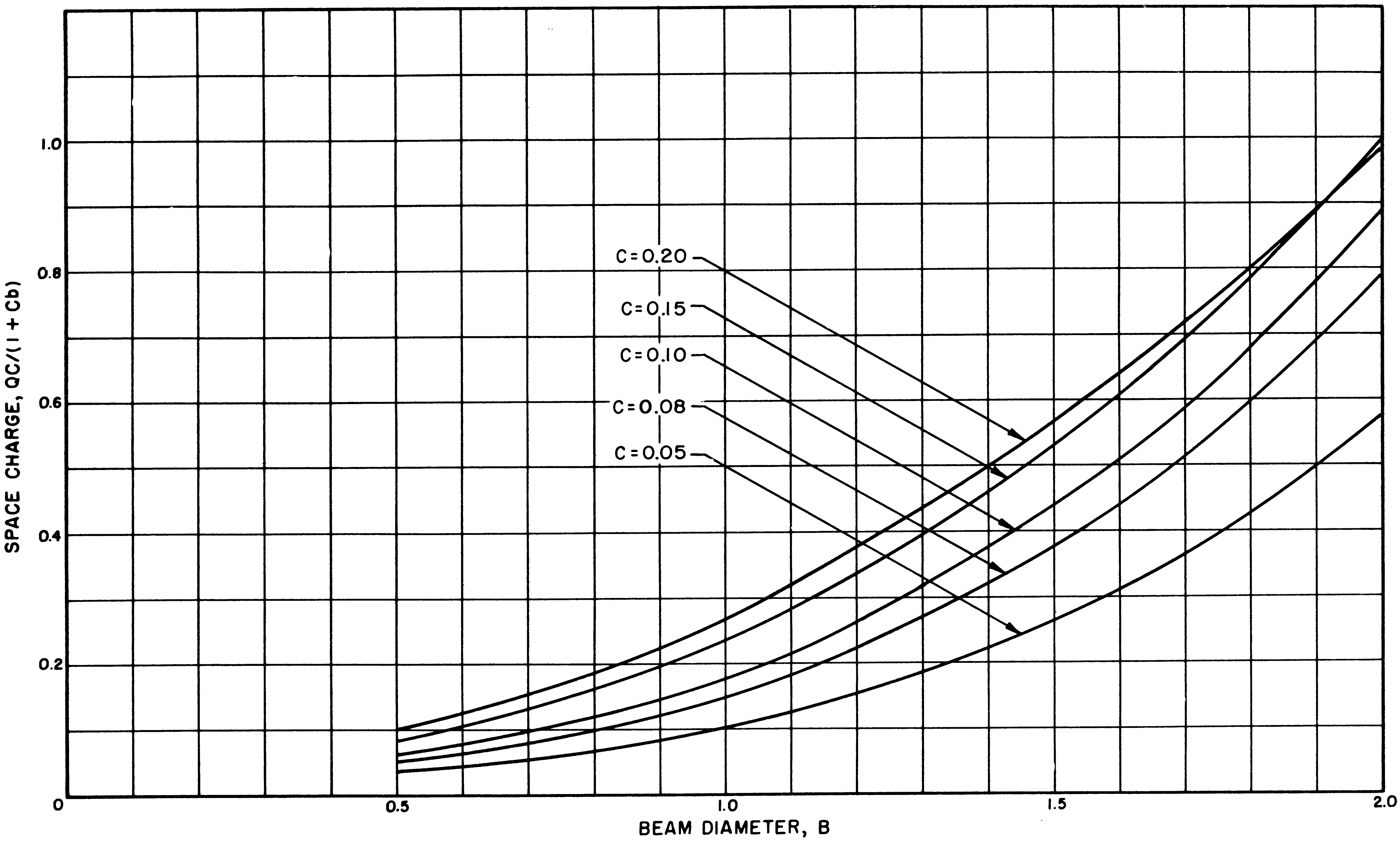


FIG. C.258 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.4$, $V_0 = 6$ KV, DLF = 95%)

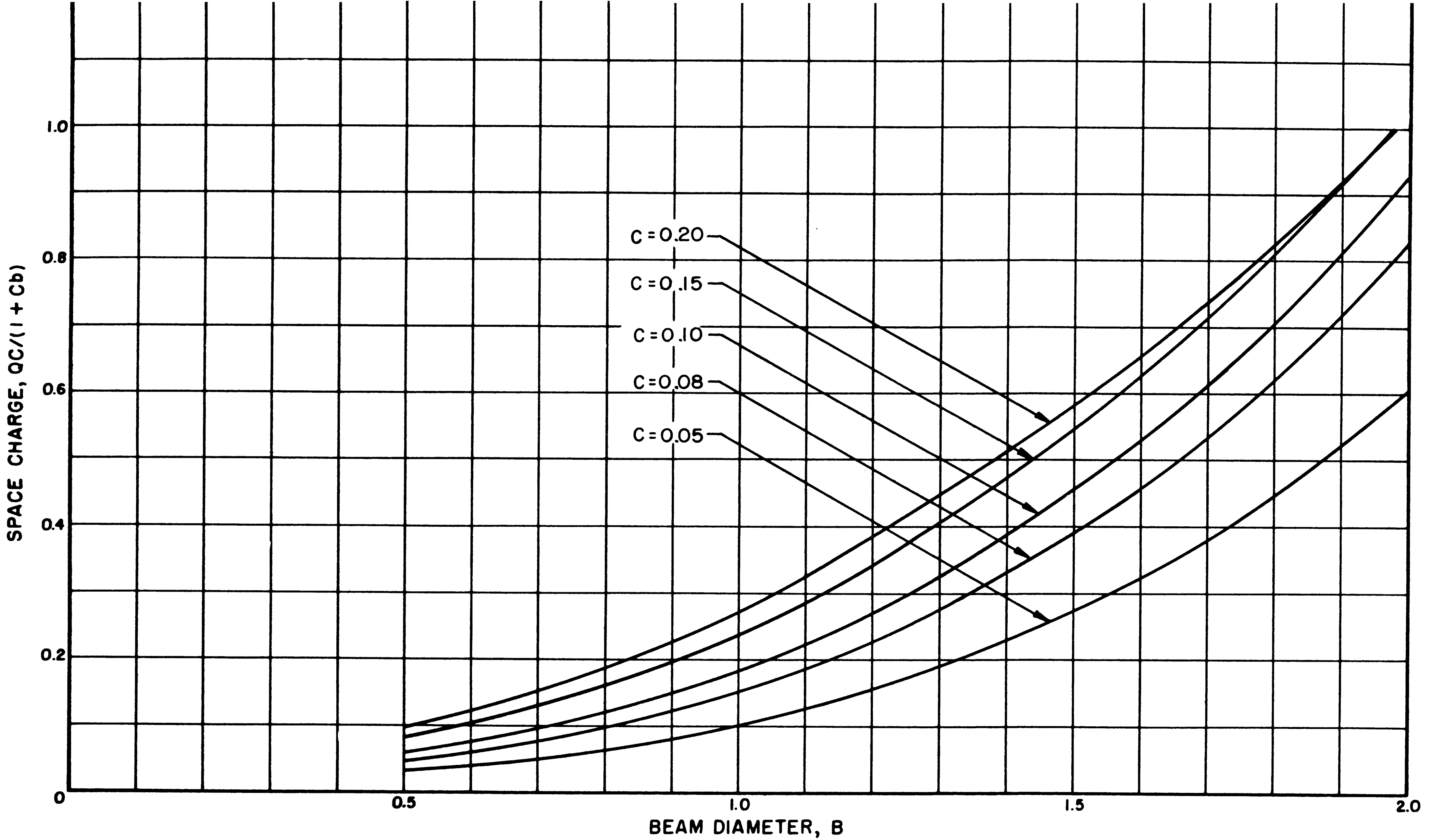


FIG. C.259 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.4$, $V_0 = 7$ KV, DLF = 95%)

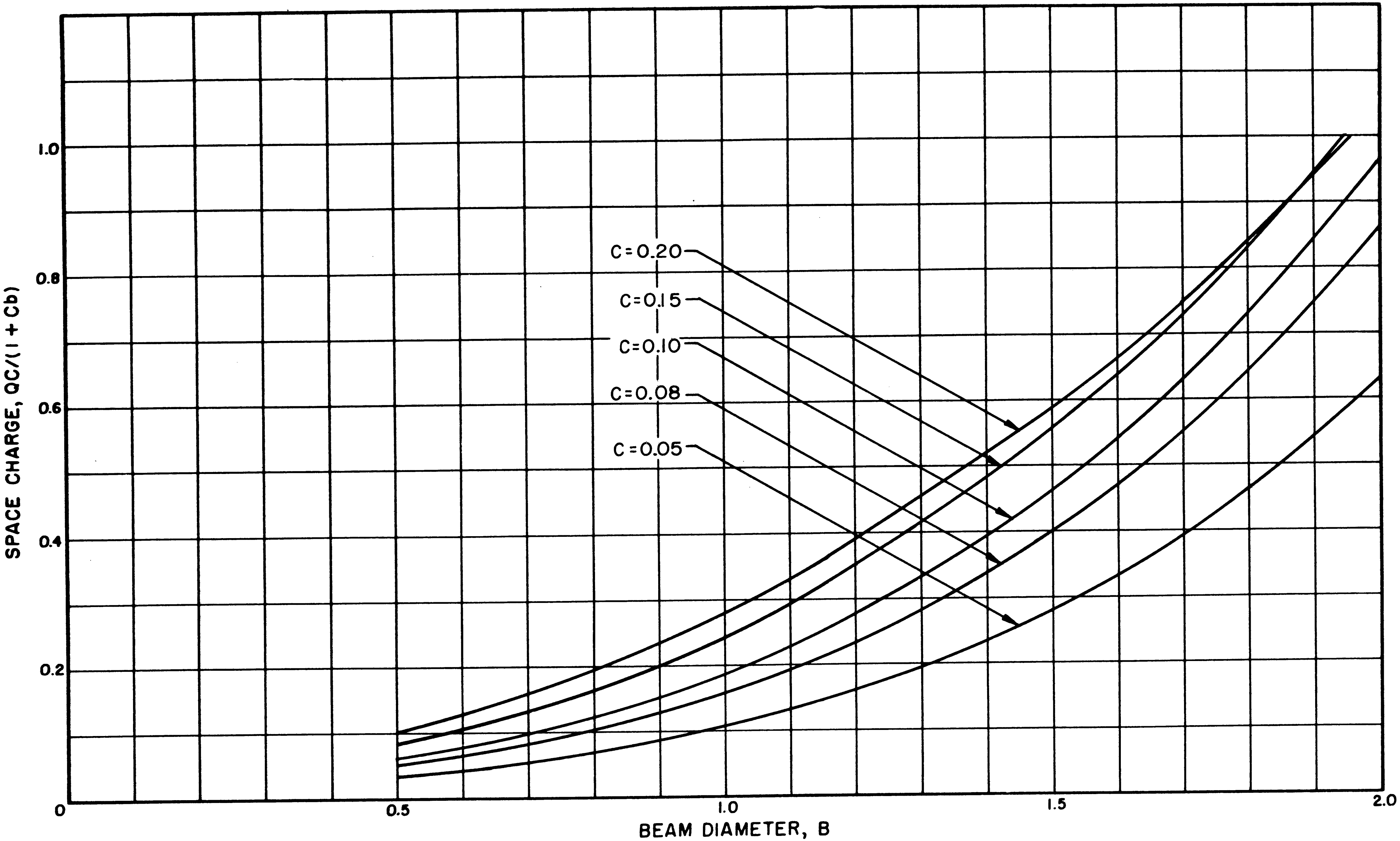


FIG. C.260 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.4$, V_0 = 8 KV, DLF = 95%)

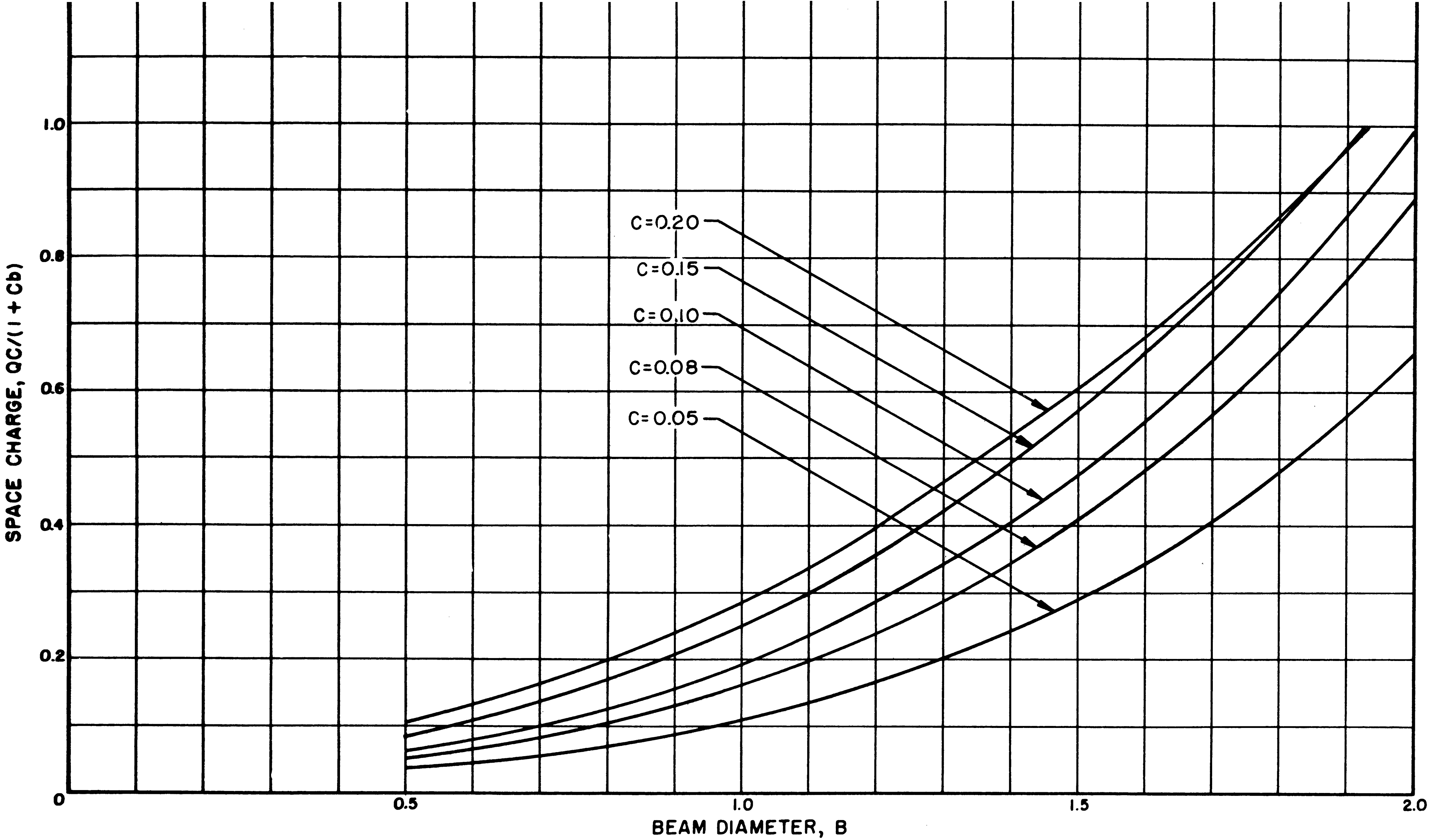


FIG. C.261 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.4$, $V_0 = 9$ KV, DLF = 95%)

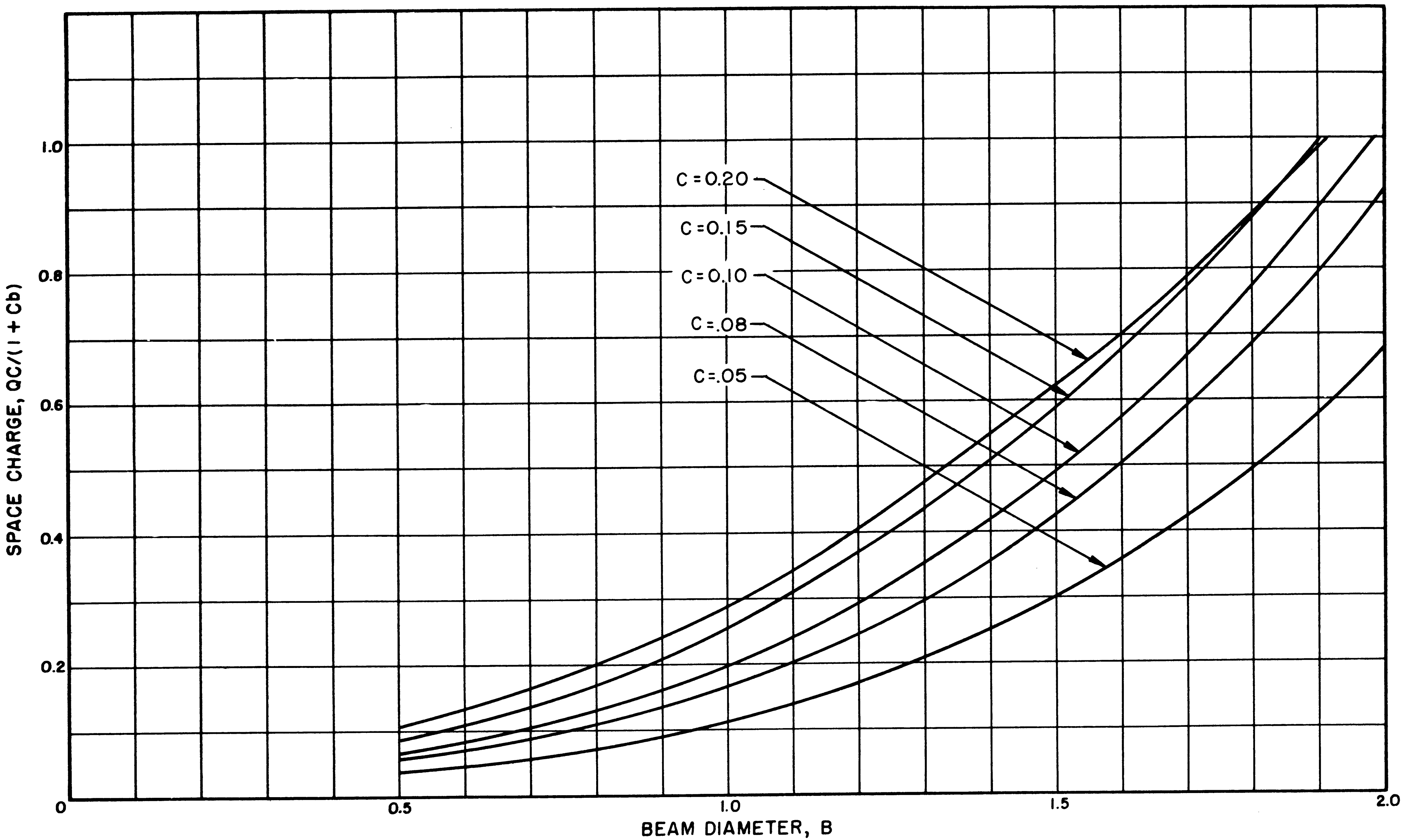


FIG. C.262 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.4$, $V_0 = 10$ KV, DLF = 95%)

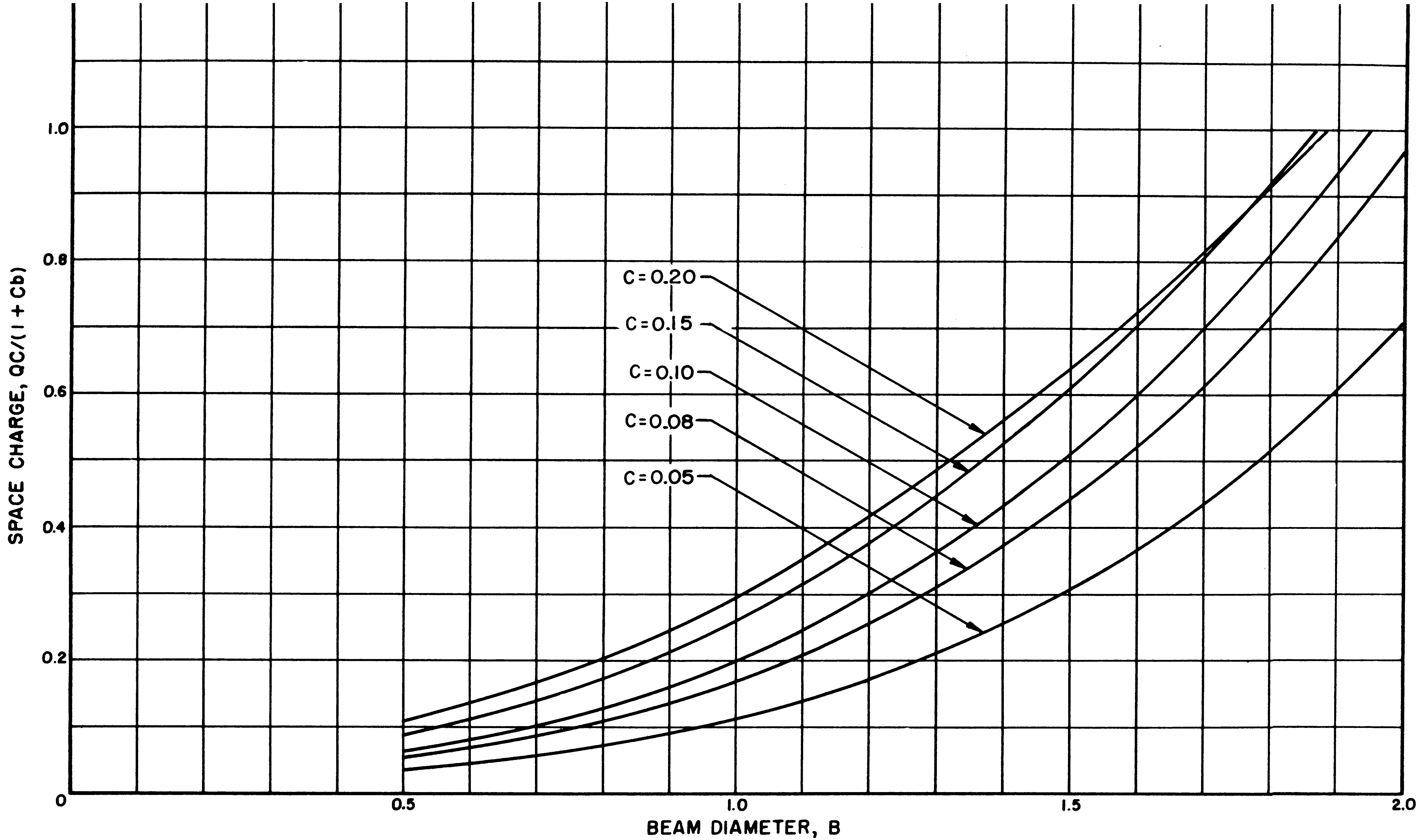


FIG. C.263 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.4$, $V_0 = 12$ KV, DLF = 95%)

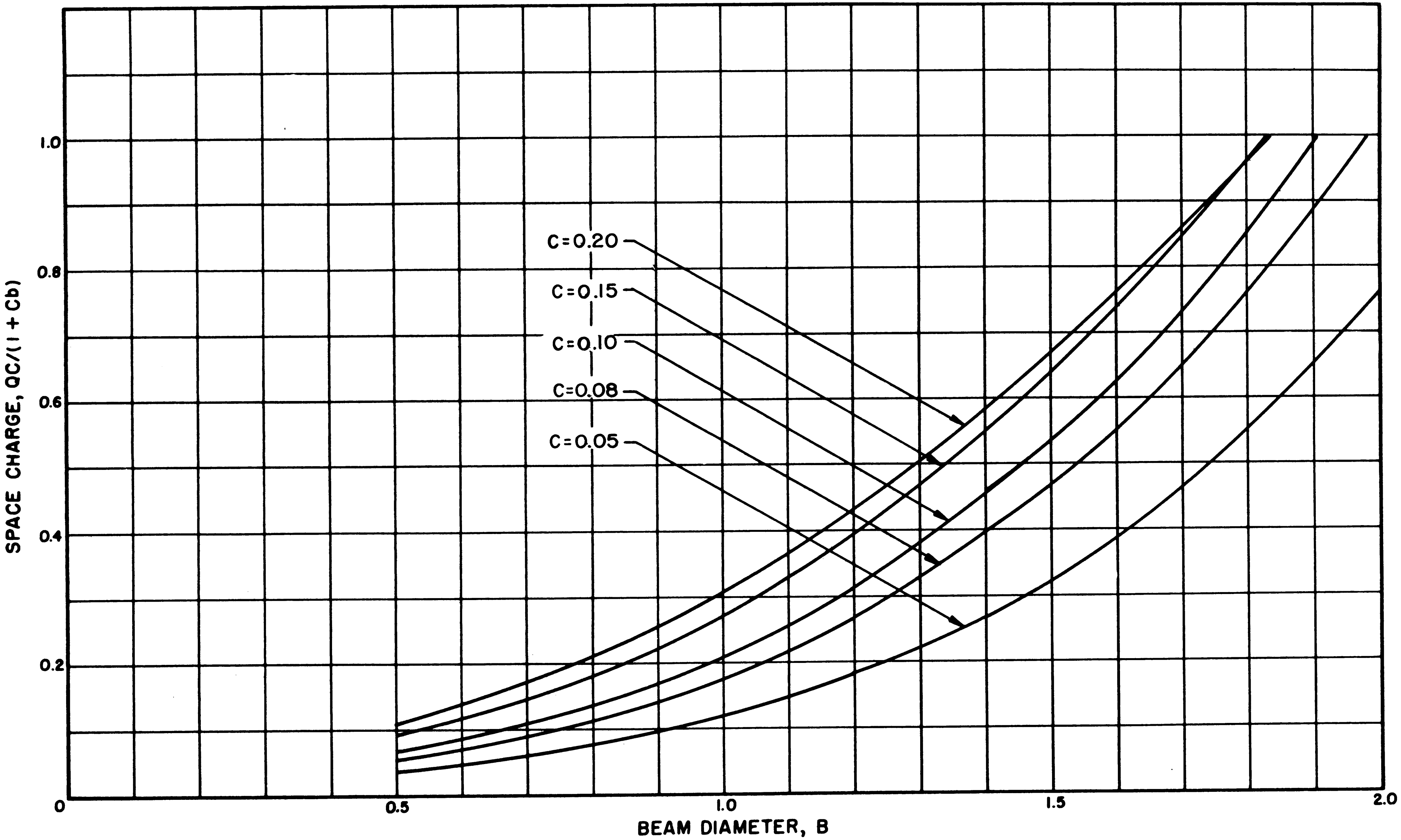


FIG. C.264 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.4$, $V_0 = 14$ KV, DLF = 95%)

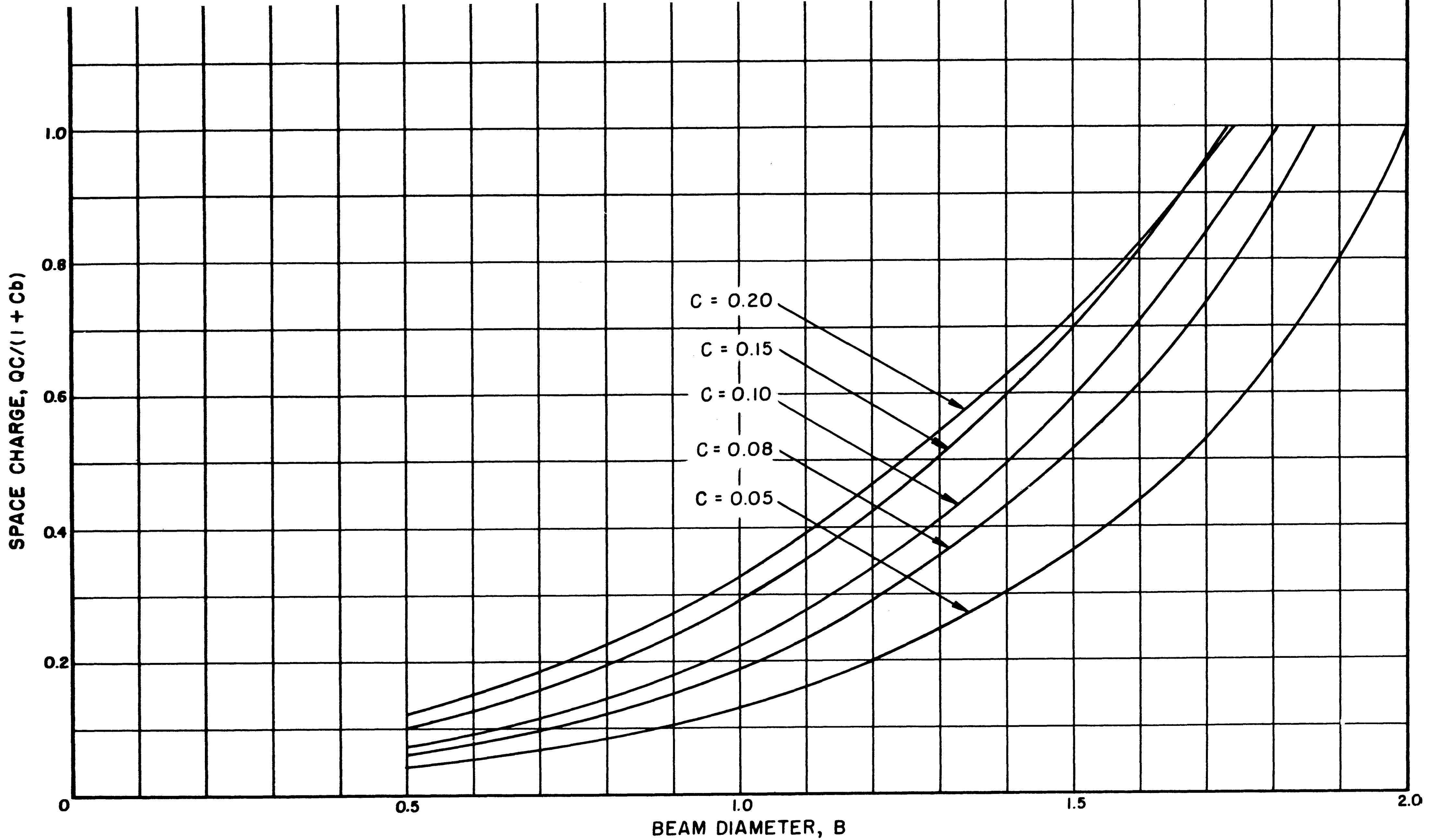


FIG. C.265 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.6$, $V_0 = 1$ KV, DLF = 95%)

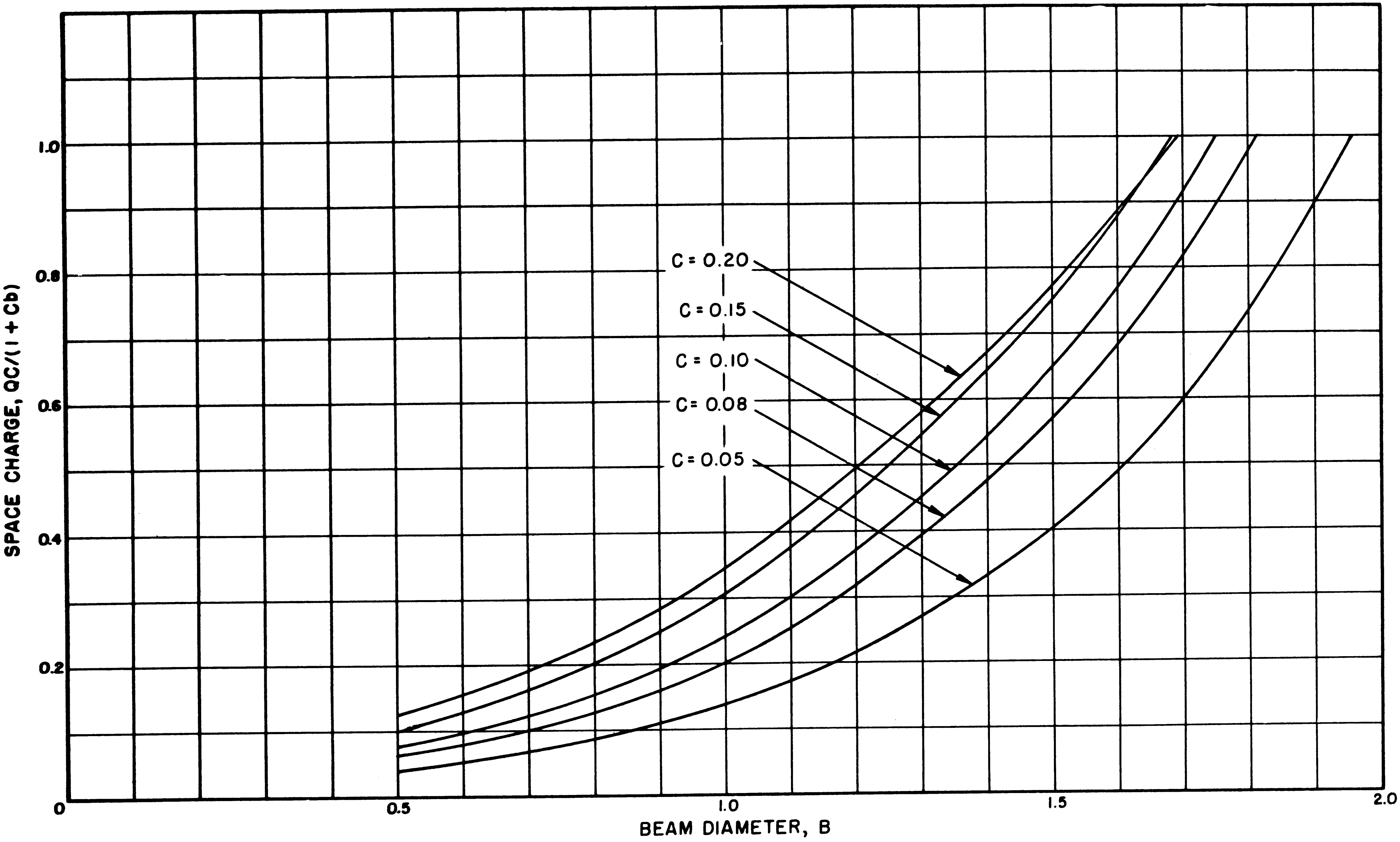


FIG. C.266 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.6$, V_0 = 2 KV, DLF = 95 %)

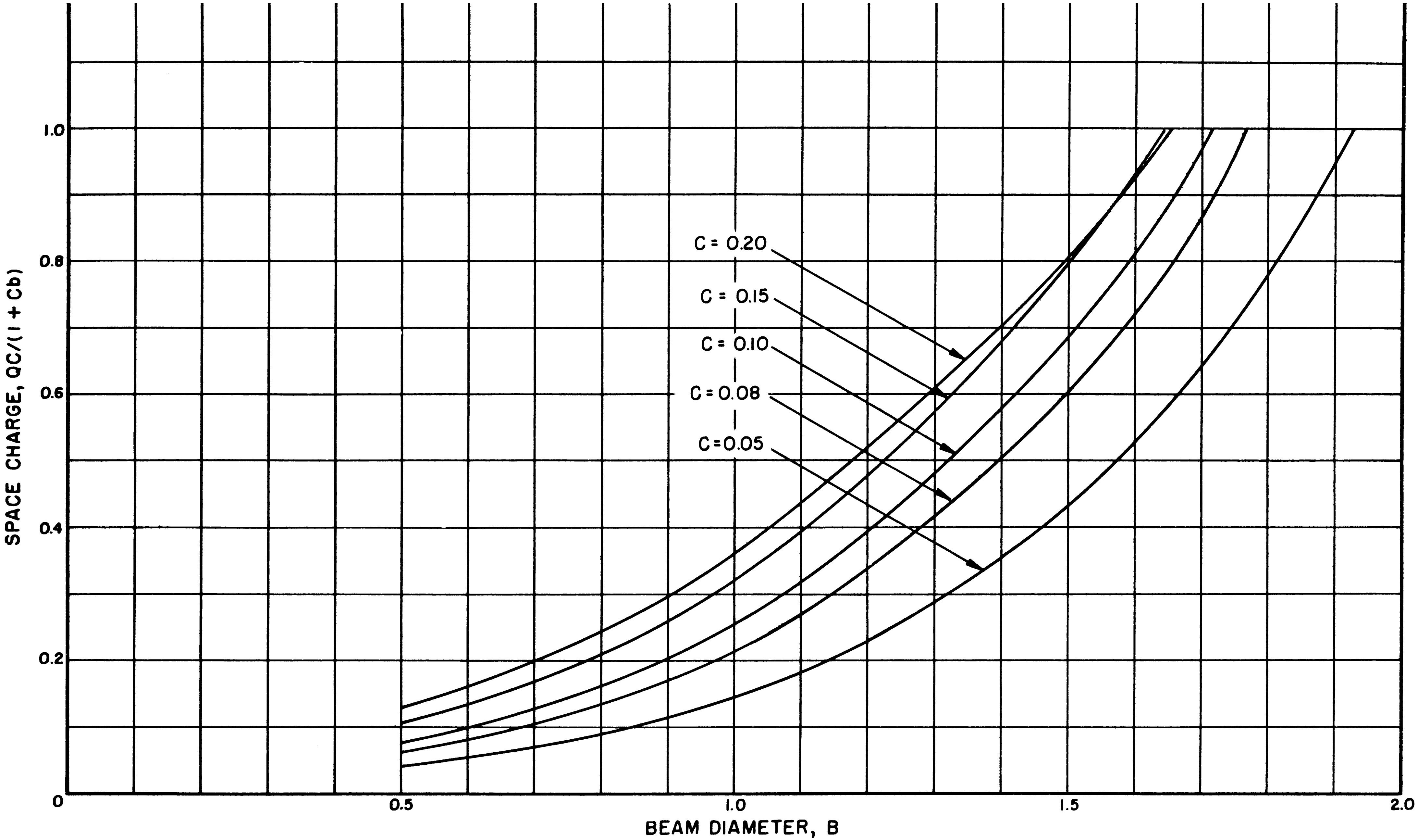


FIG. C.267 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.6$, V_0 = 3 KV, DLF = 95 %)

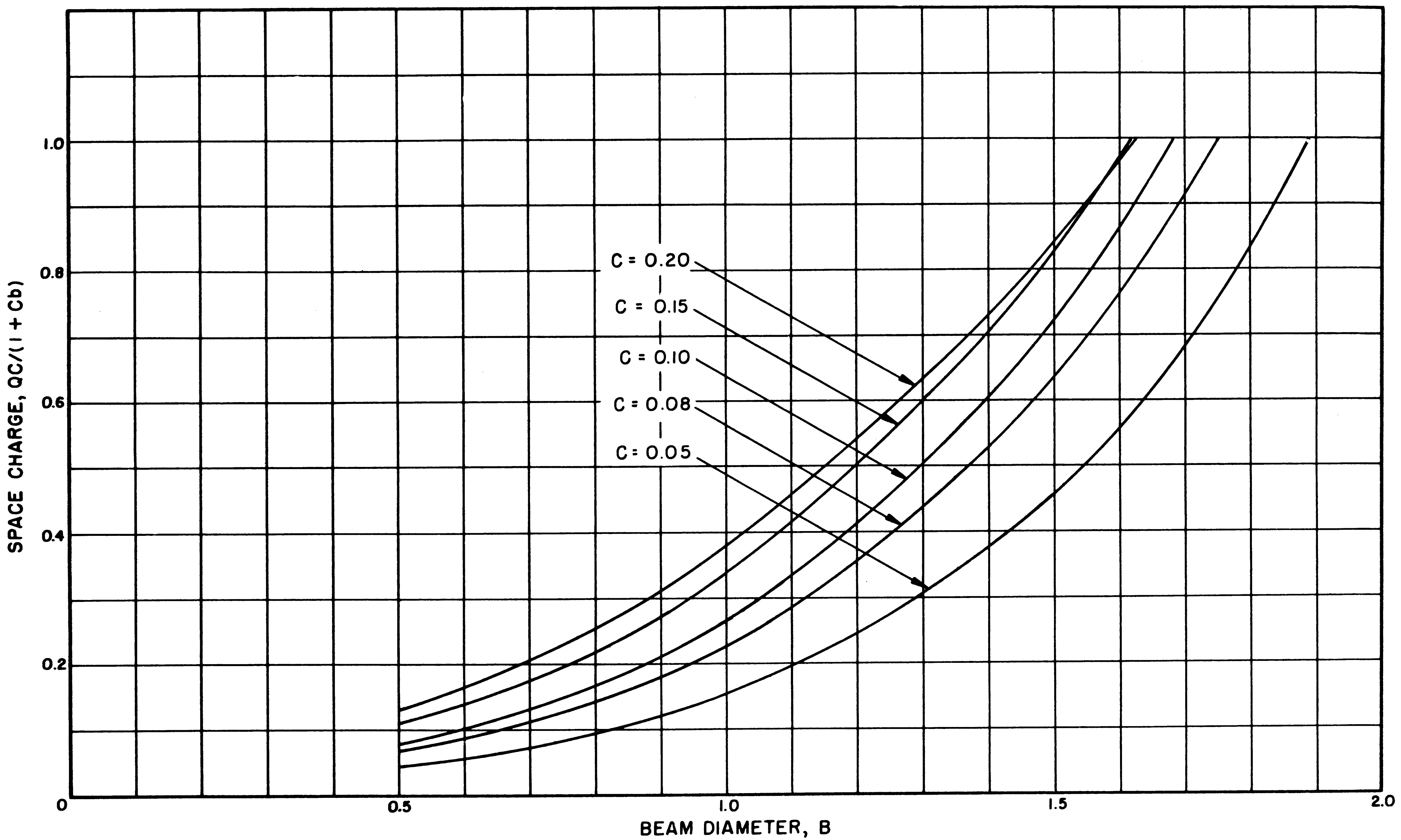


FIG. C.268 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.6$, $V_o = 4$ KV, DLF = 95 %)

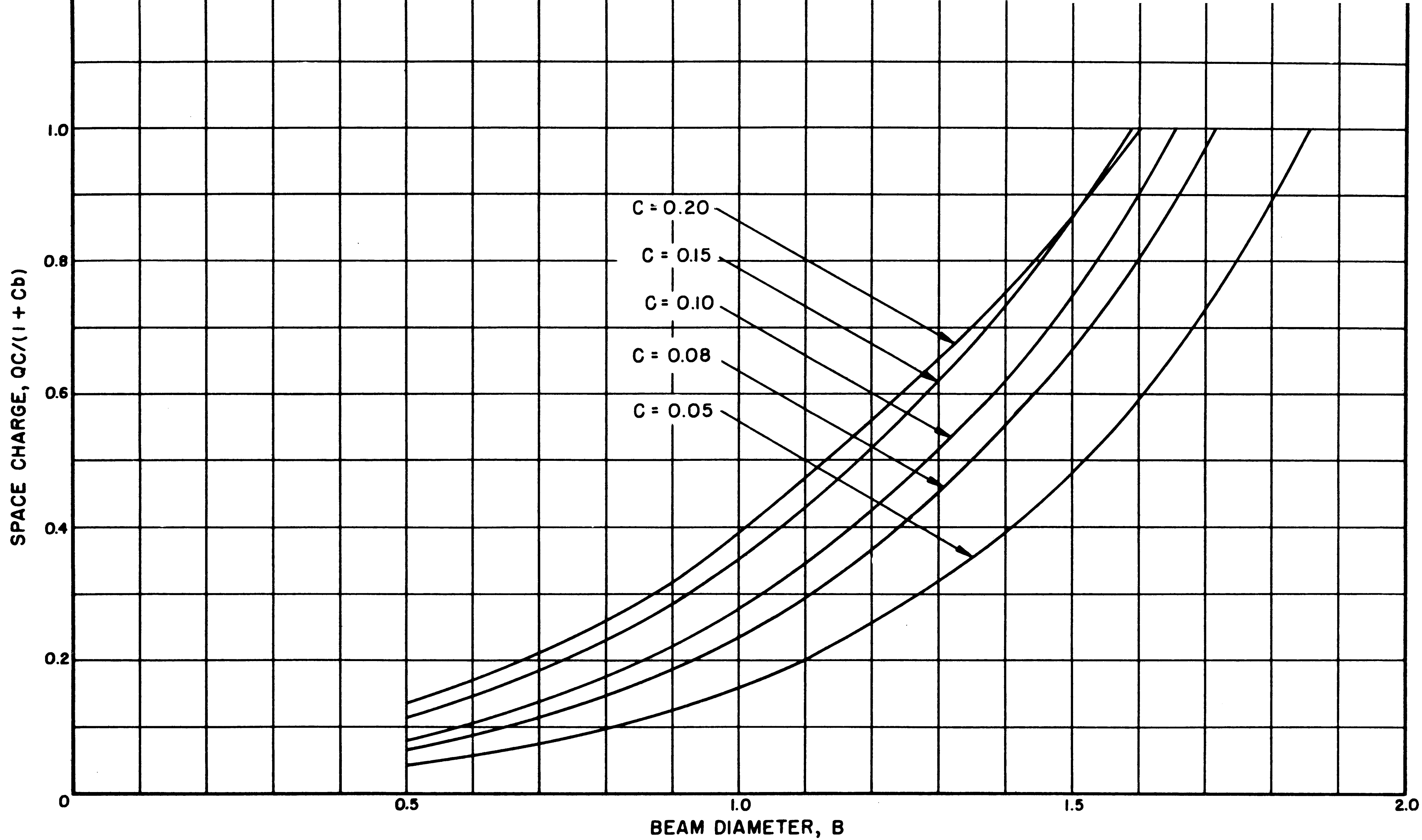


FIG. C.269 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER. ($a'/b' = 1.6$, $V_0 = 5$ KV, DLF = 95%)

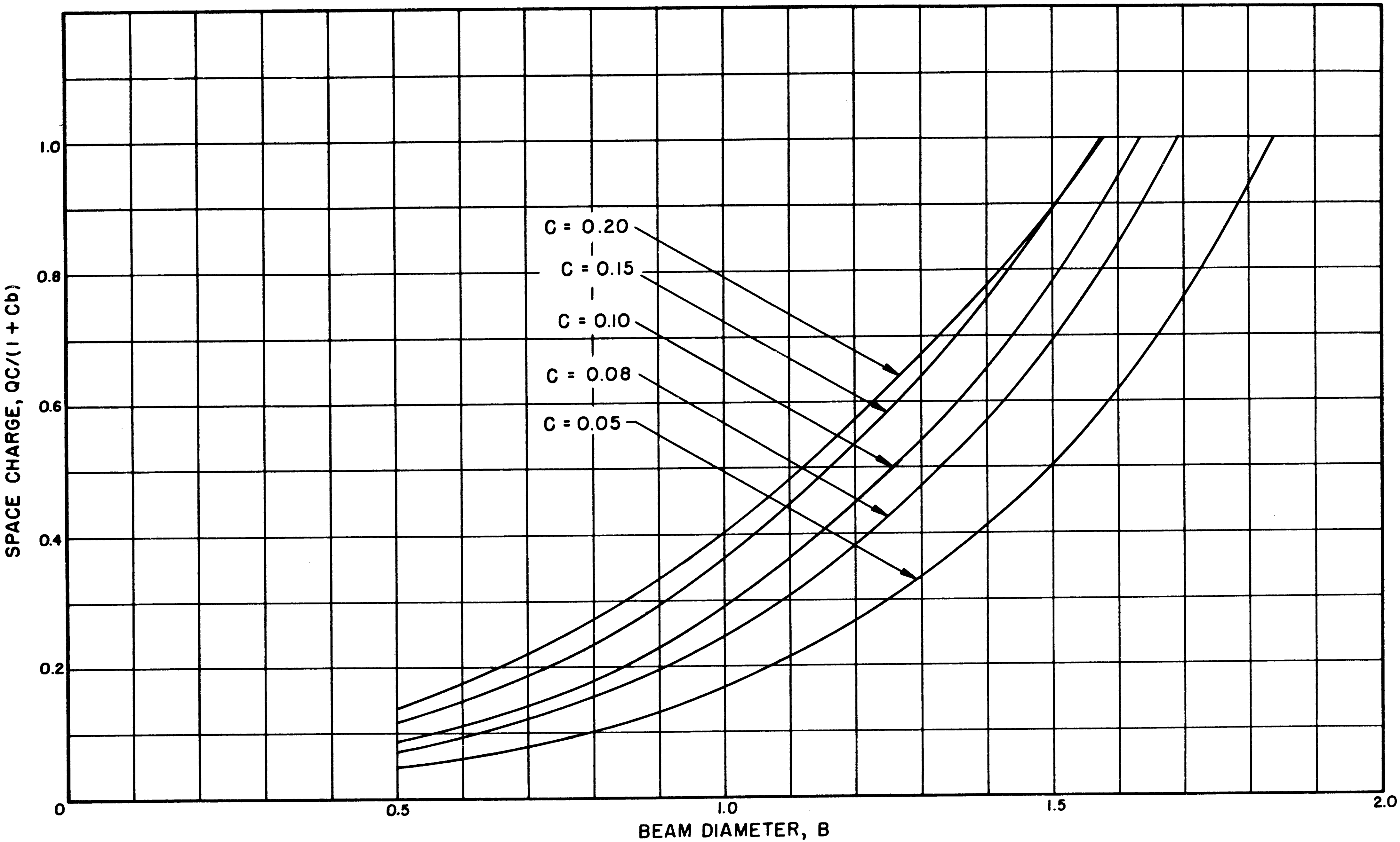


FIG. C.270 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.6$, $V_0 = 6$ KV, DLF = 95 %)

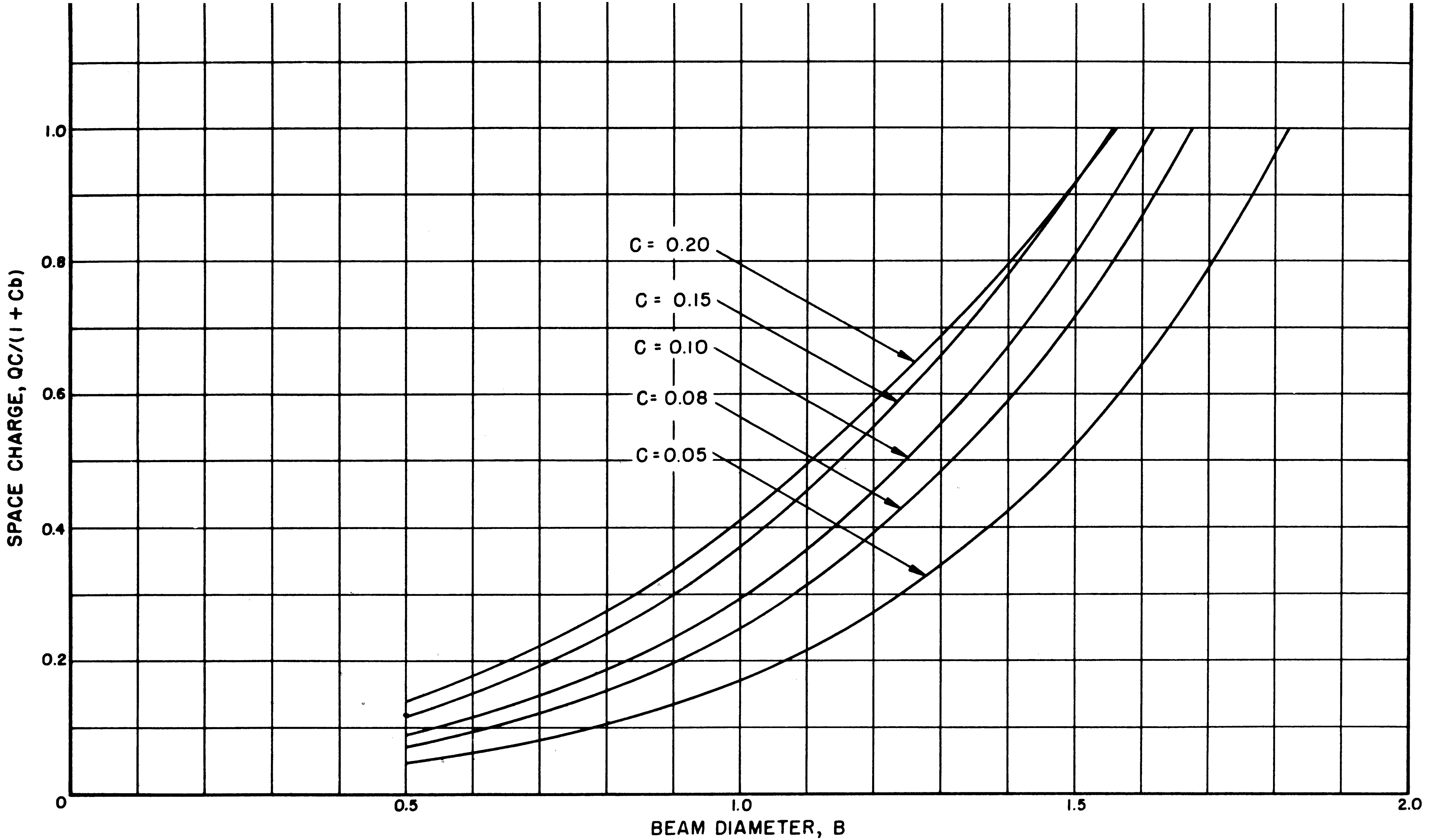


FIG. C.271 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER. ($a'/b' = 1.6$, $V_0 = 7$ KV, DLF = 95 %)

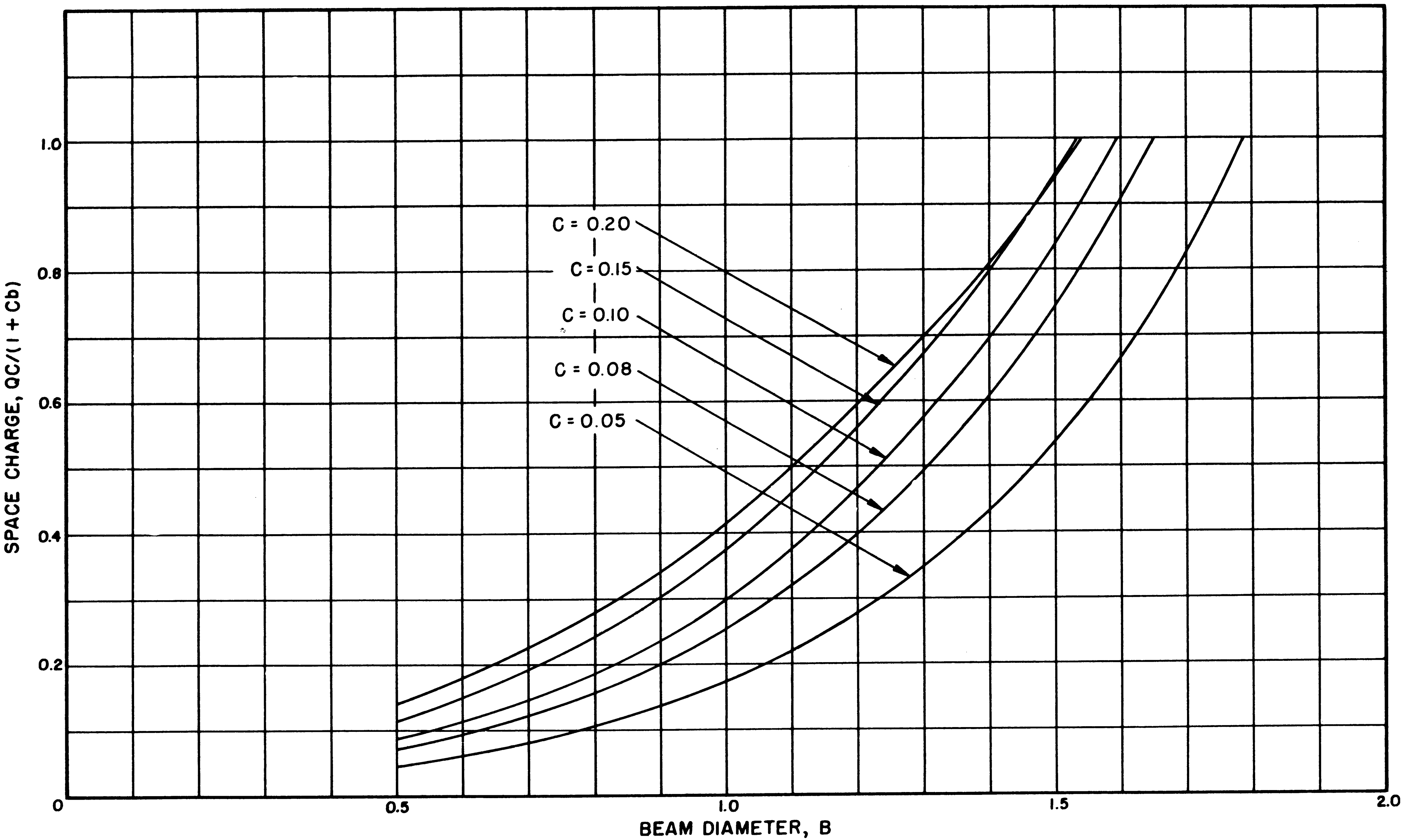


FIG. C.272 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.6$, V_0 = 8 KV, DLF = 95 %)

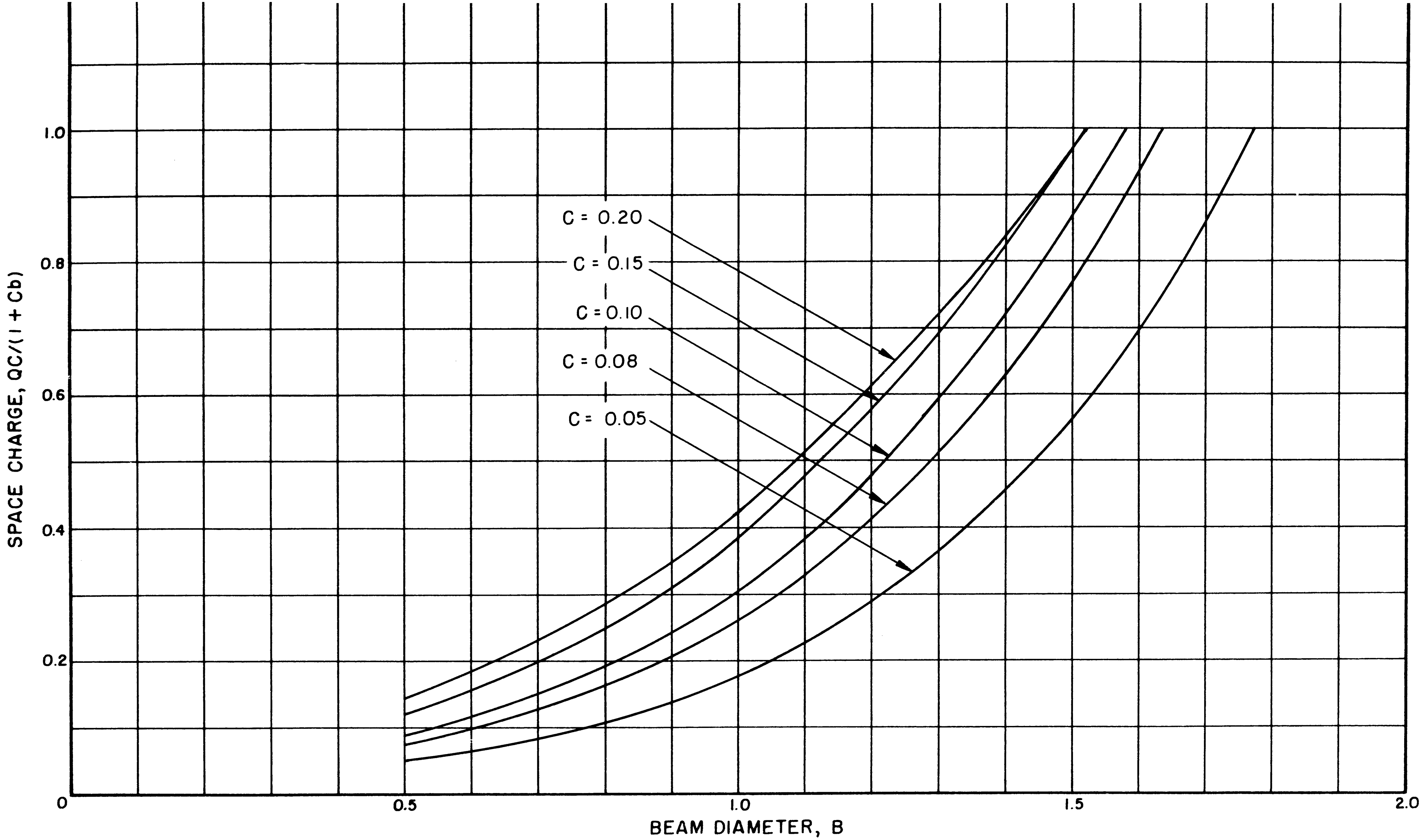


FIG. C.273 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.6$, $V_0 = 9$ KV, DLF = 95%)

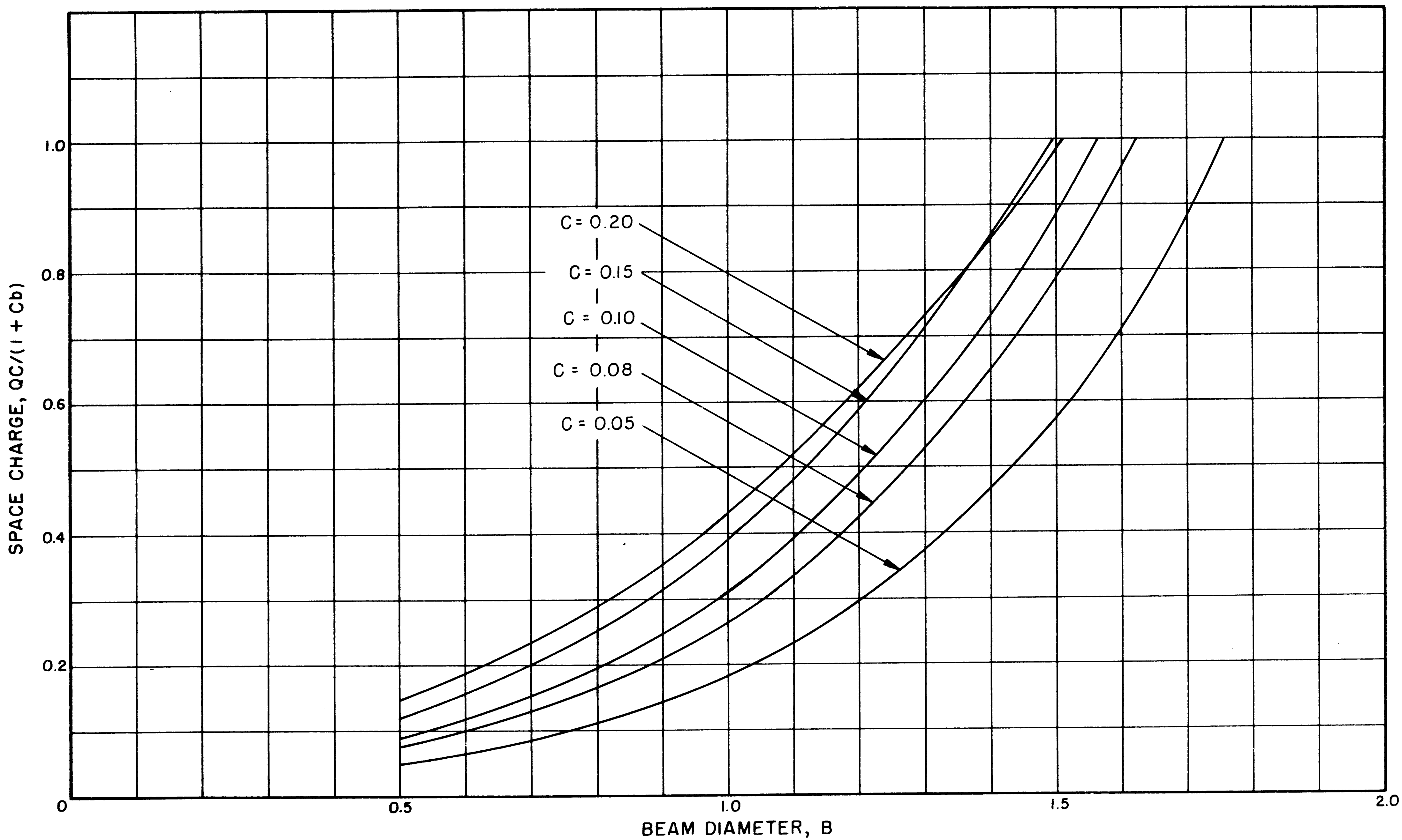


FIG. C.274 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.6$, $V_0 = 10$ KV, DLF = 95%)

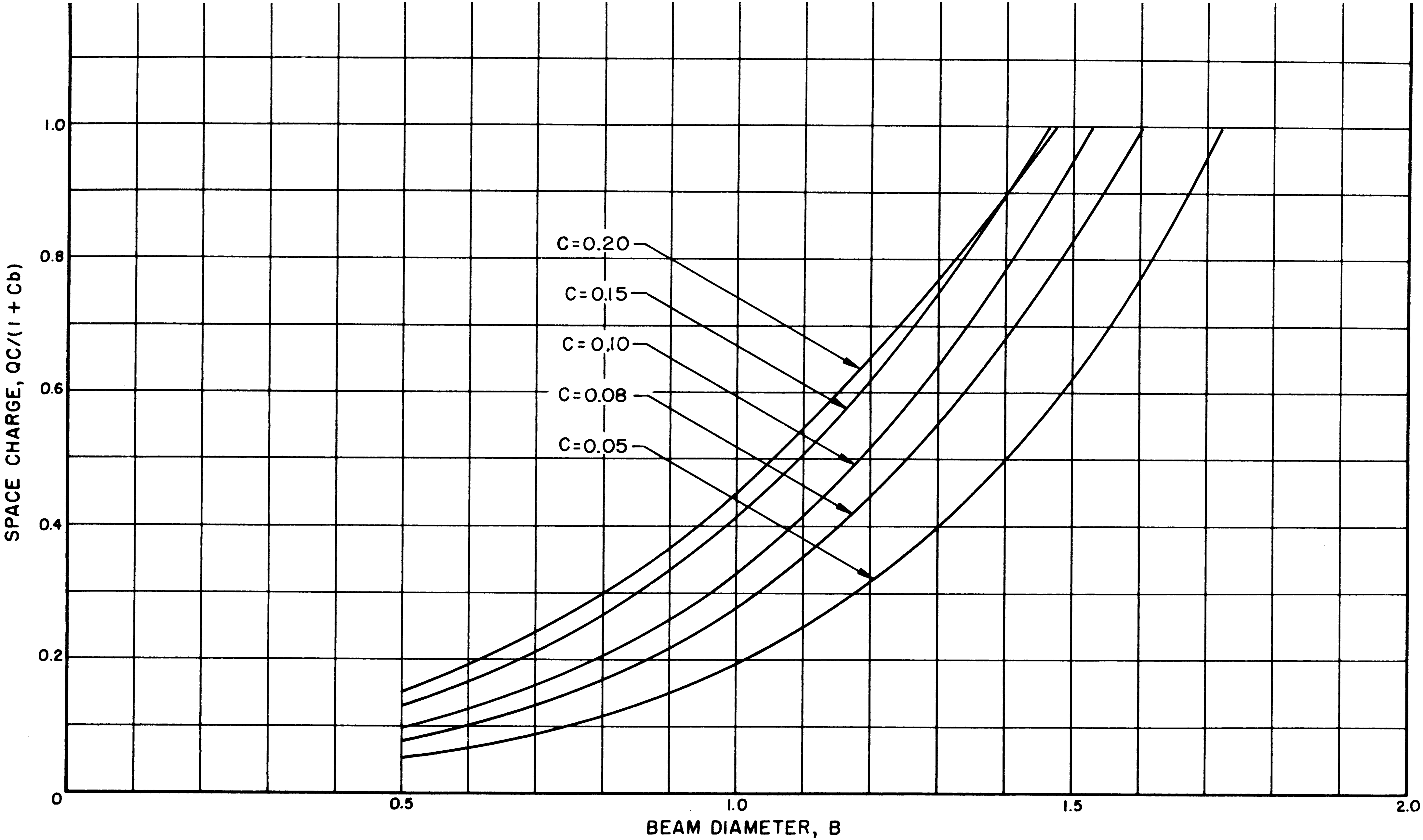


FIG. C.275 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER. ($a'/b' = 1.6$, $V_0 = 12$ KV, DLF = 95%)

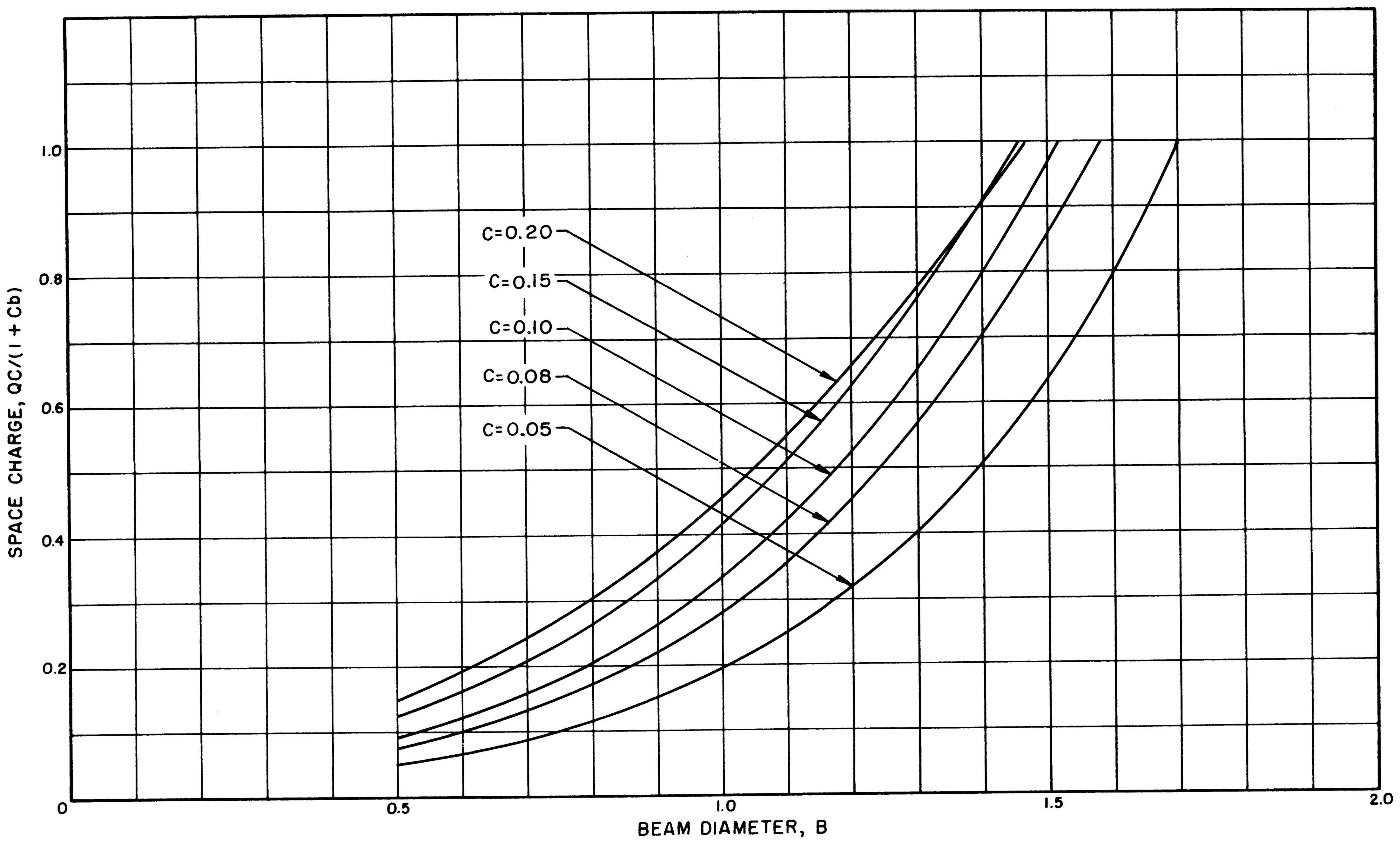


FIG. C.276 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.6$, $V_0 = 14$ KV, DLF = 95%)

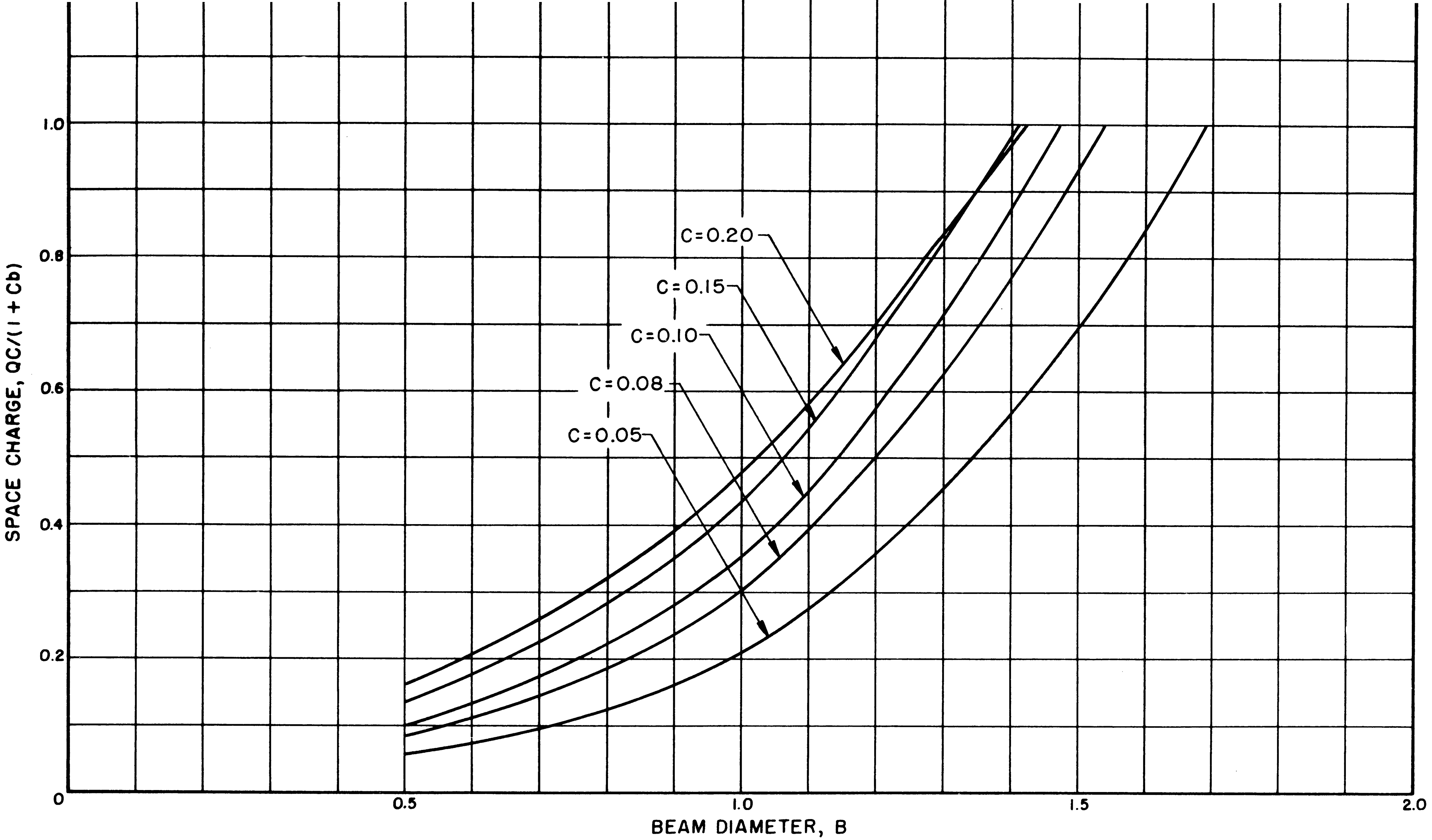


FIG. C.277 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.8$, $V_0 =$ 1 KV, DLF = 95%)

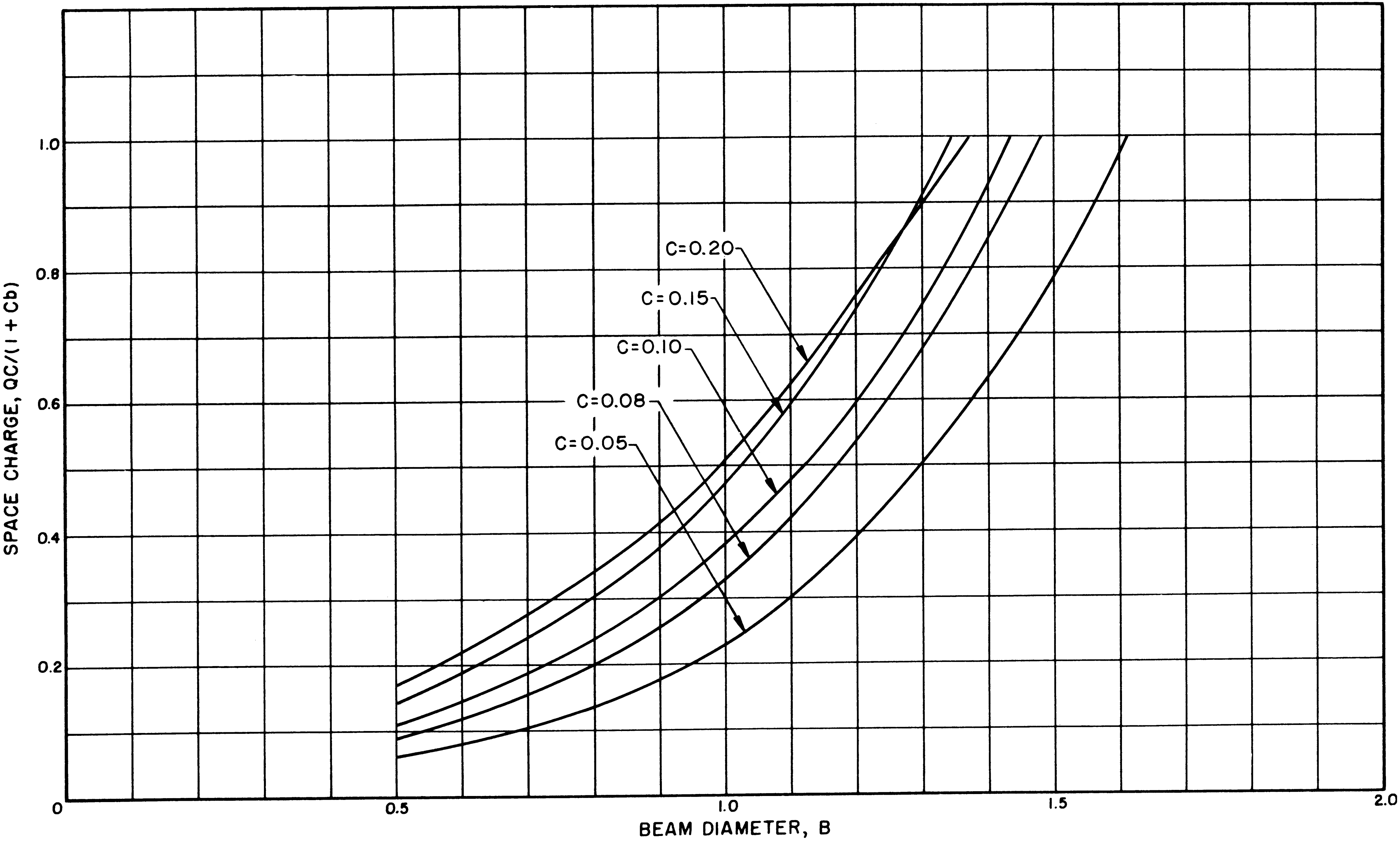


FIG. C.278 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
(a'/b' = 1.8 , V_0 = 2 KV, DLF = 95%)

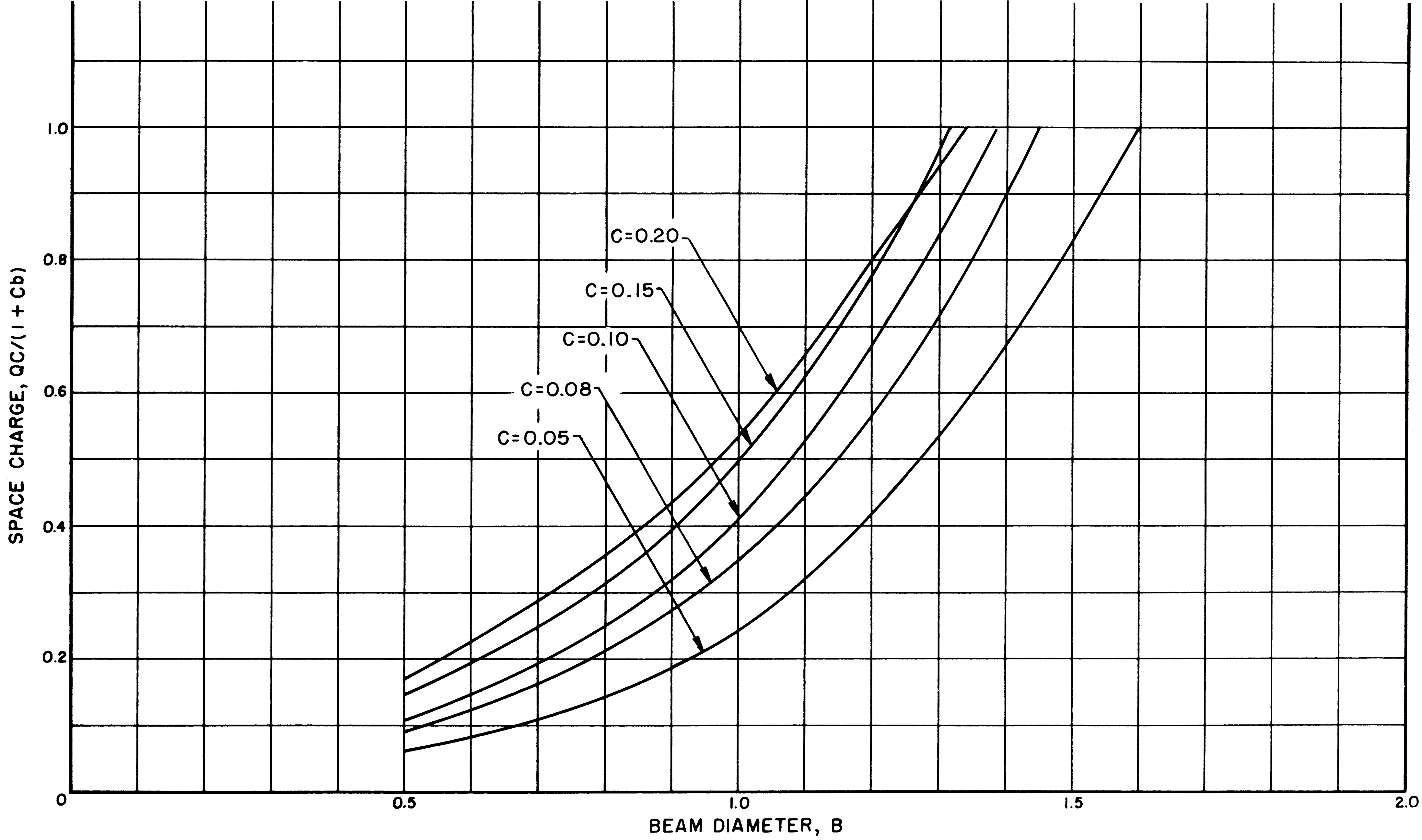


FIG. C.279 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.8$, $V_0 = 3$ KV, DLF = 95%)

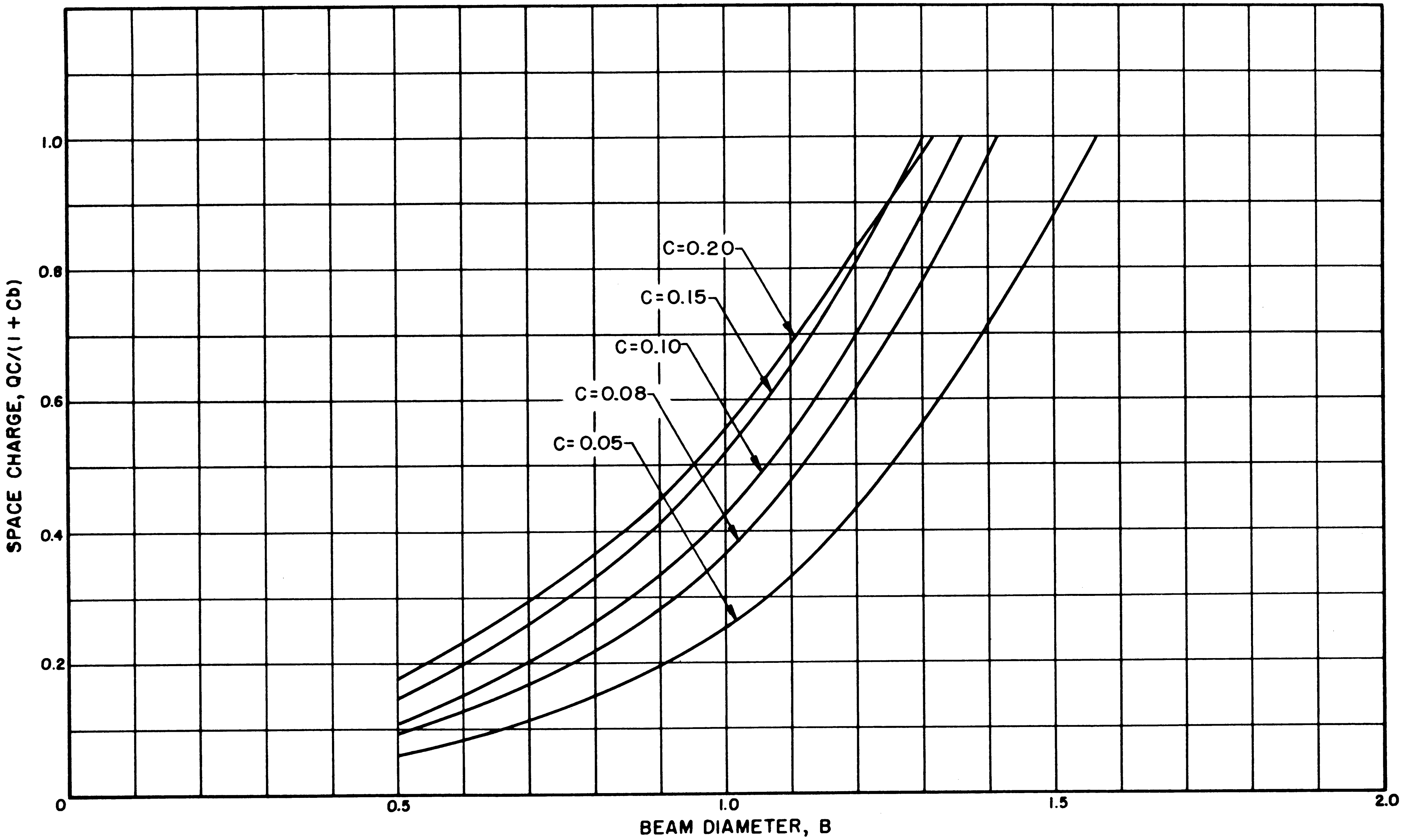


FIG. C.280 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.8$, $V_0 = 4$ KV, DI F = 95%)

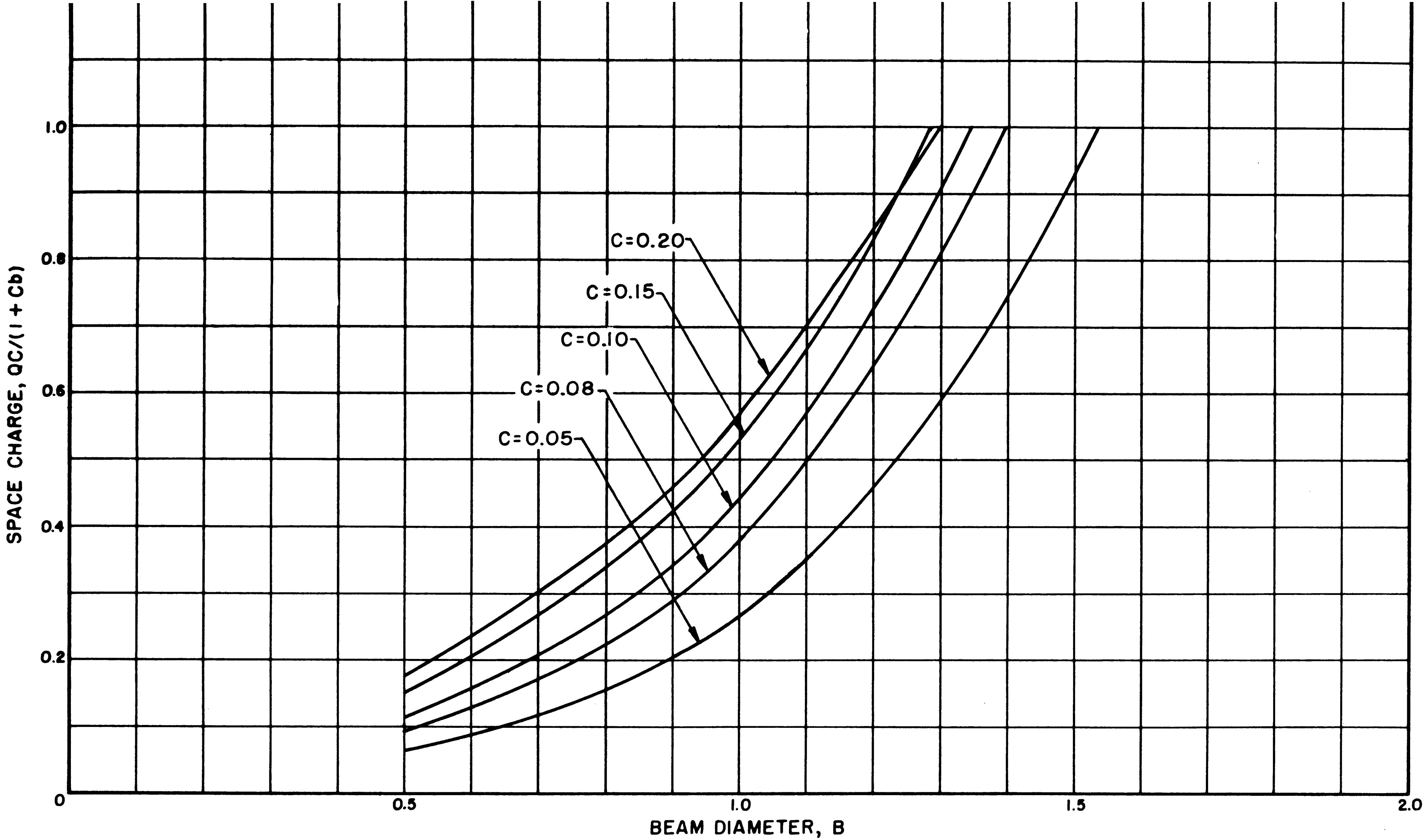


FIG. C.281 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.8$, $V_0 = 5$ KV, DLF = 95%)

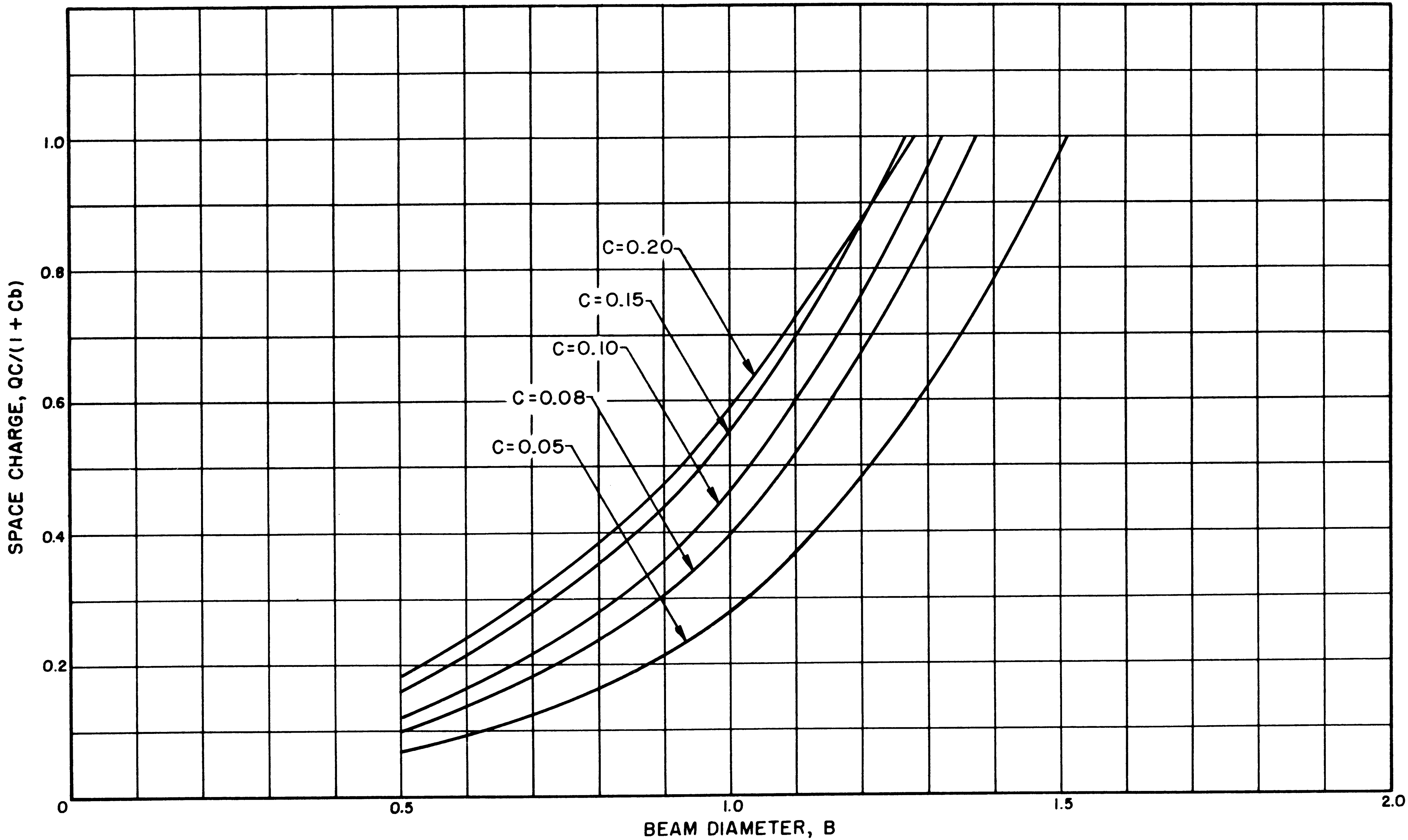


FIG. C.282 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.8$, $V_0 = 6$ KV, DLF = 95%)

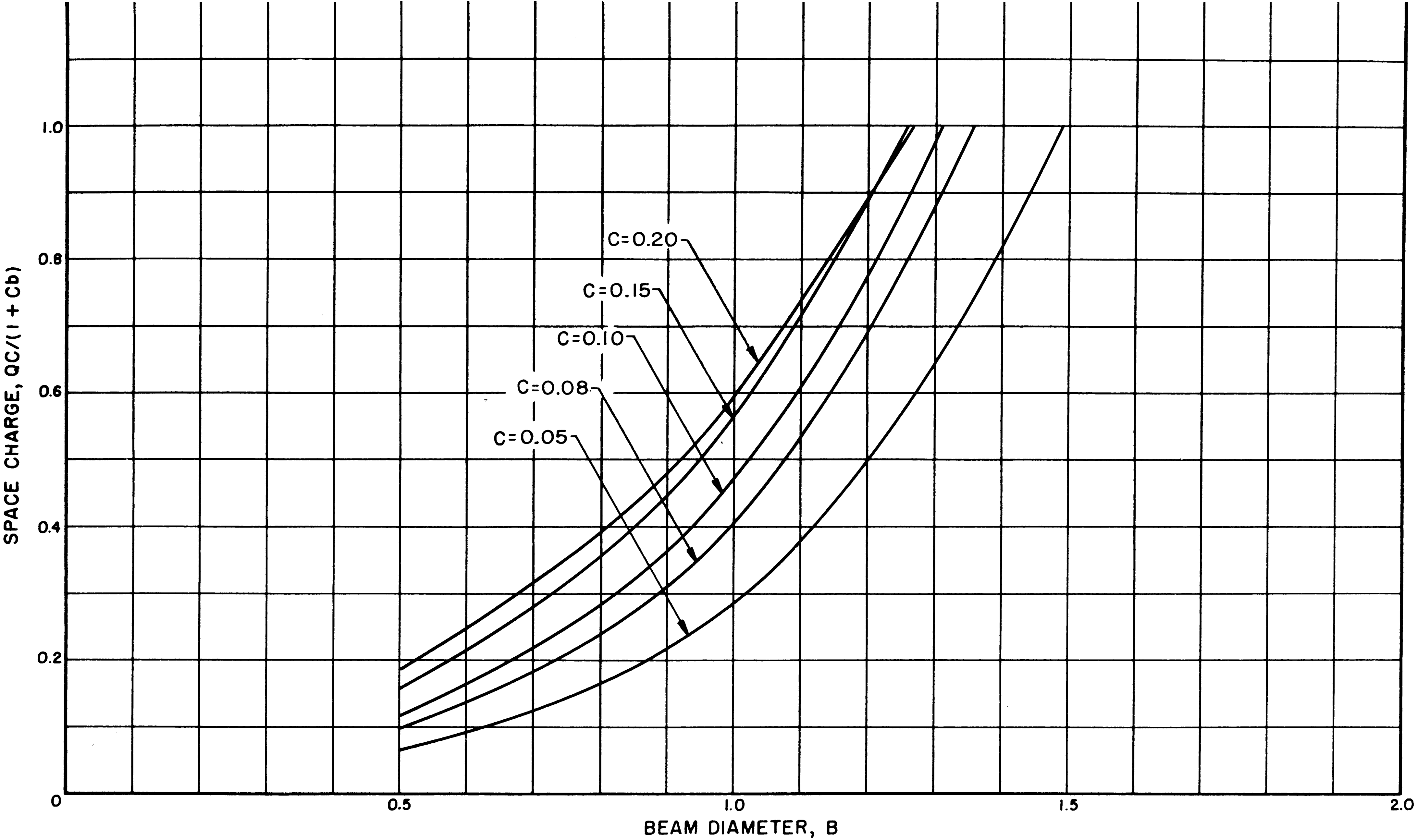


FIG. C.283 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
(a'/b' = 1.8, V_0 = 7 KV, DLF = 95%)

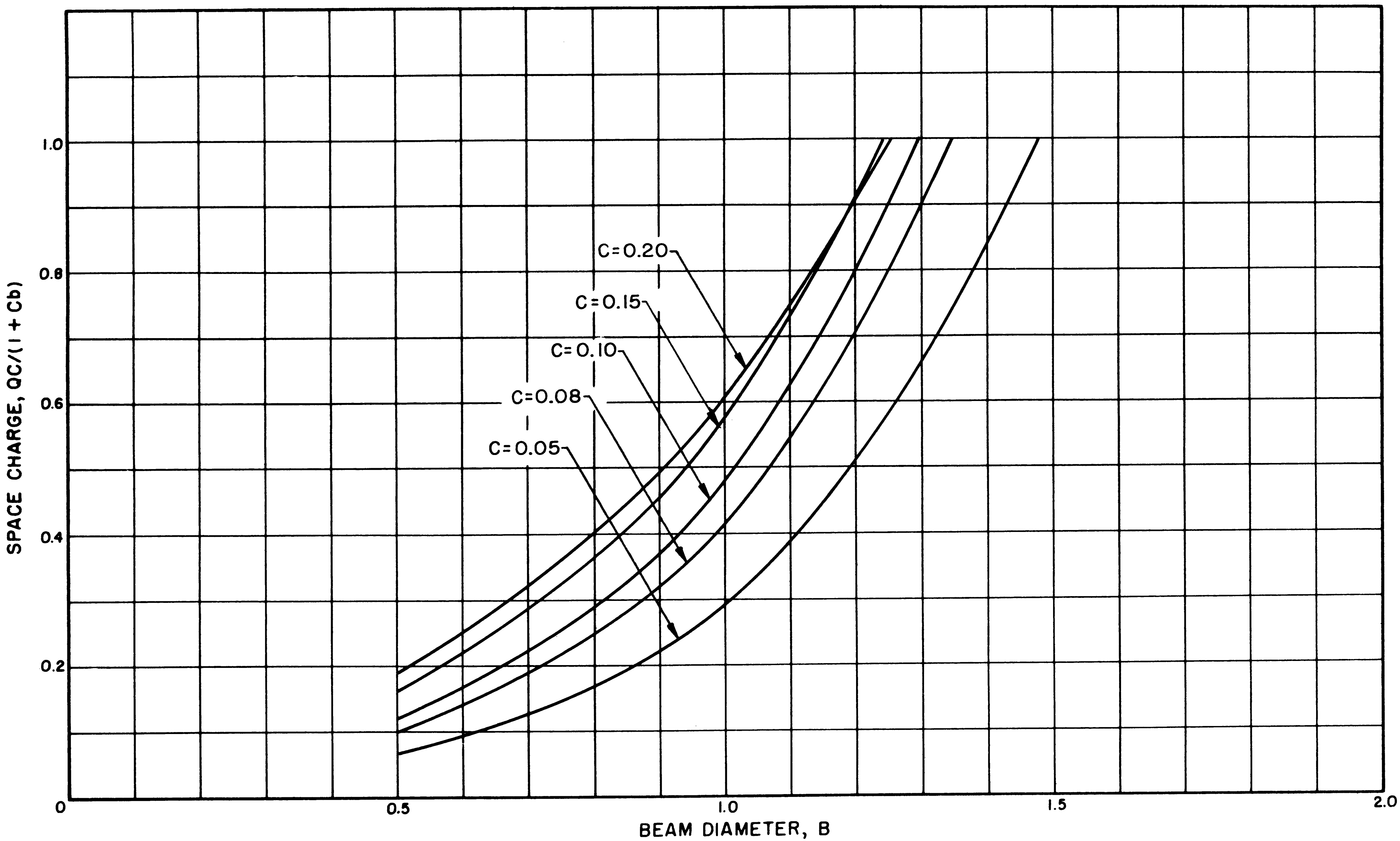


FIG. C.284 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.8$ $V_0 =$ 8 KV DLF = 95%)

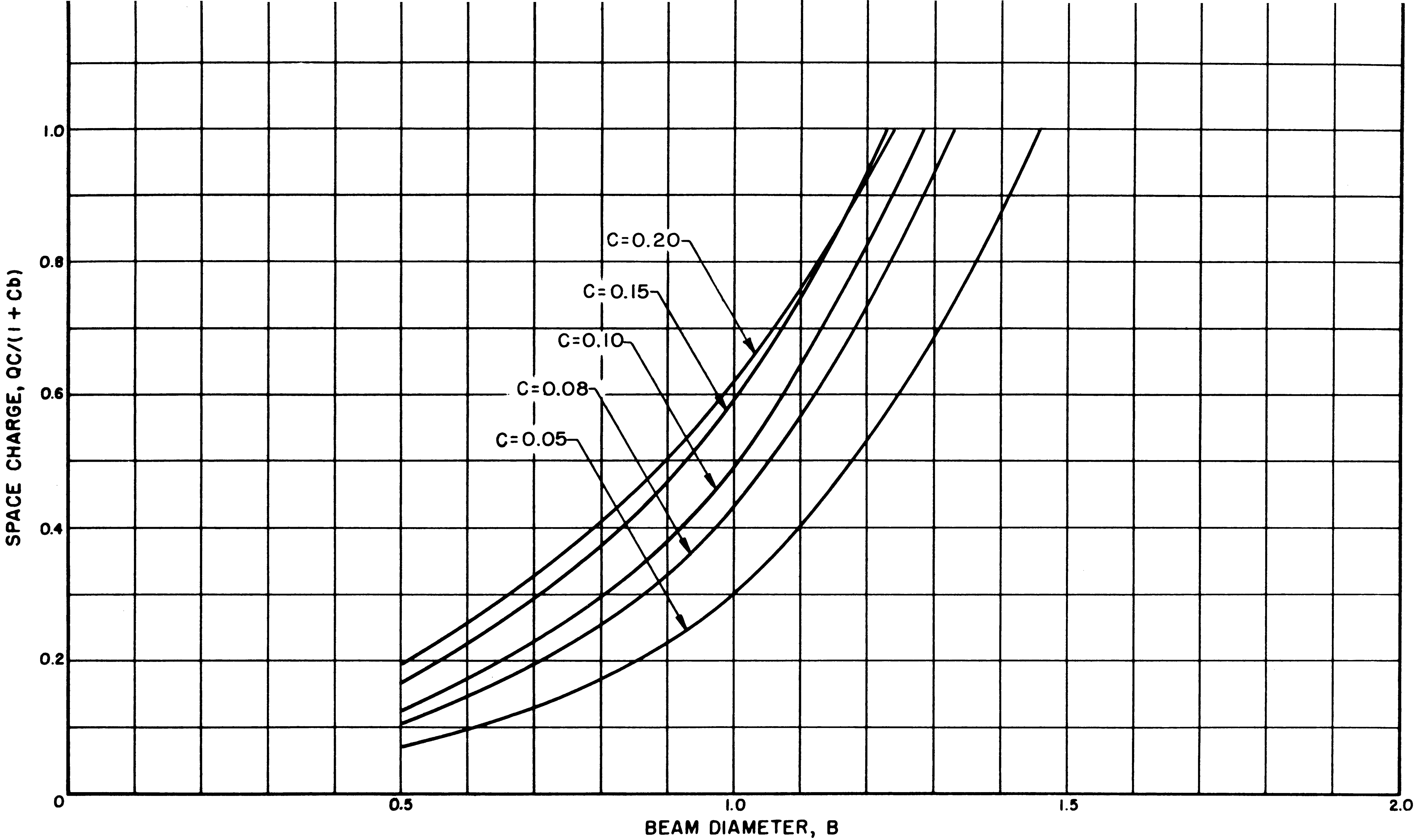


FIG. C.285 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.8$, $V_0 = 9$ KV, DLF = 95%)

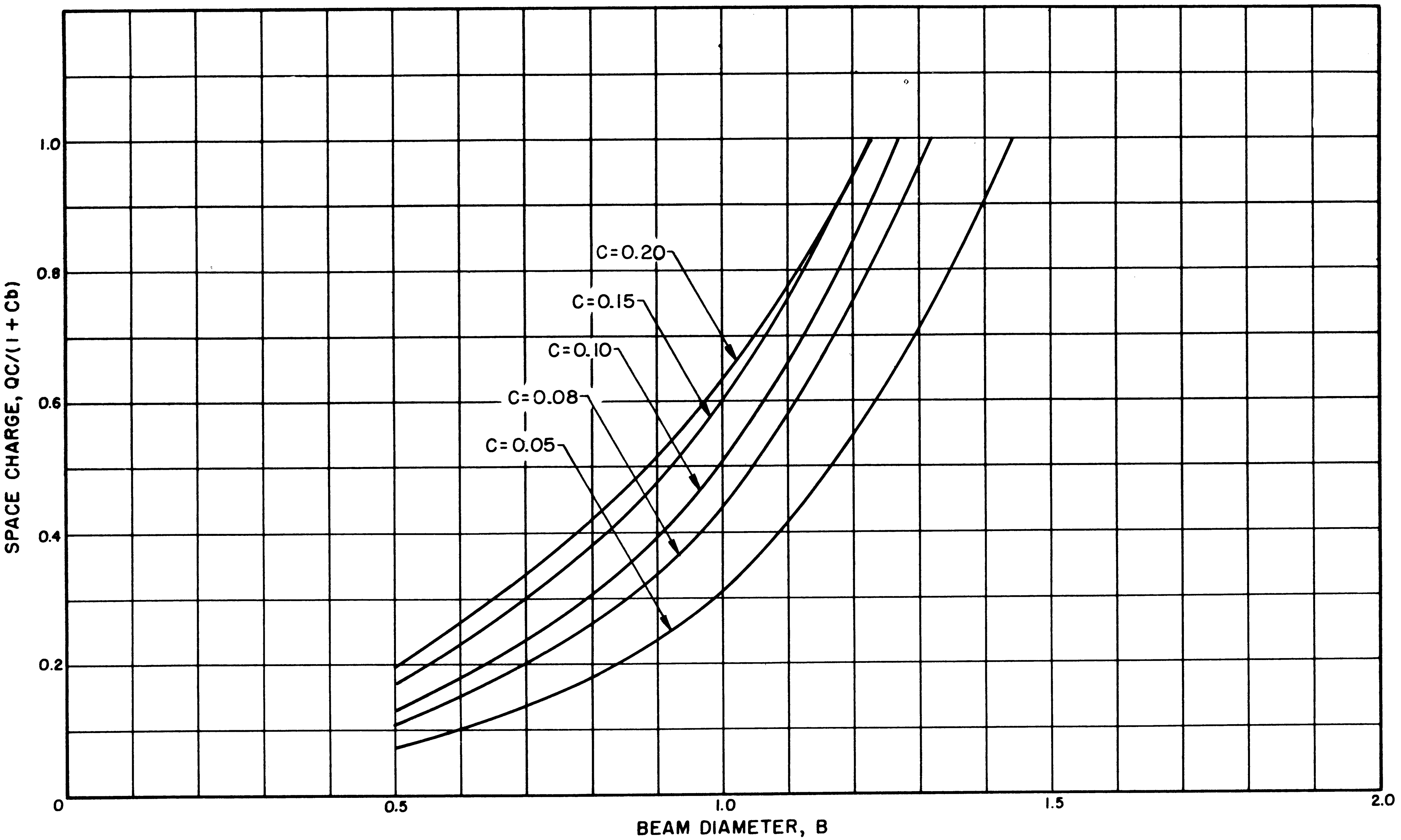


FIG. C.286 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.8$, $V_0 = 10$ KV, DLF = 95%)

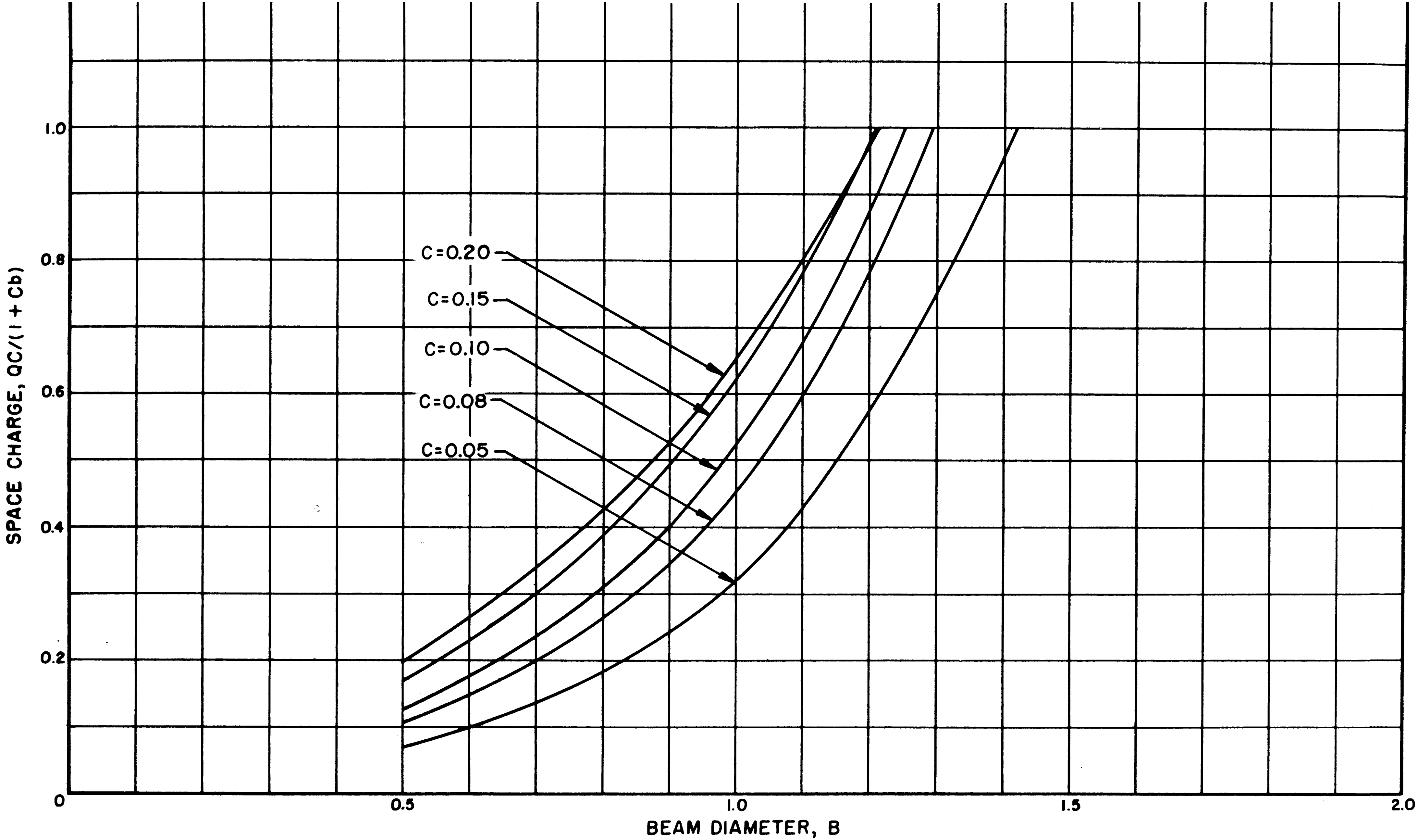


FIG. C.287 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.8$, $V_0 = 12$ KV, DLF = 95 %)

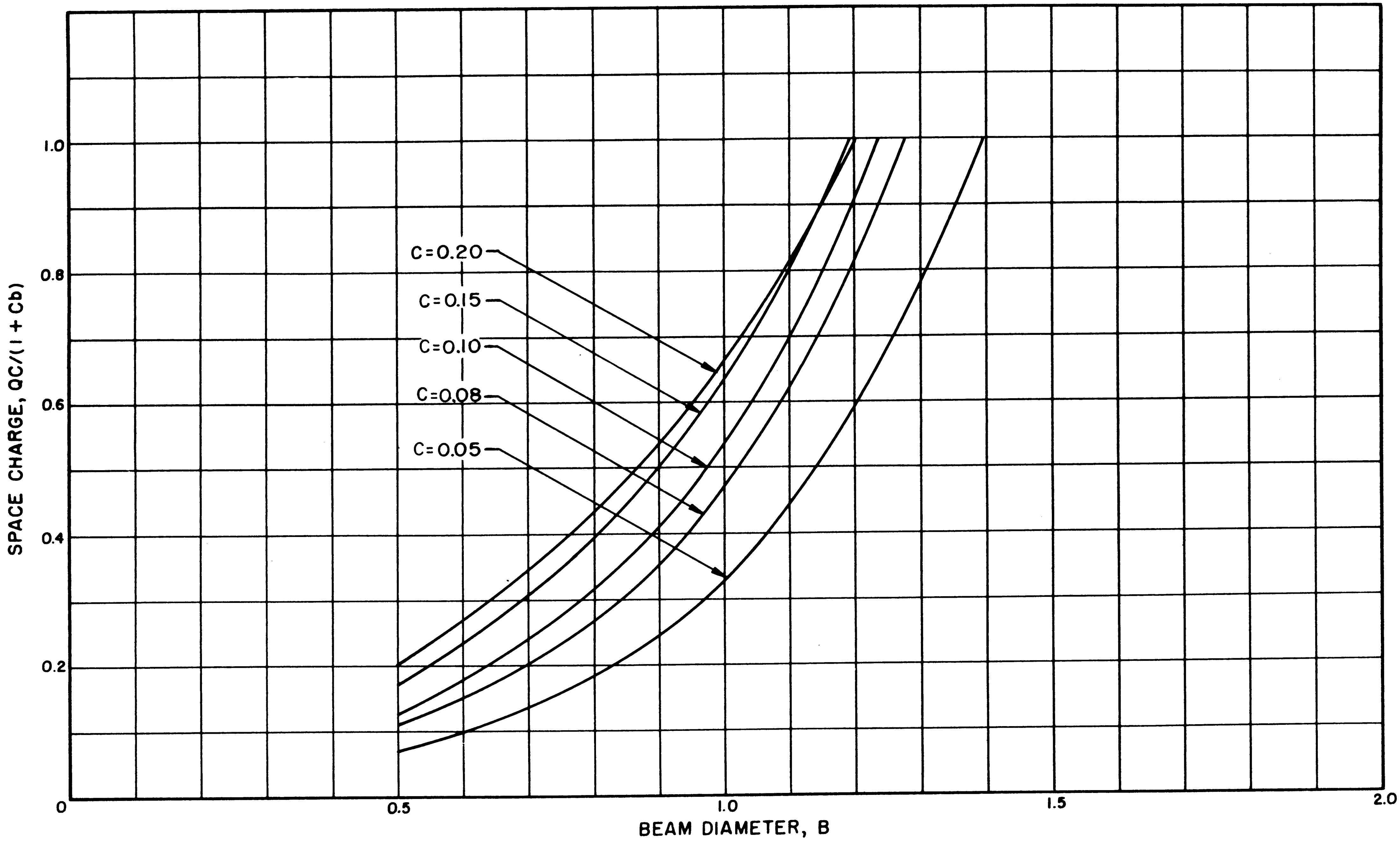


FIG. C.288 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.8$, $V_0 = 14$ KV, DLF = 95 %)

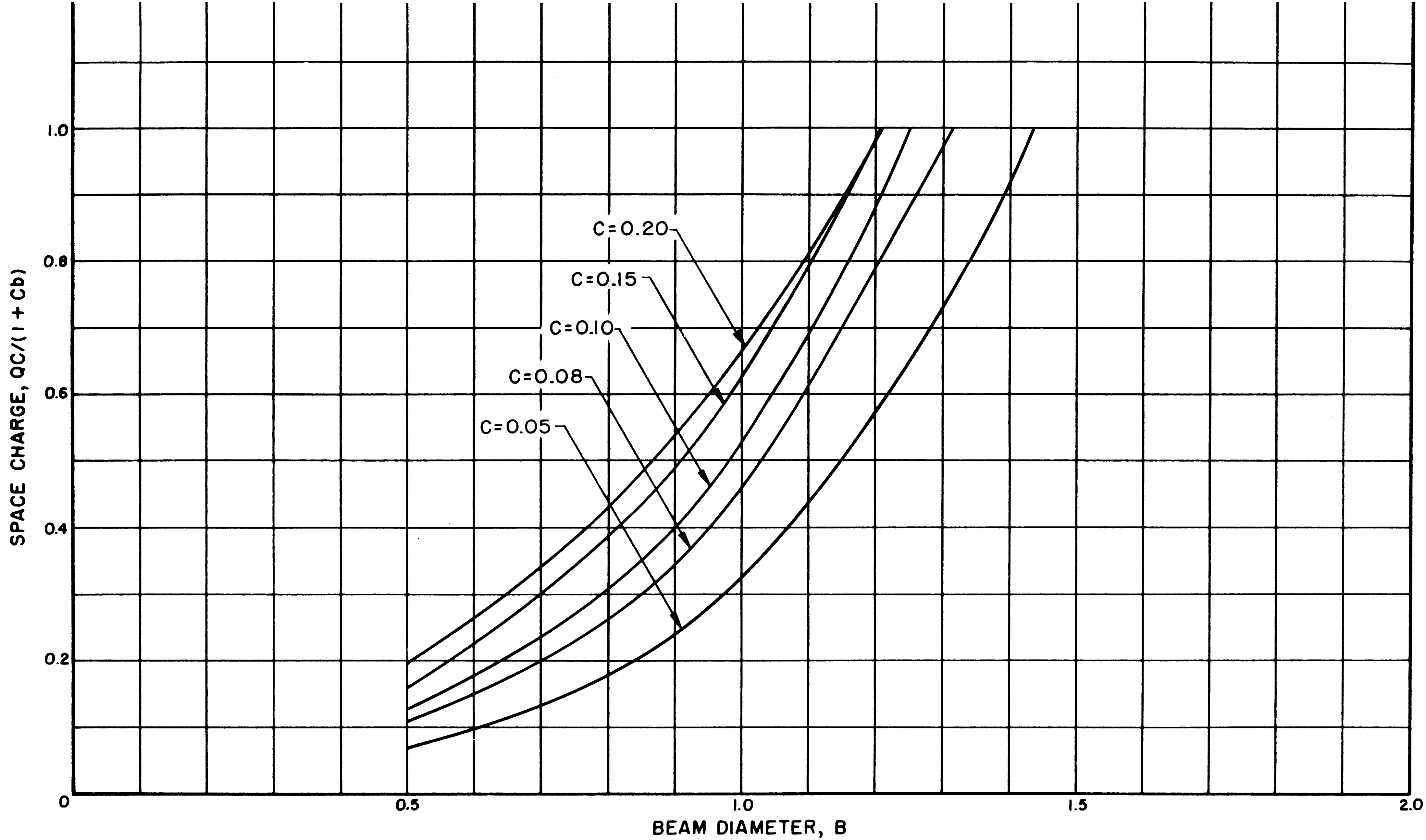


FIG. C.289 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b'=2.0$, $V_0=1$ KV, DLF = 95 %)

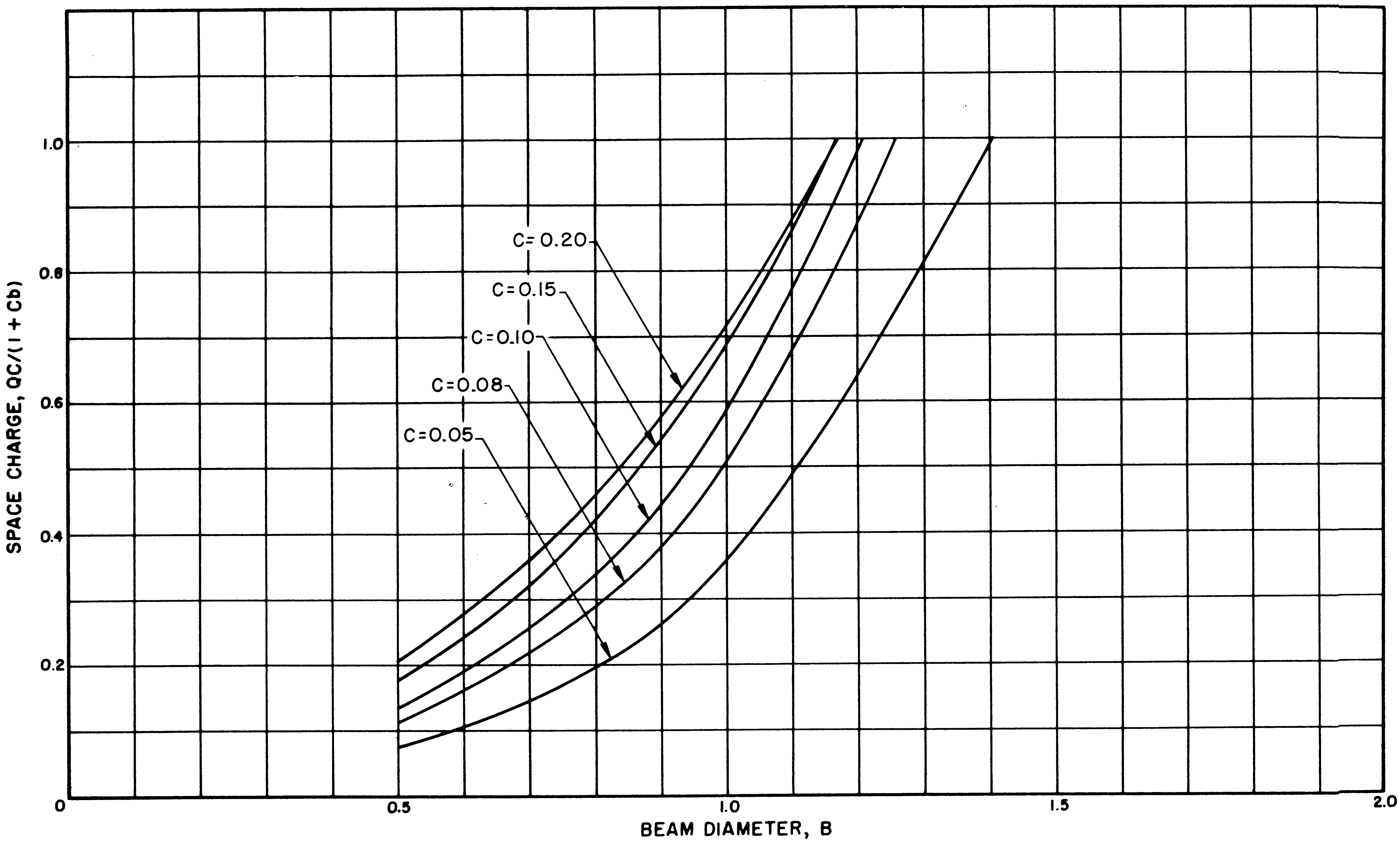


FIG. C.290 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
(a'/b' =2.0 , V_0 = 2 KV, DLF = 95%)

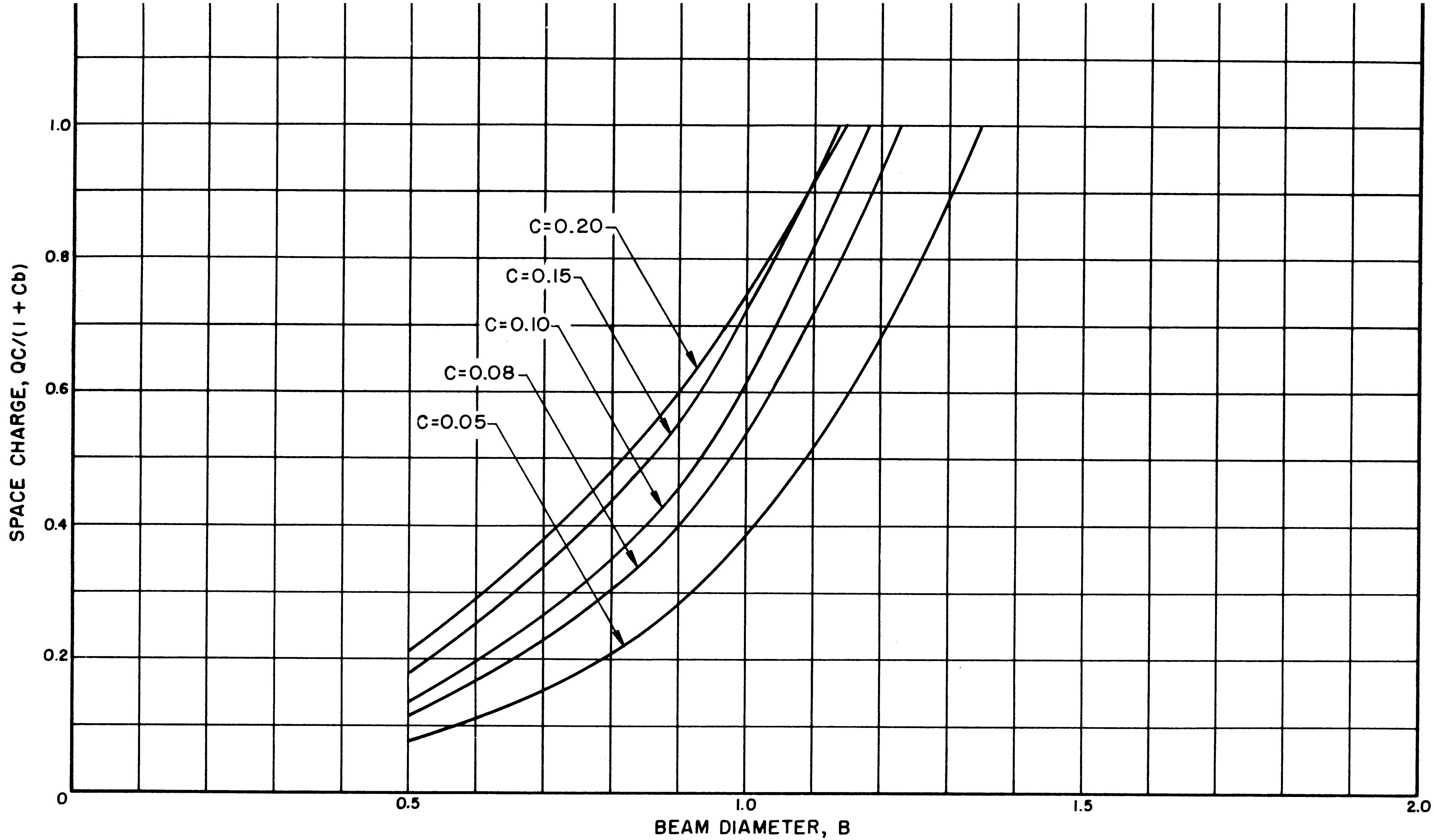


FIG. C.291 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 2.0$, $V_0 = 3$ KV, DLF = 95%)

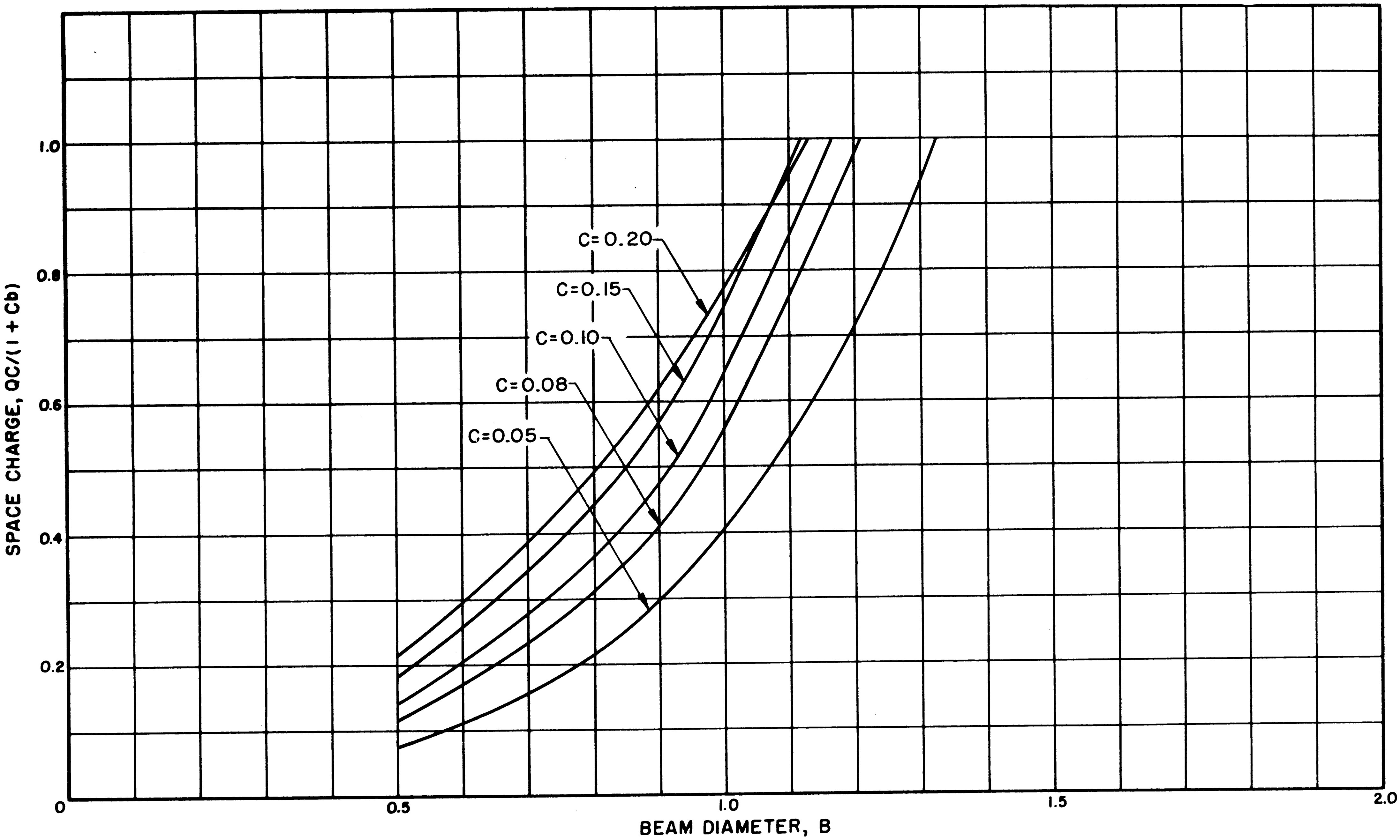


FIG. C.292 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 2.0$, $V_0 = 4$ KV, DLF = 95%)

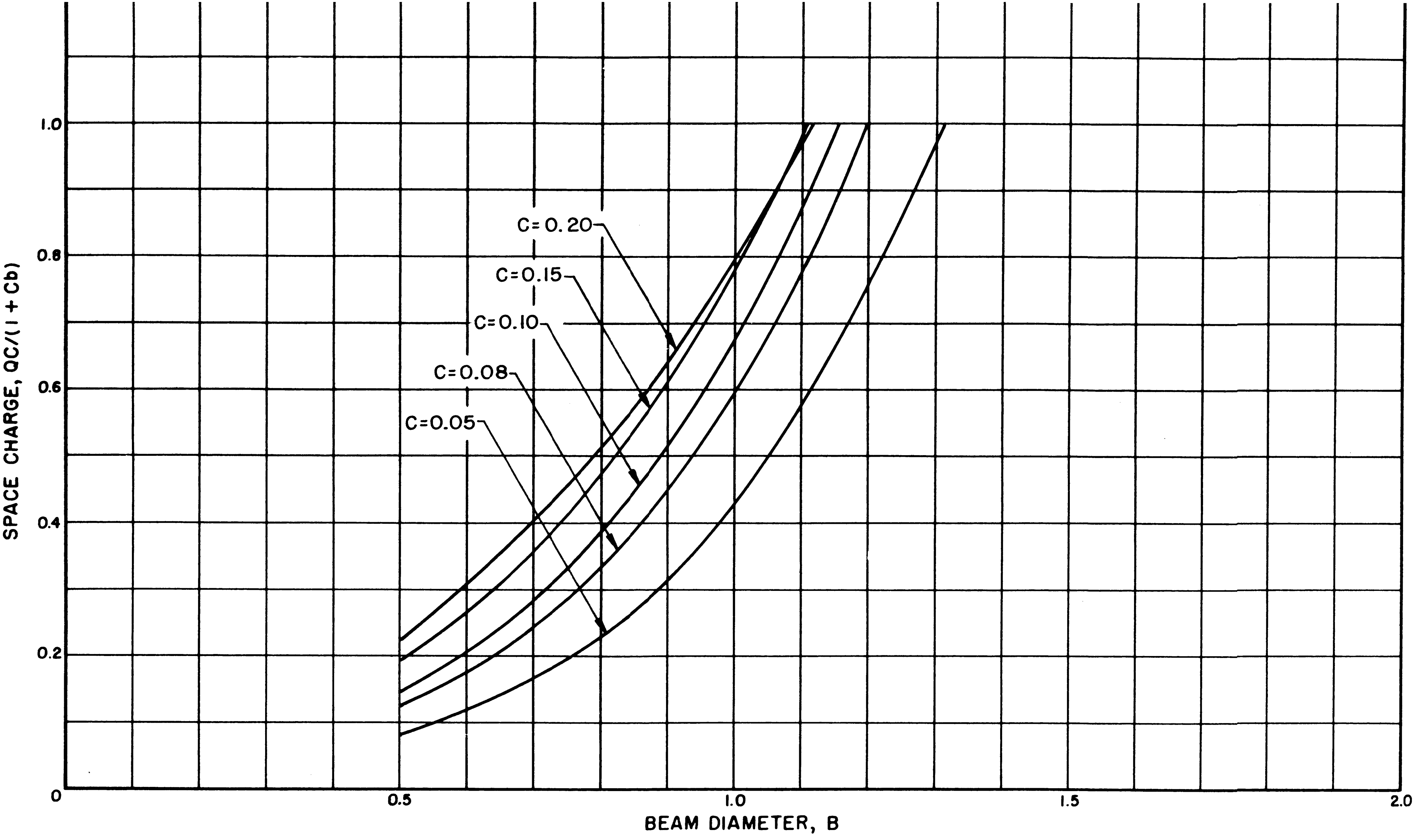


FIG. C.293 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
(a'/b' =2.0, V_0 = 5 KV, DLF = 95%)

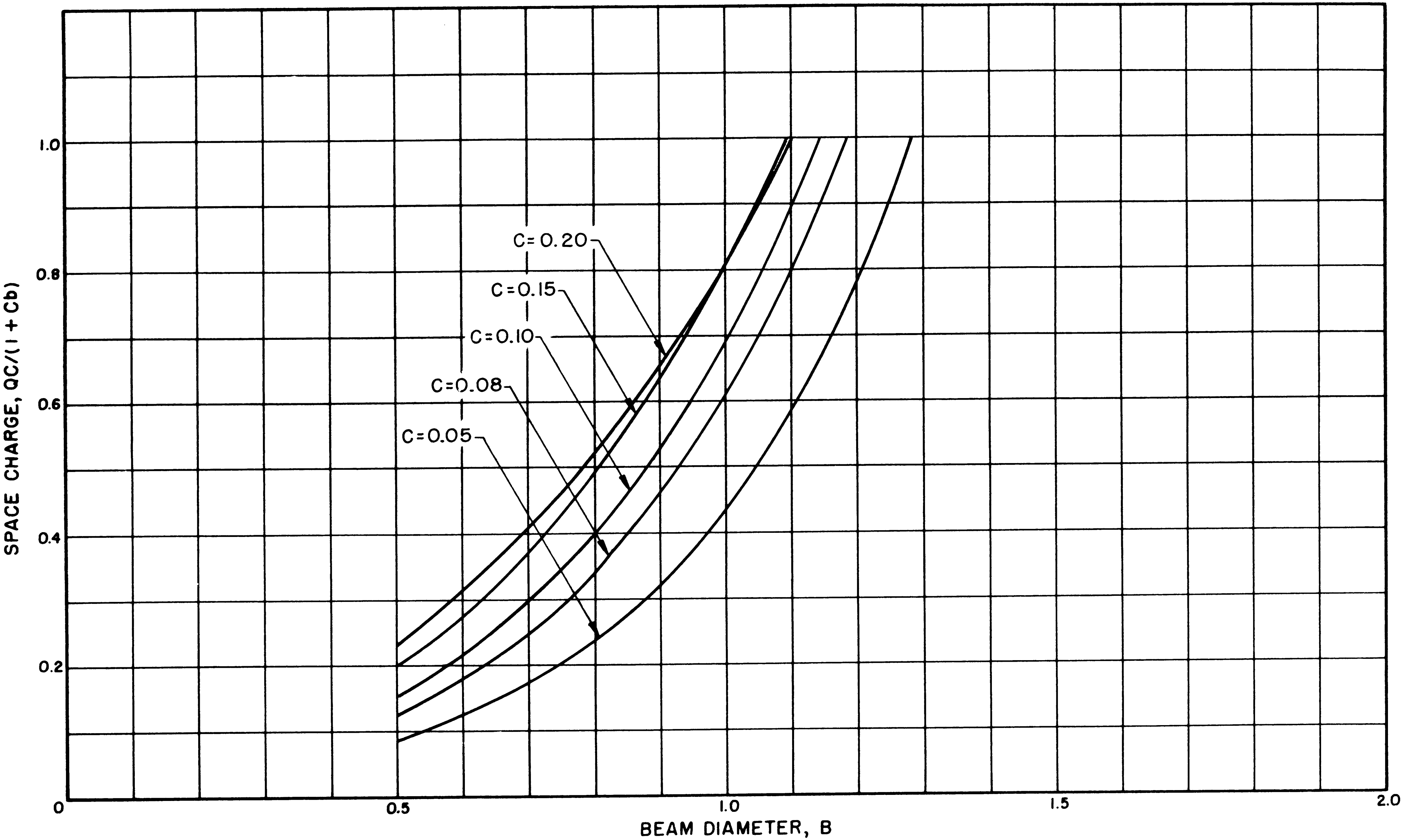


FIG. C.294 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
(a'/b' =2.0 , V_0 = 6 KV, DLF = 95%)

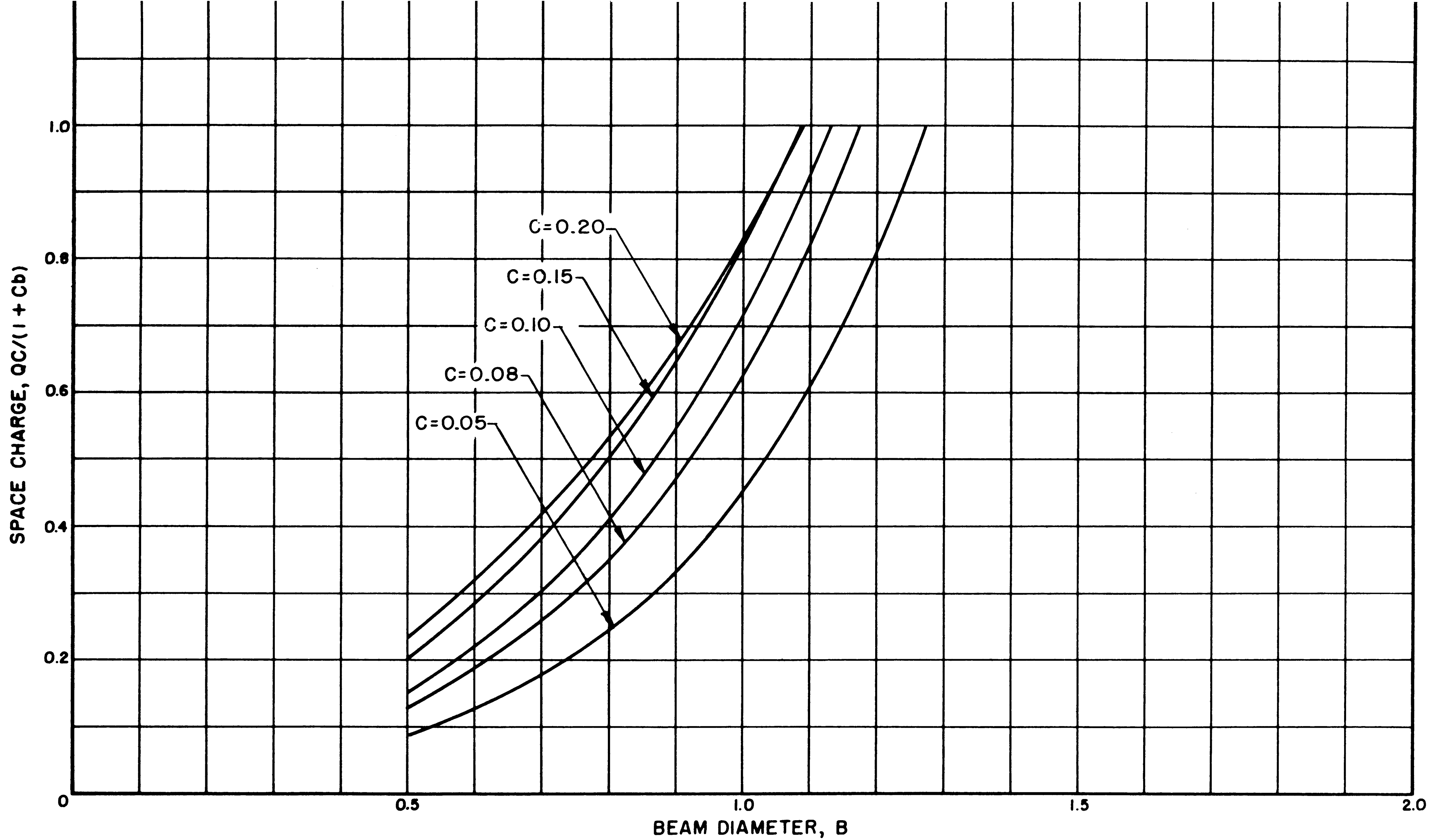


FIG. C.295 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
(a'/b' =2.0 , V_0 = 7 KV, DLF = 95%)

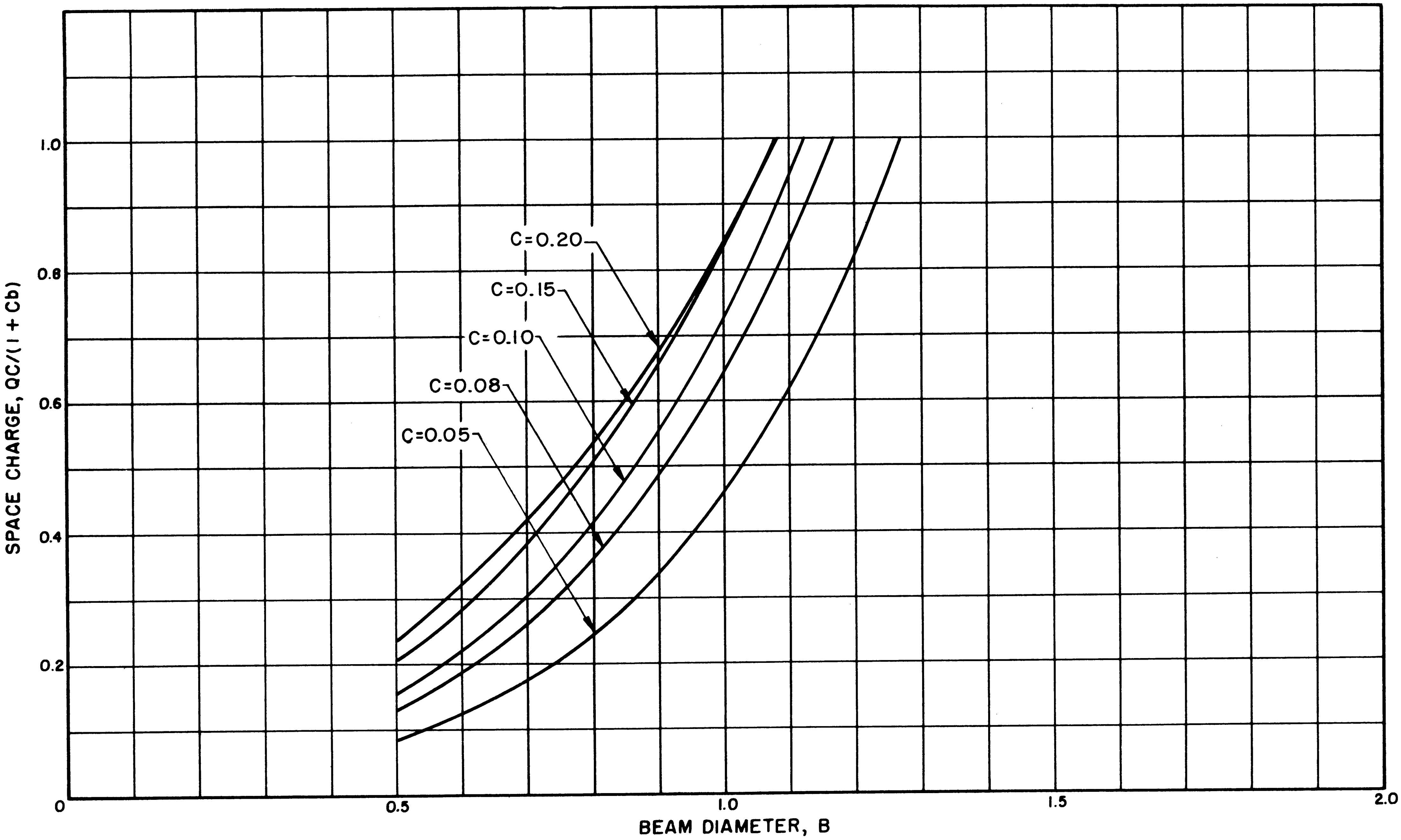


FIG. C.296 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b'=2.0$, V_0 = 8 KV, DLF = 95%)

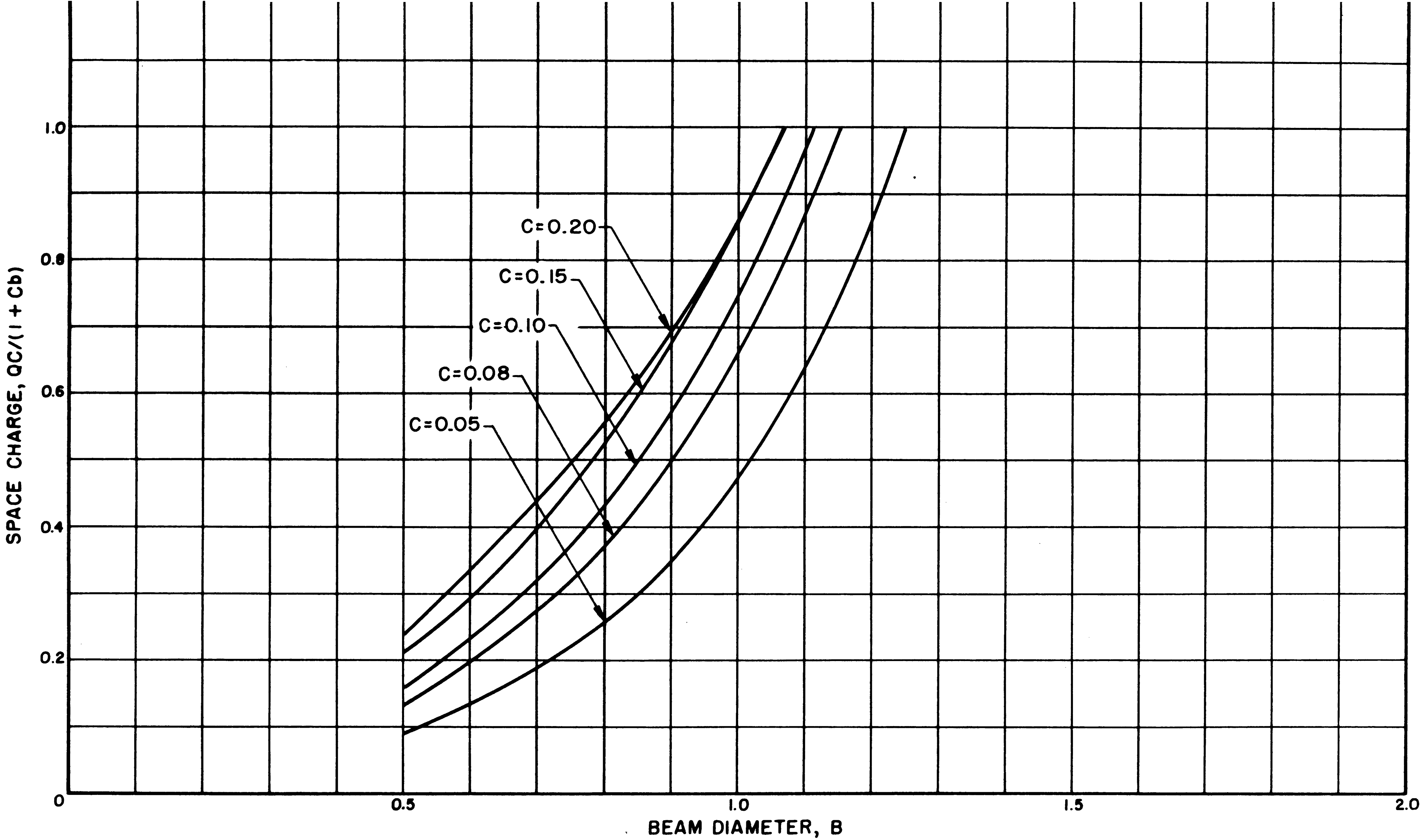


FIG. C.297 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b'=2.0$, $V_0 = 9$ KV, DLF = 95%)

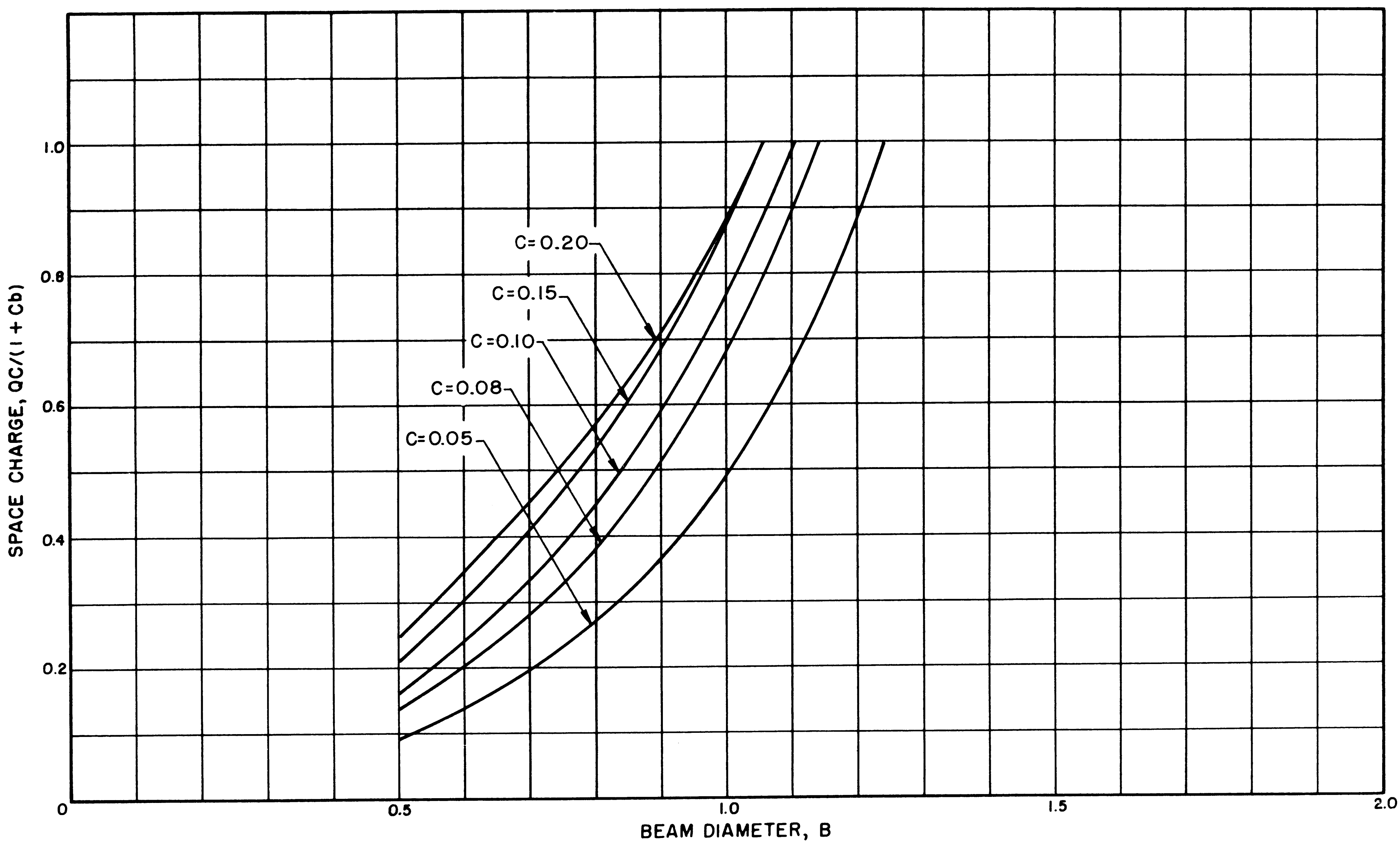


FIG. C.298 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 2.0$, $V_0 = 10$ KV, DLF = 95%)

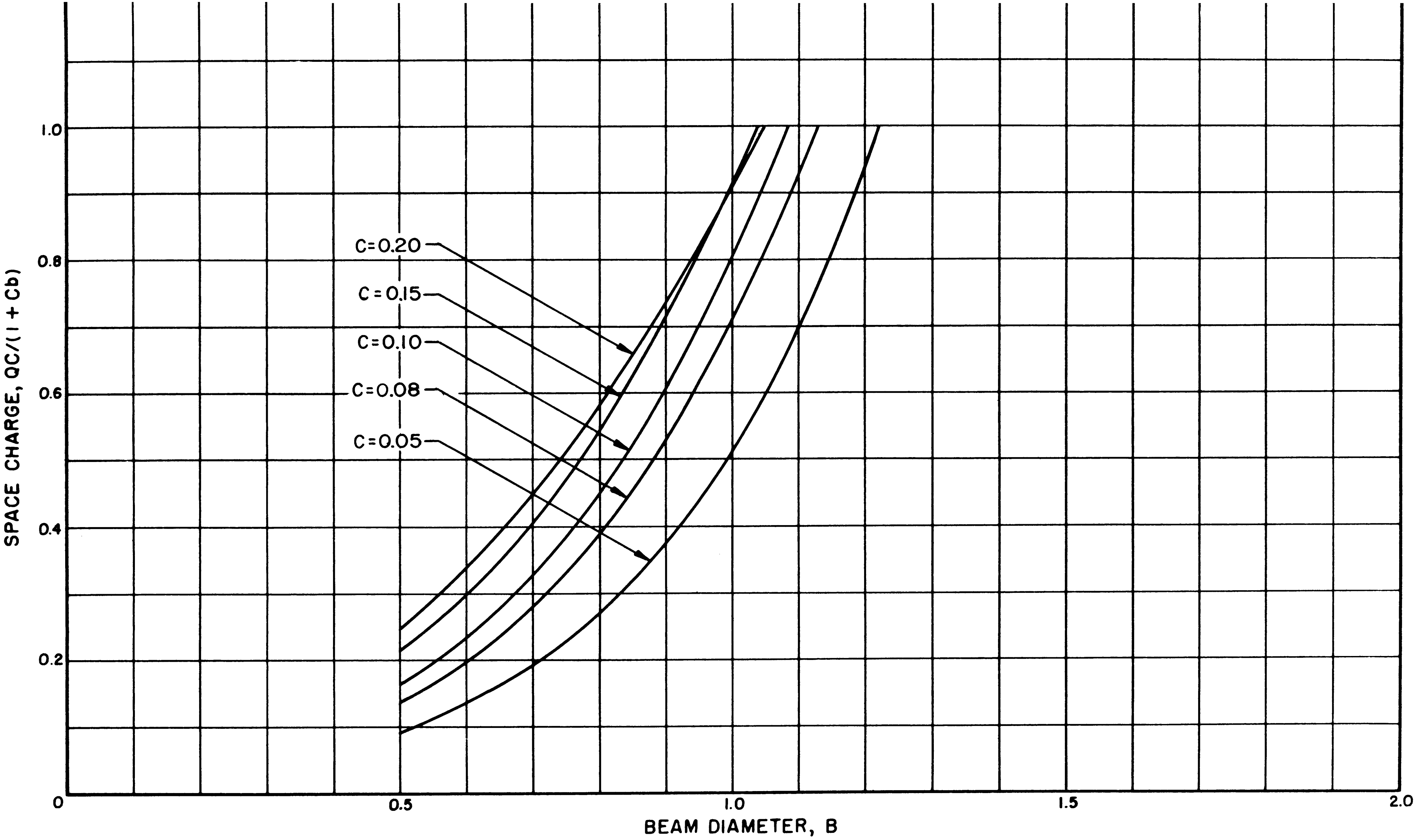


FIG. C.299 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b'=2.0$, $V_0=12$ KV, DLF = 95%)

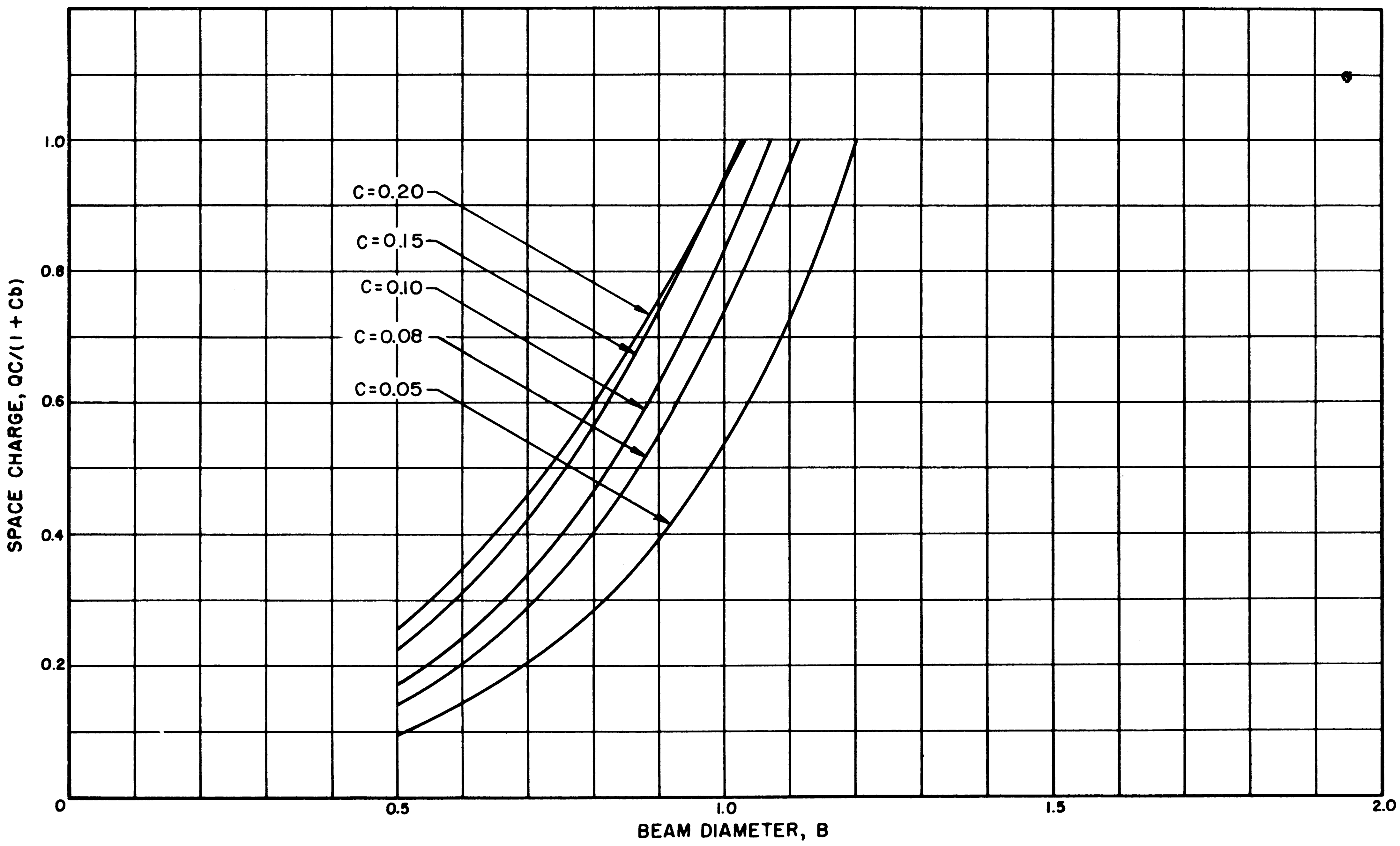


FIG. C.300 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 2.0$, $V_0 = 14KV$, DLF = 95%)

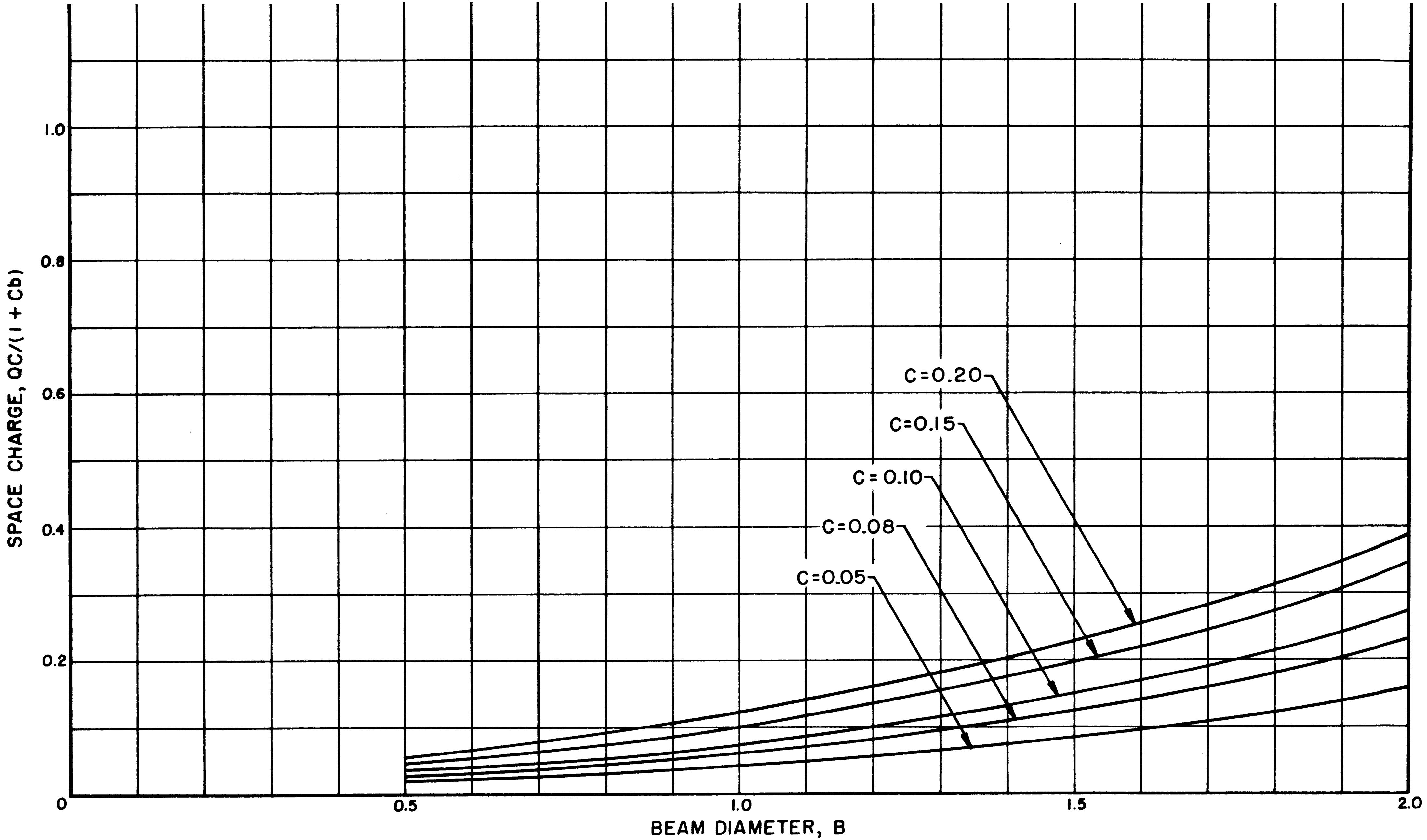


FIG. C.301 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.2$, $V_0 =$ 1 KV, DLF = 100%)

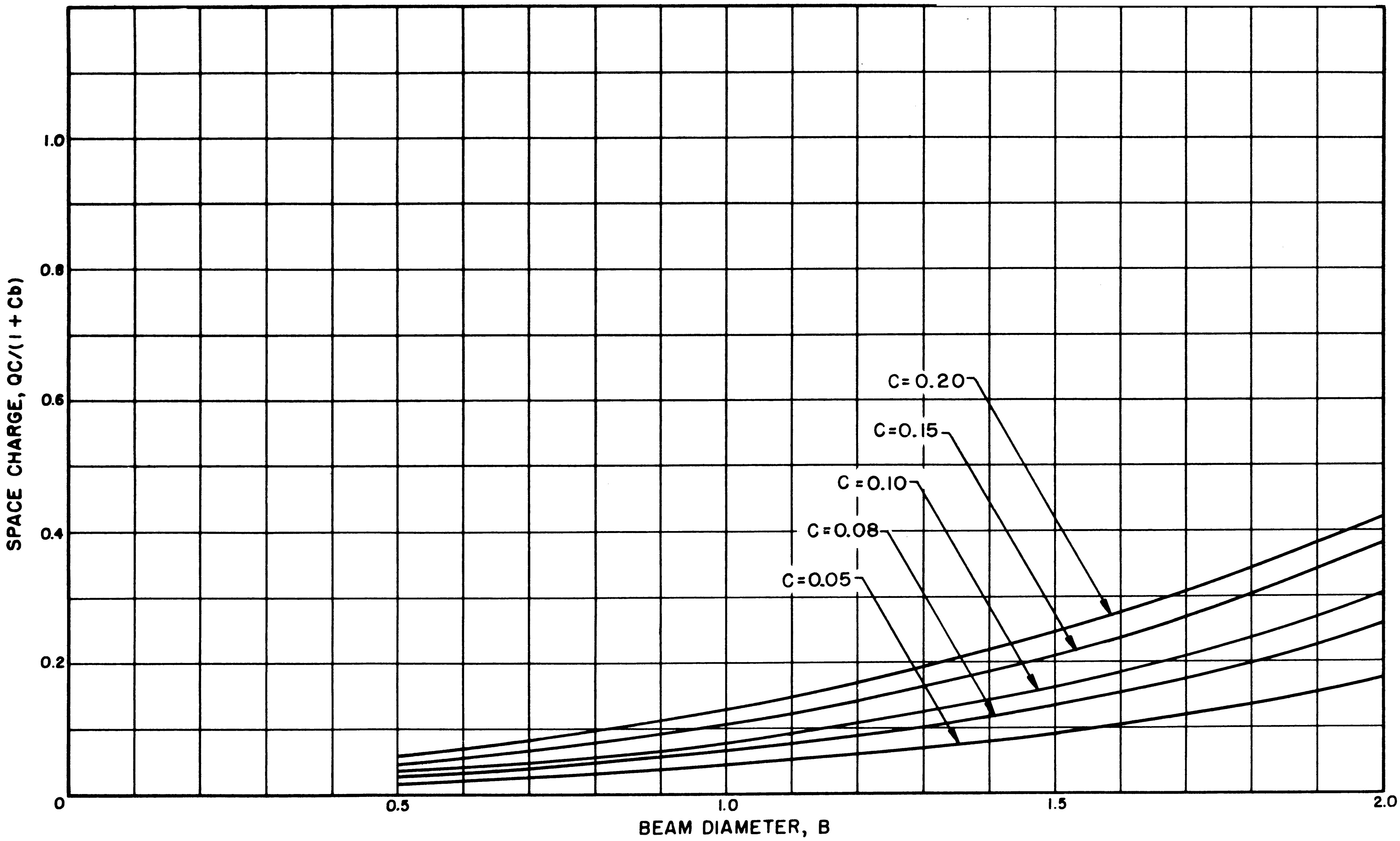


FIG. C.302 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.2$, $V_0 =$ 2 KV, DLF = 100%)

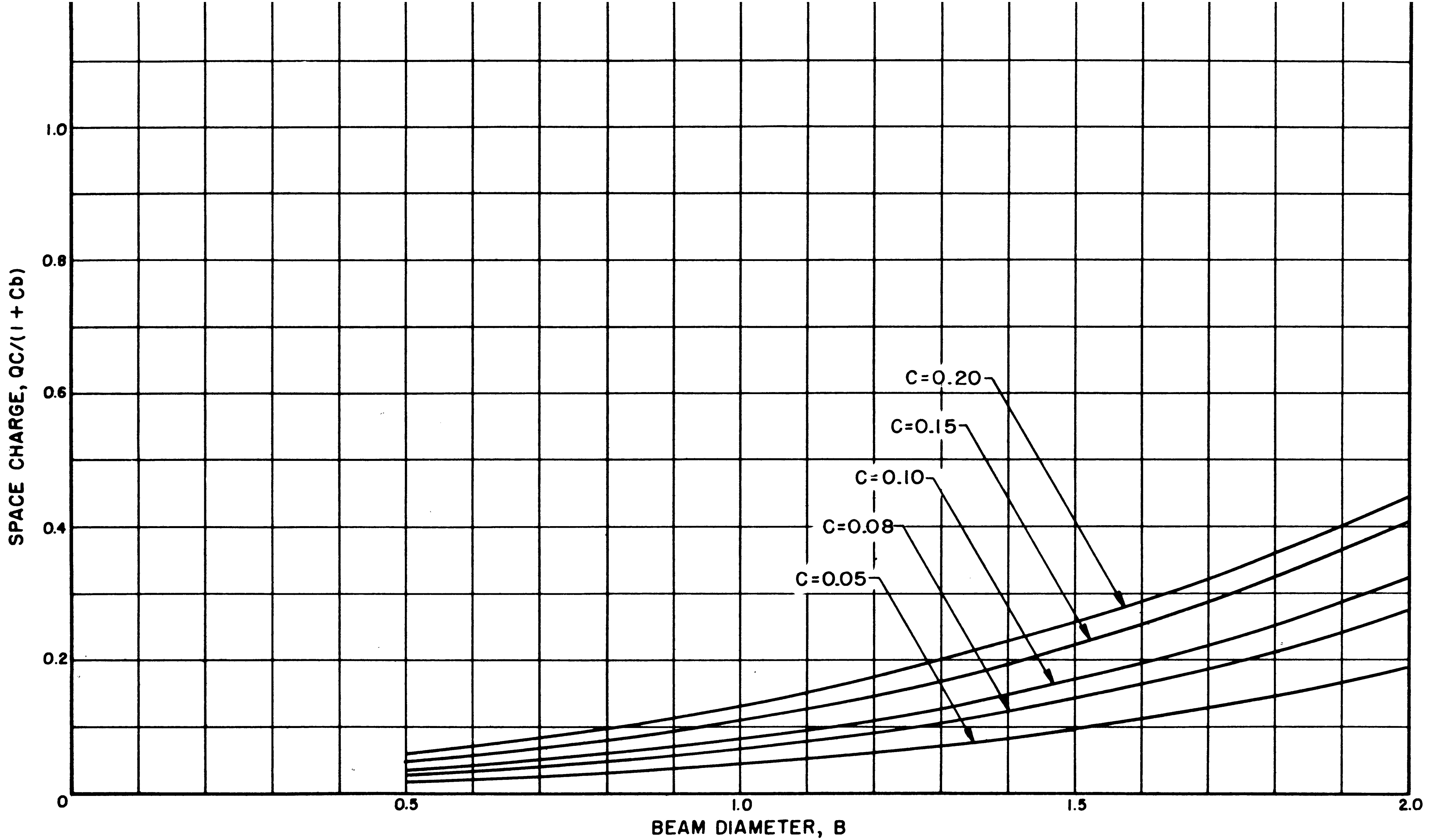


FIG. C.303 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.2$, $V_0 =$ 3KV, DLF =100%)

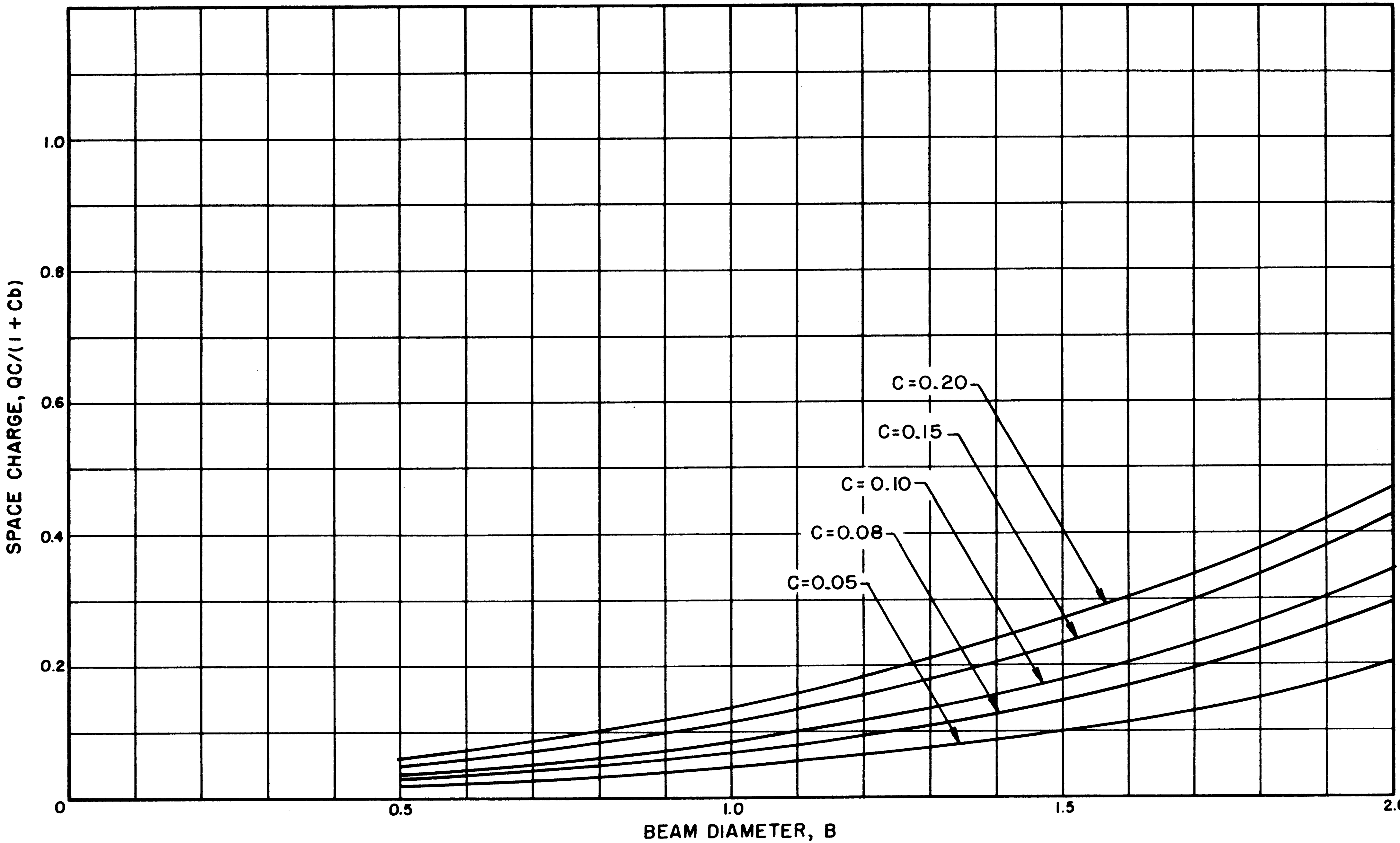


FIG. C.304 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.2$, V_0 = 4 KV. DLF = 100%)

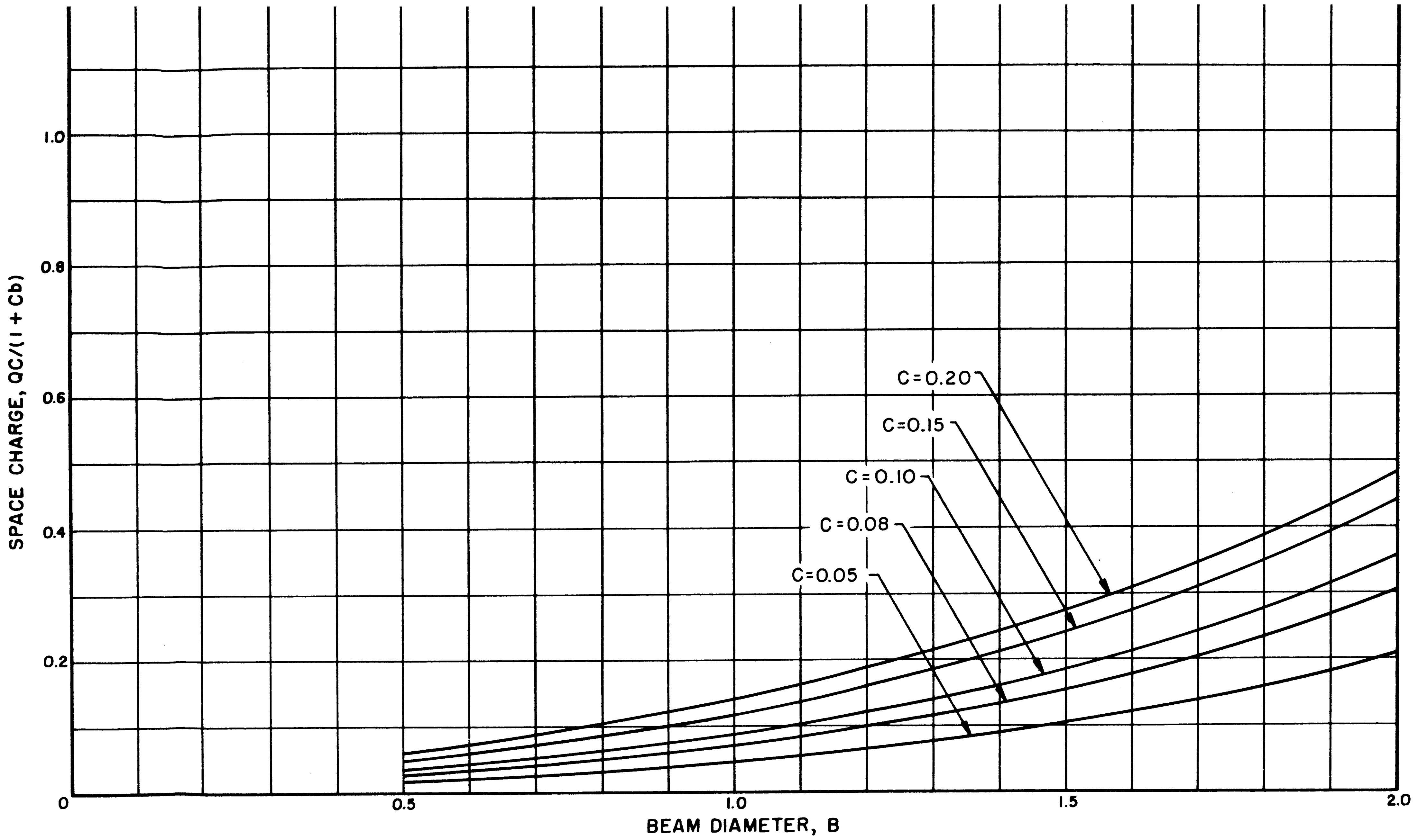


FIG. C.305 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.2$, $V_0 = 5$ KV, DLF =100%)

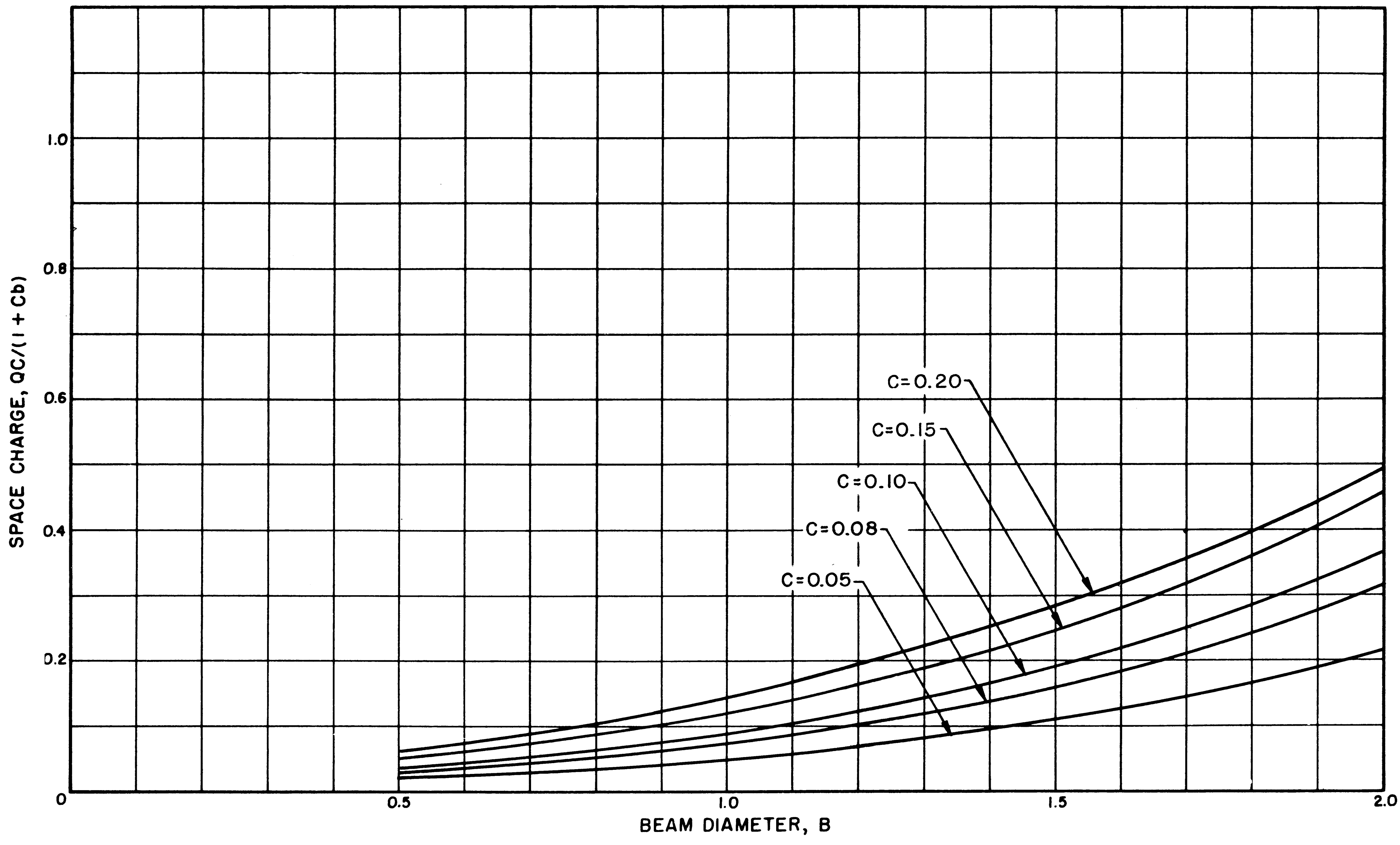


FIG. C.306 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.2$, $V_0 = 6$ KV, DLF = 100%)

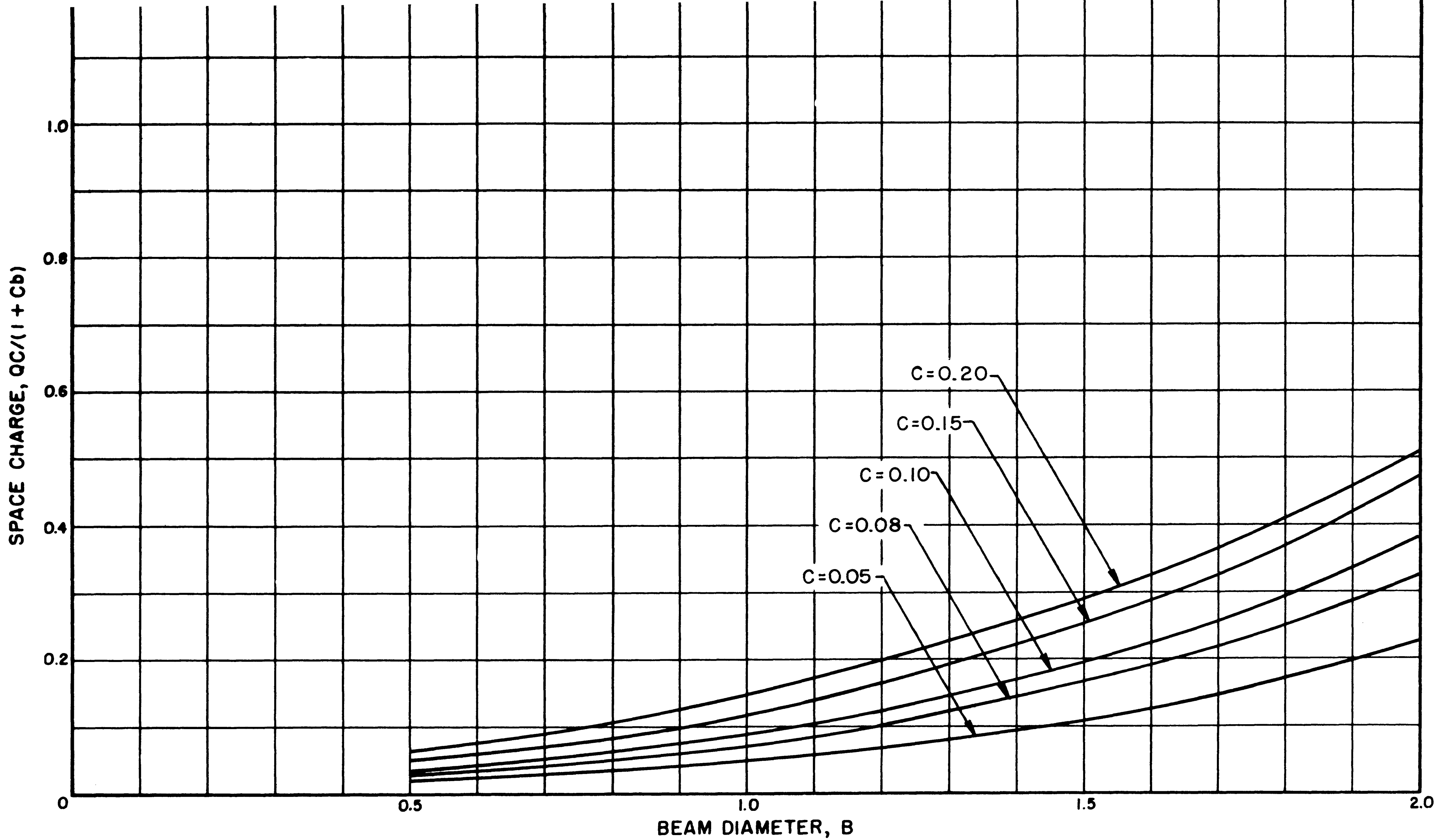


FIG. C.307 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.2$, $V_0 = 7$ KV, DLF = 100%)

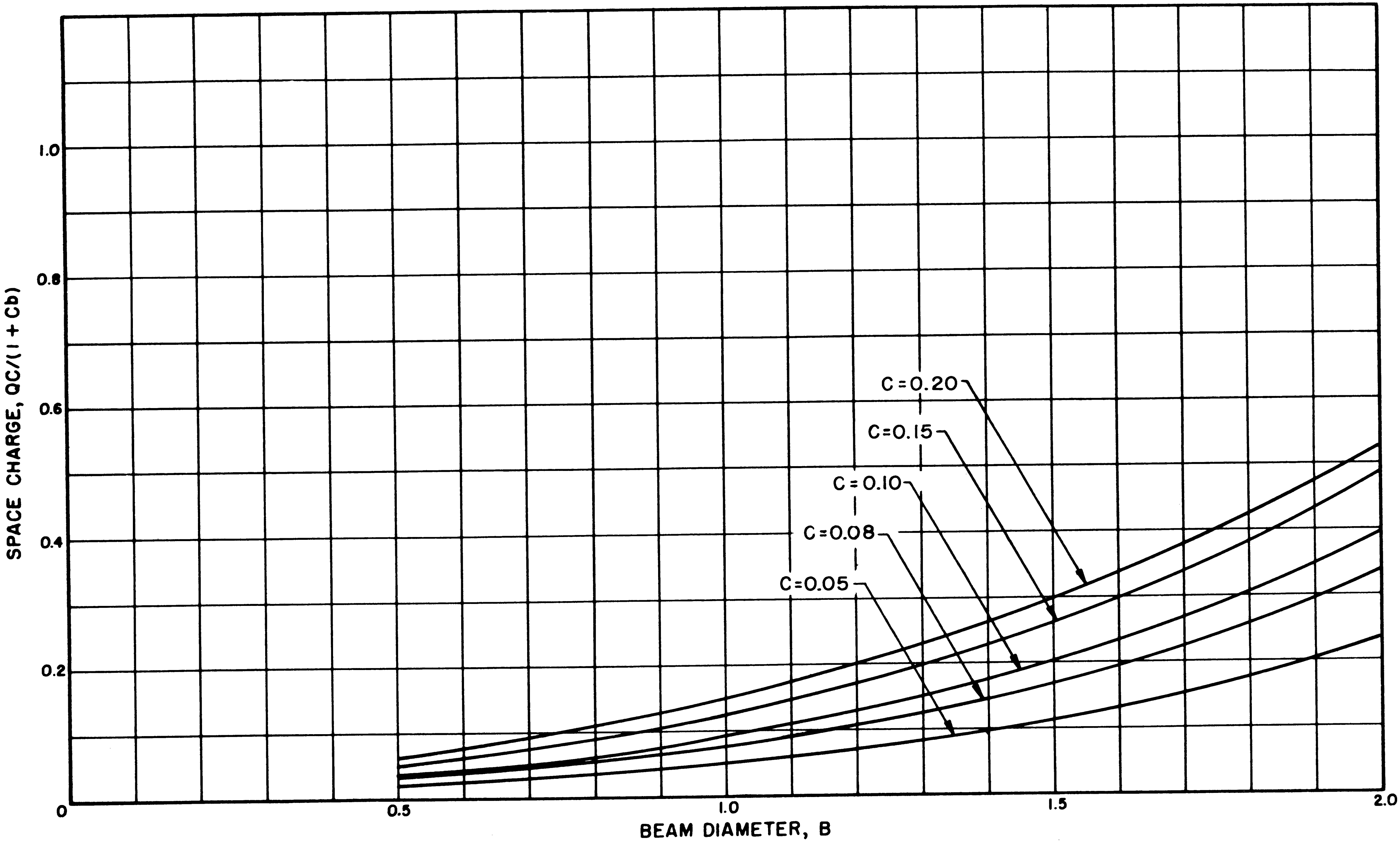


FIG. C.308 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
$(a'/b' = 1.2,\ V_0 = 8\,KV,\ DLF = 100\%)$

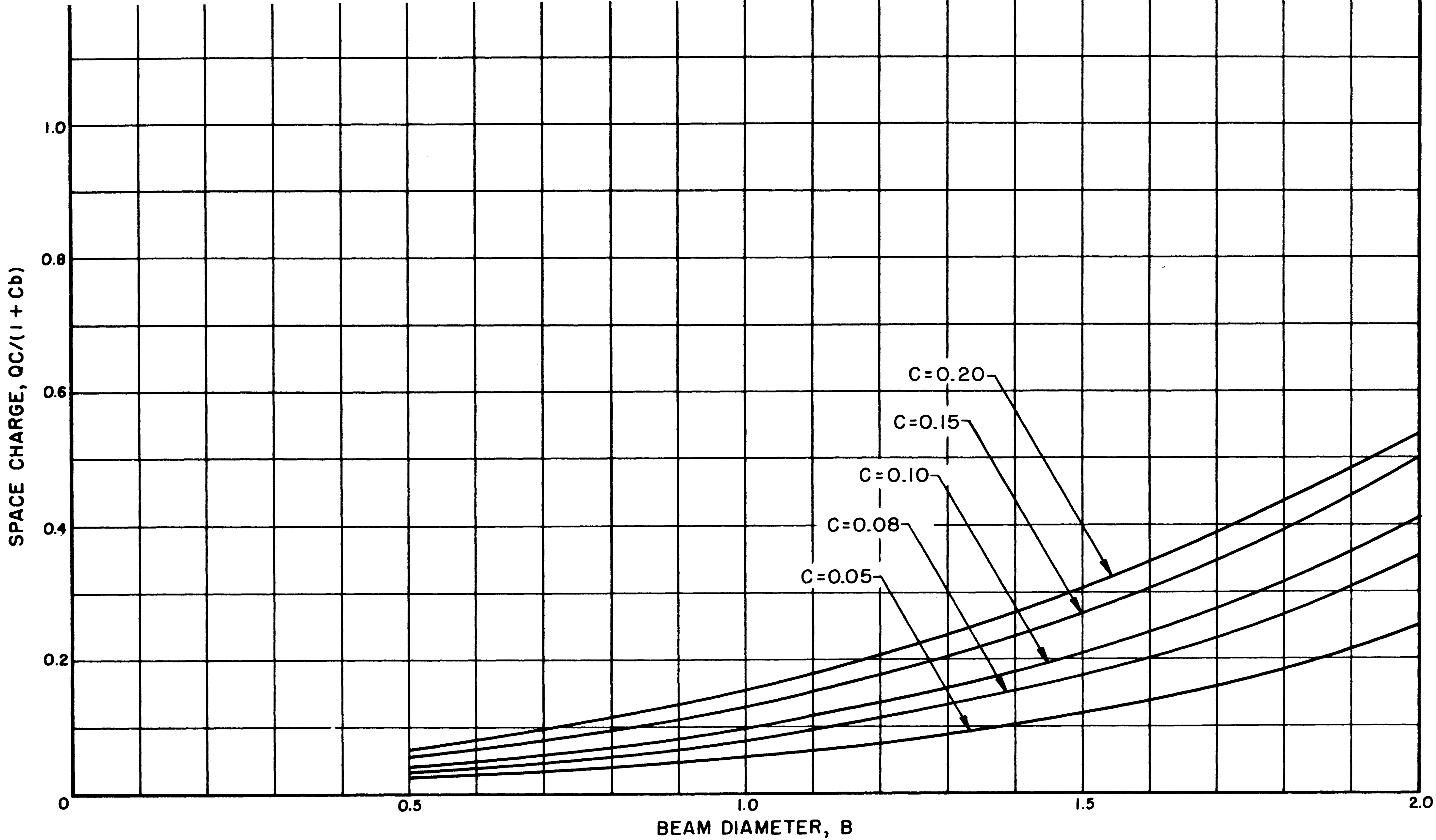


FIG. C.309 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.2$, $V_0 = 9$ KV, DLF = 100%)

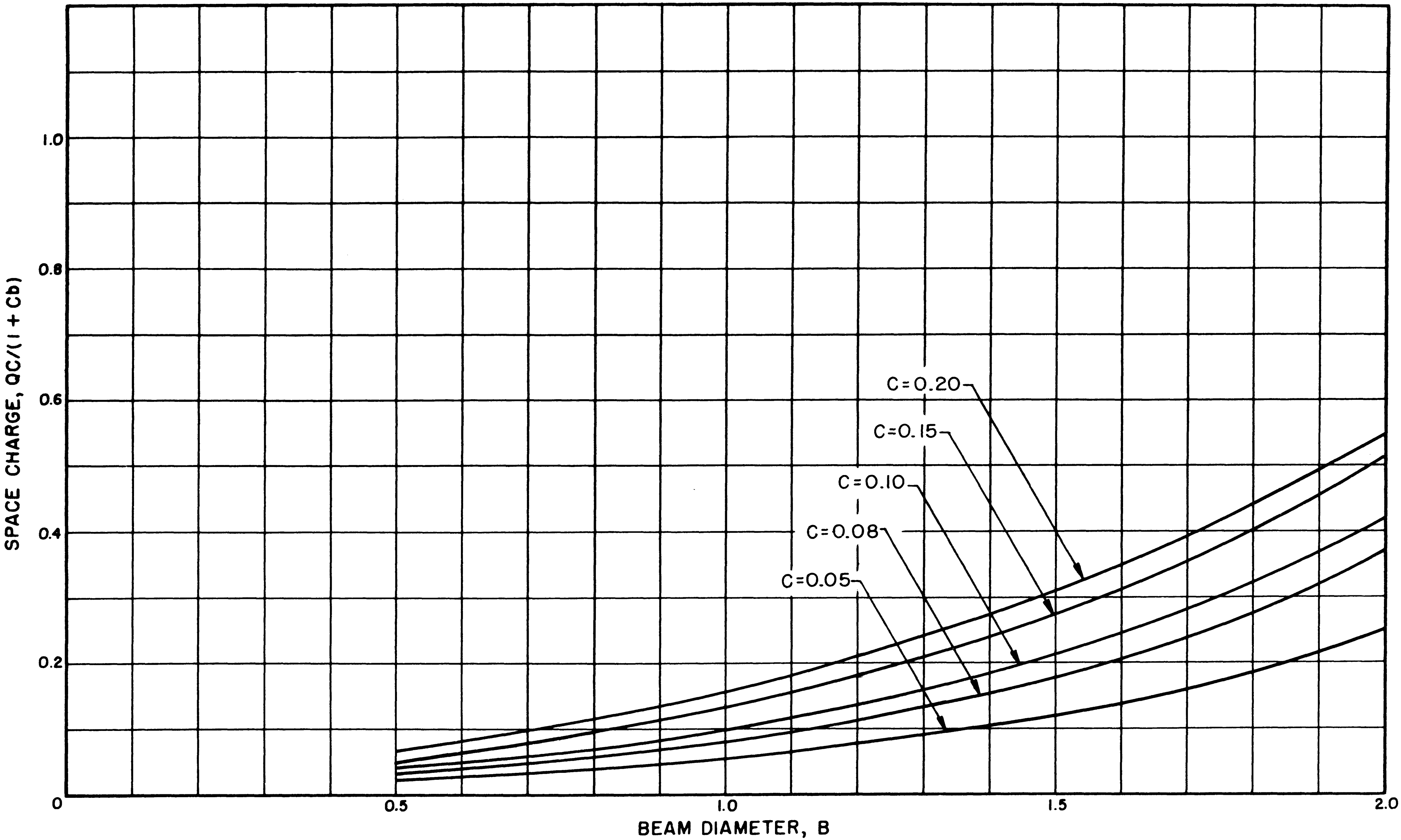


FIG. C.310 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.2$, V_0 = 10 KV, DLF = 100%)

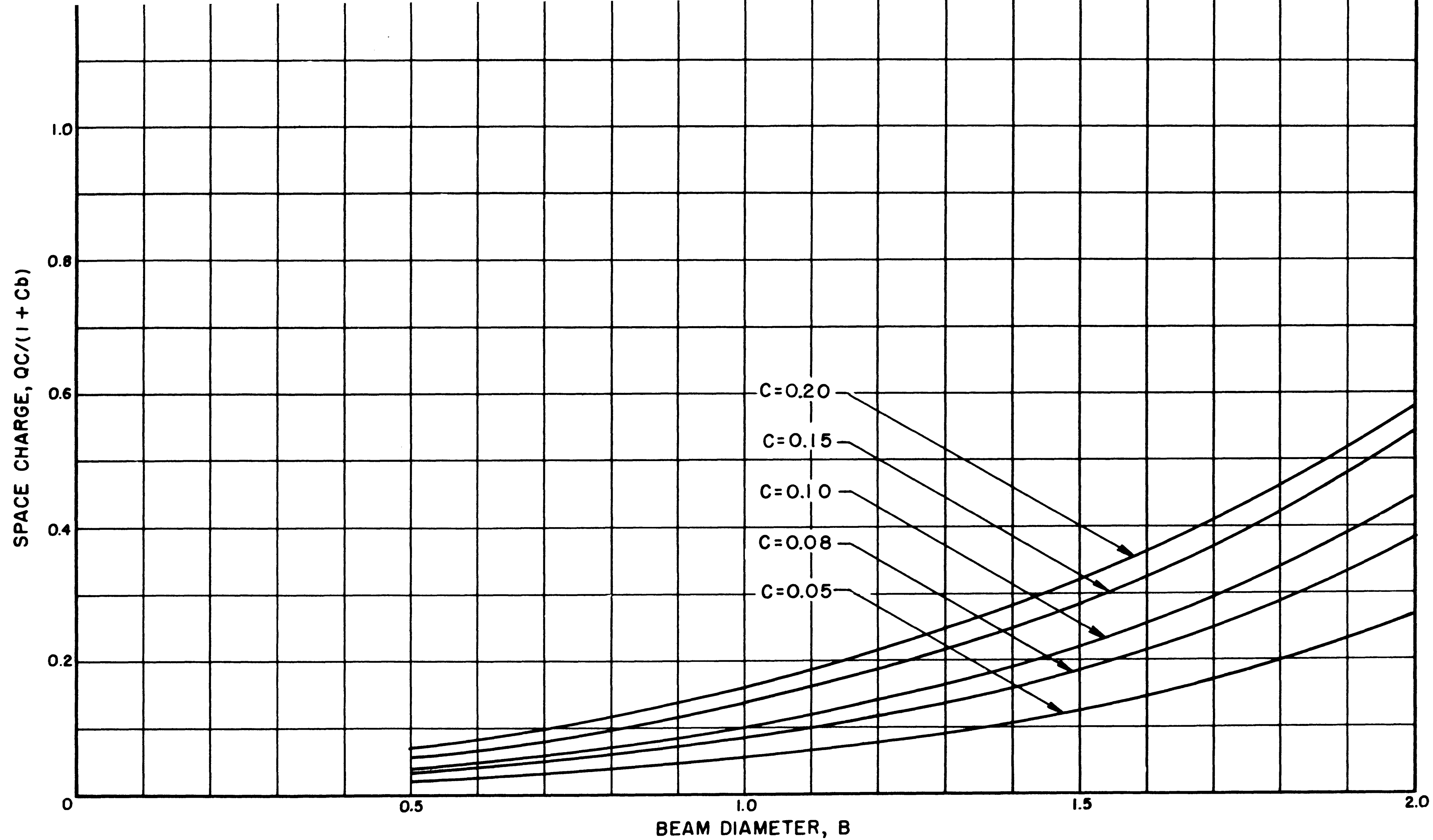


FIG. C.311 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.2$, $V_0 = 12$ KV, DLF = 100%)

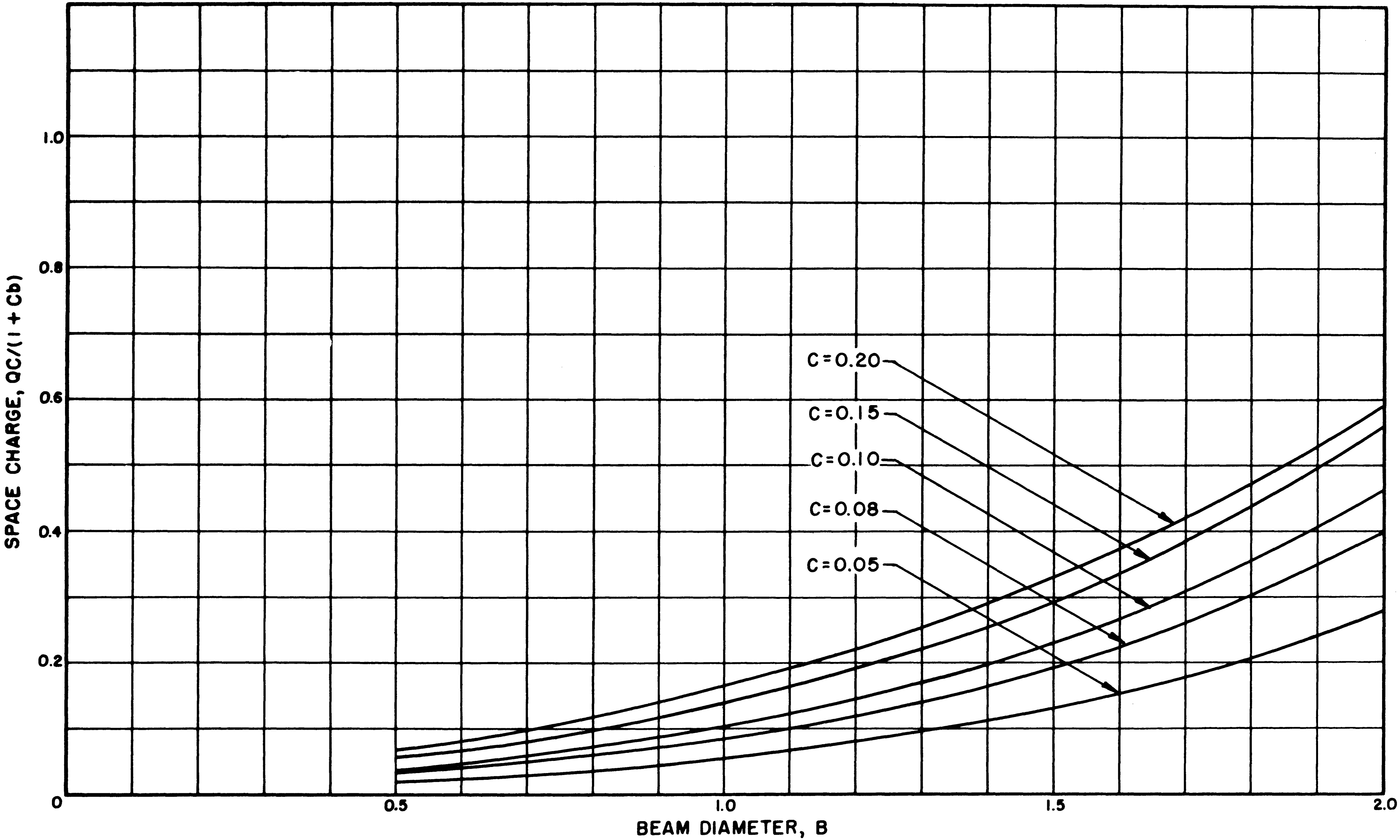


FIG. C.312 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.2$, $V_0 = 14$ KV, DLF = 100%)

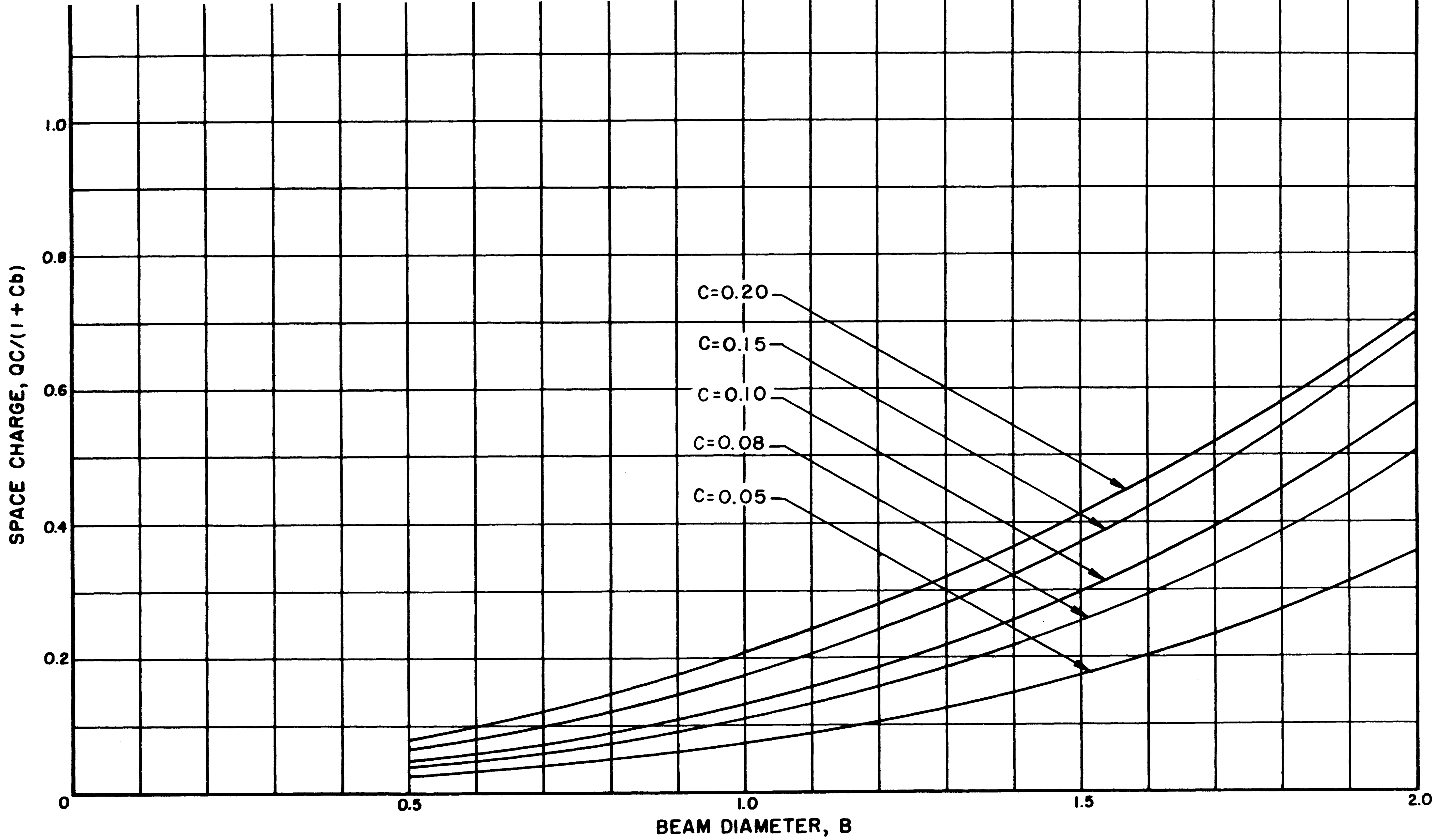


FIG. C.313 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.4$, $V_0 = 1$ KV, DLF = 100%)

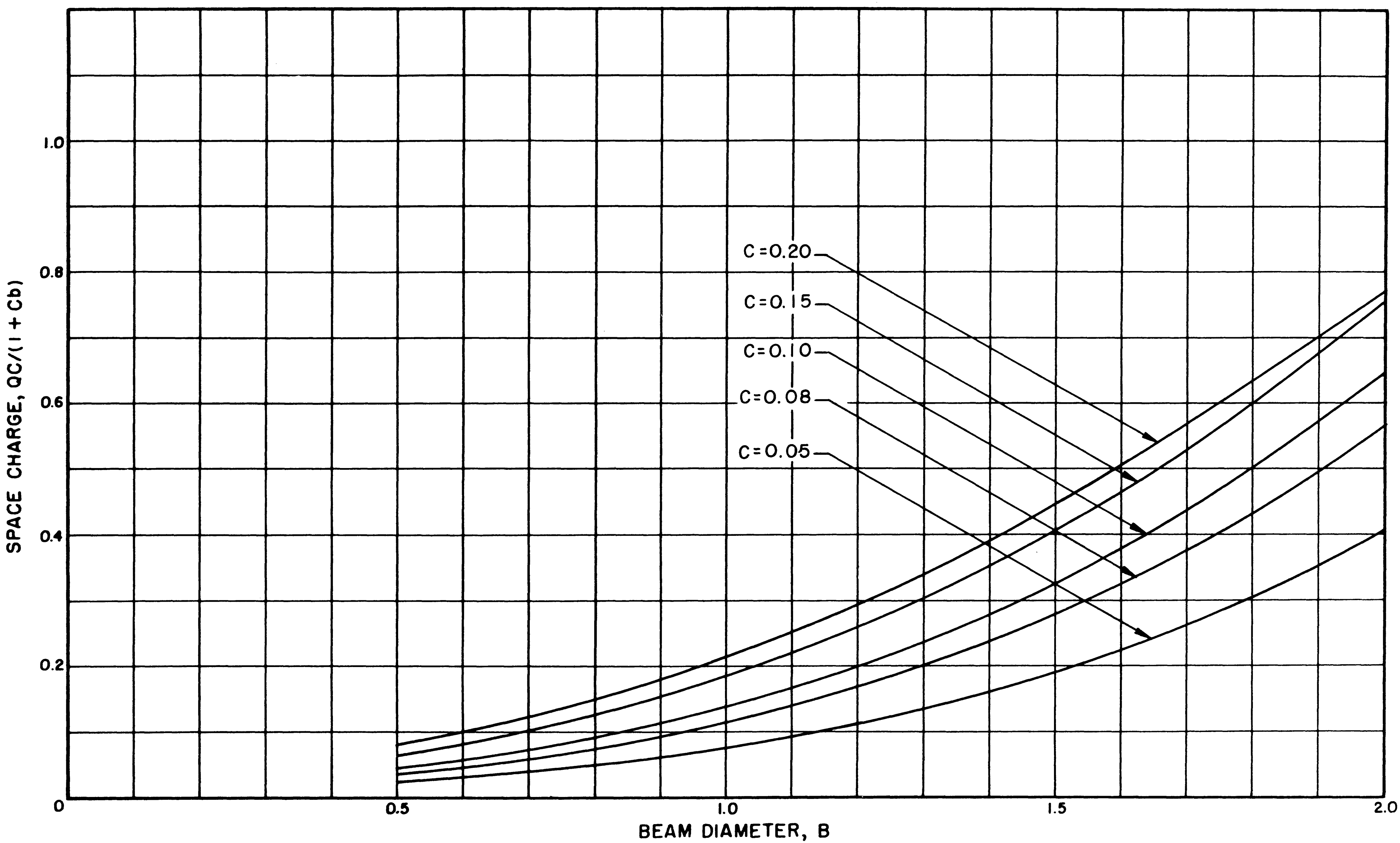


FIG. C.314 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER. ($a'/b' = 1.4$, $V_0 = 2$ KV, DLF = 100 %)

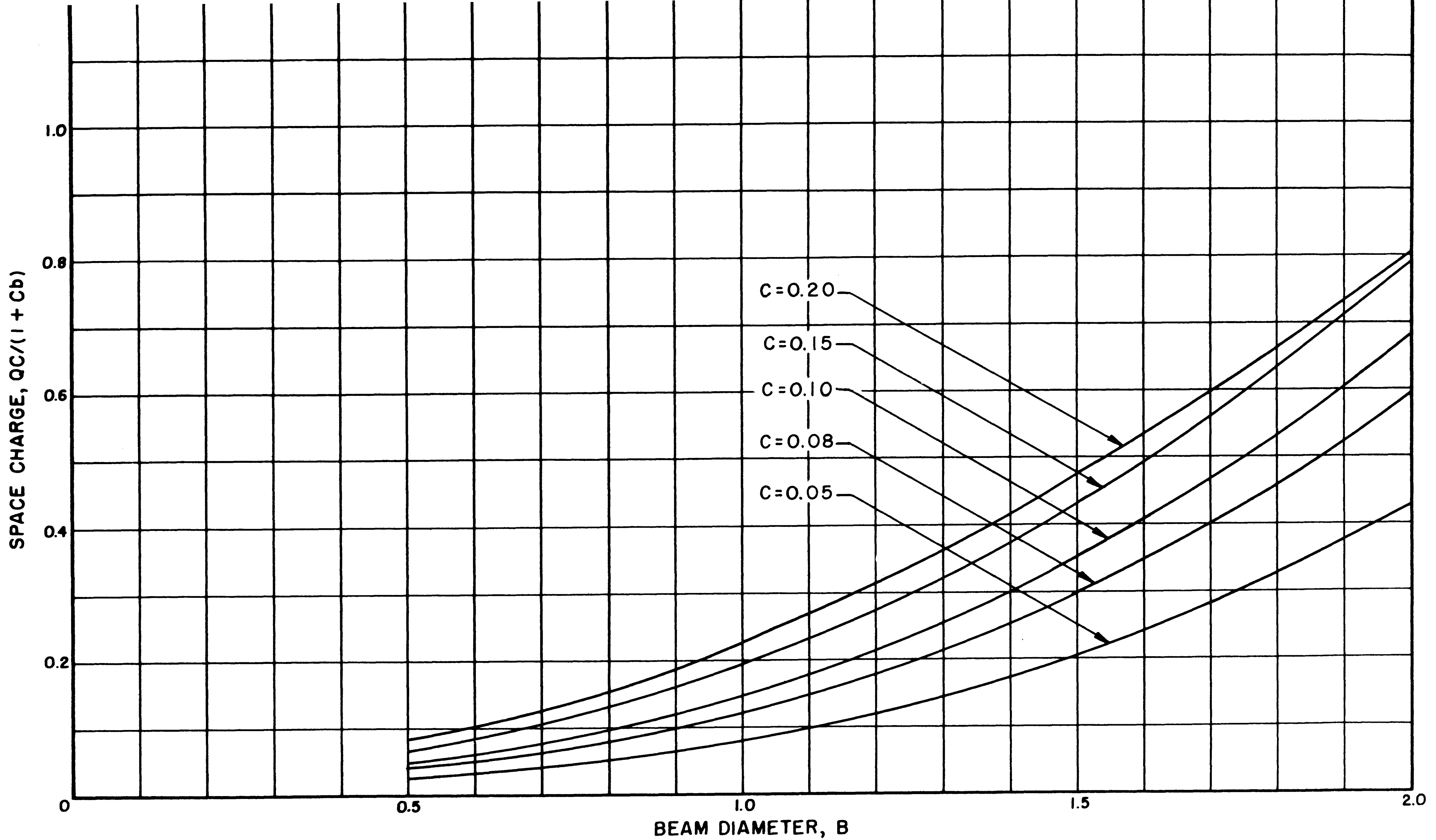


FIG. C.315 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.4$, $V_0 = 3$ KV, DLF = 100%)

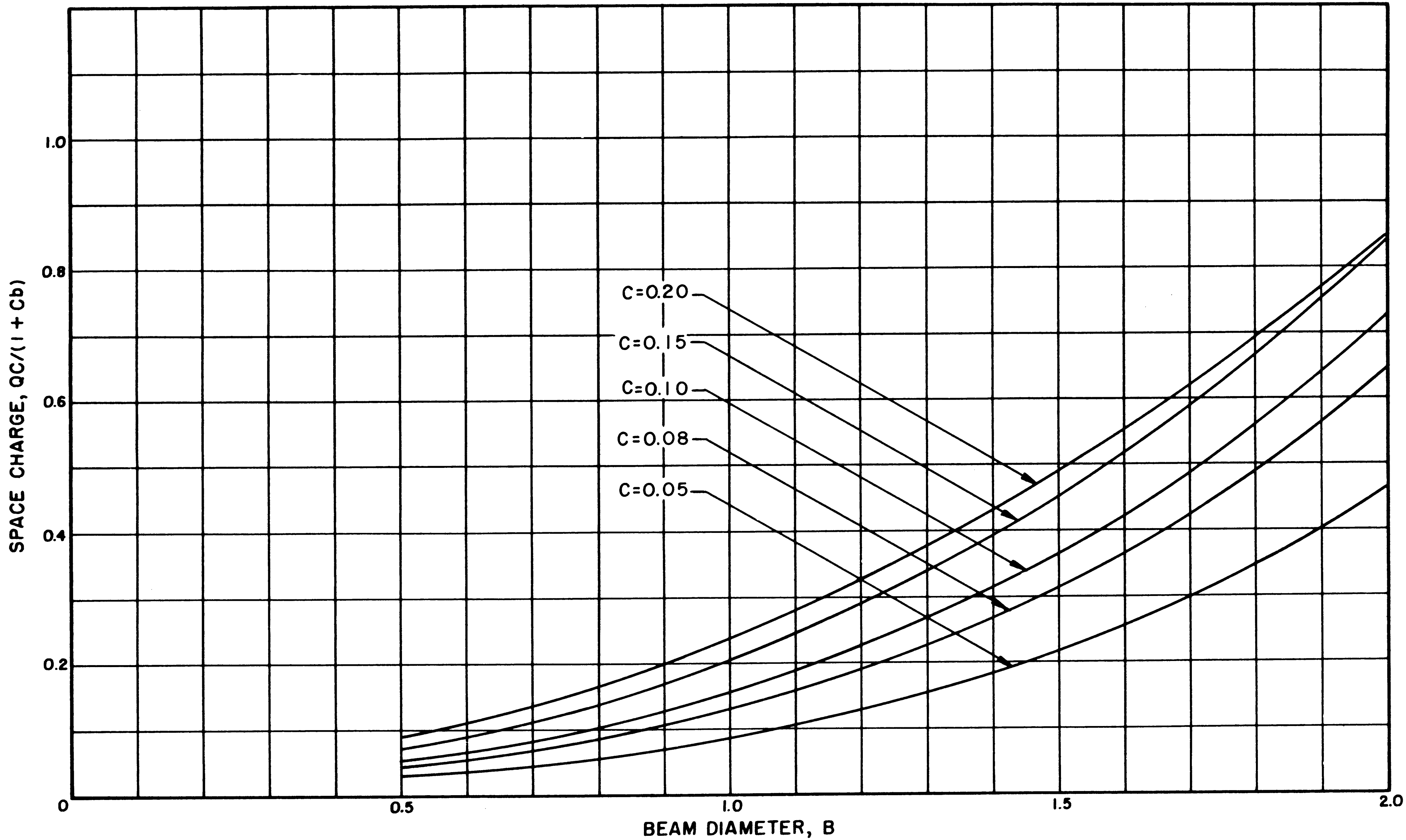


FIG. C.316 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
(a'/b' = 1.4 V_0 = 4 KV DLF = 100 %)

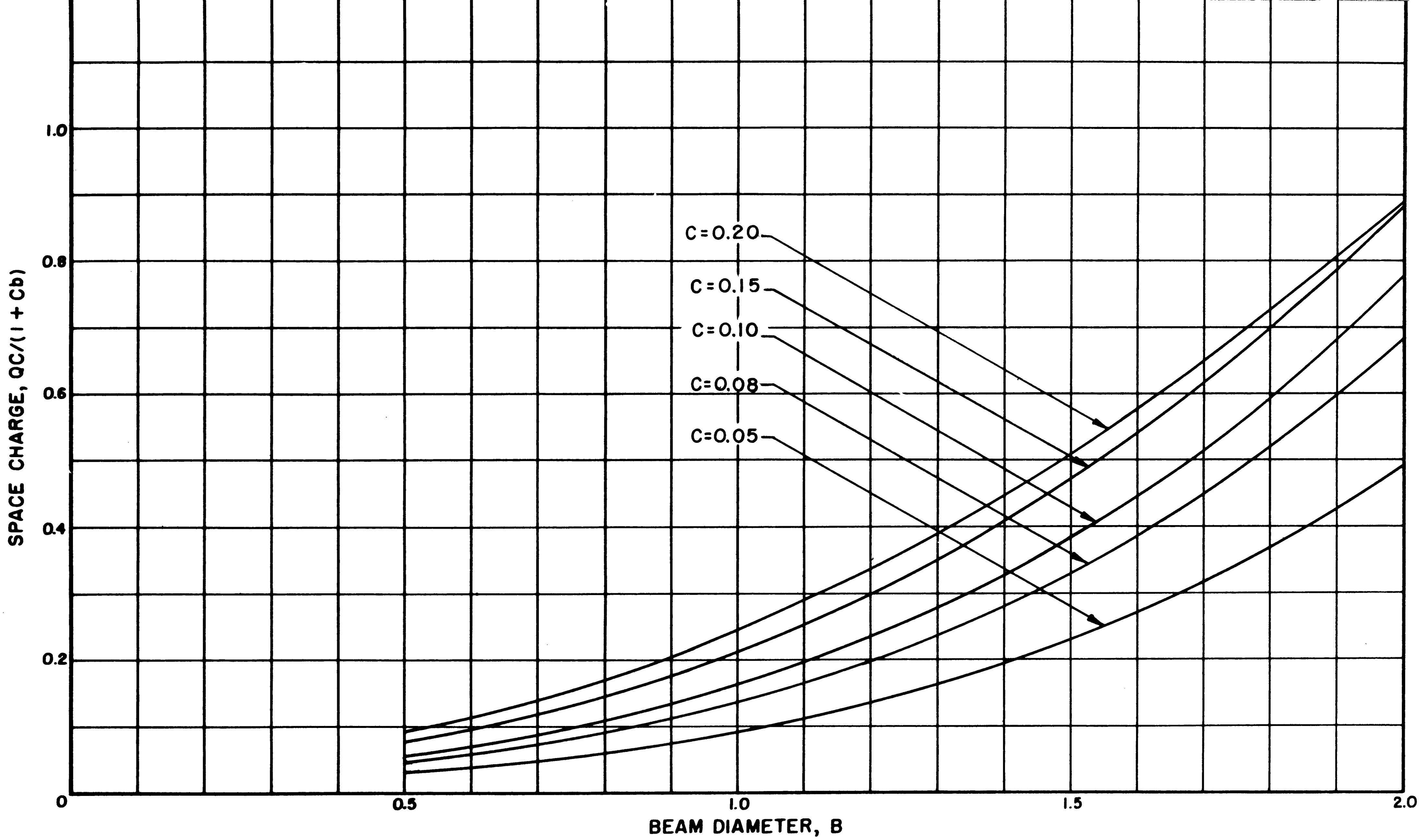


FIG. C. 317 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER. (a'/b' = 1.4, V_0 = 5 KV, DLF = 100 %)

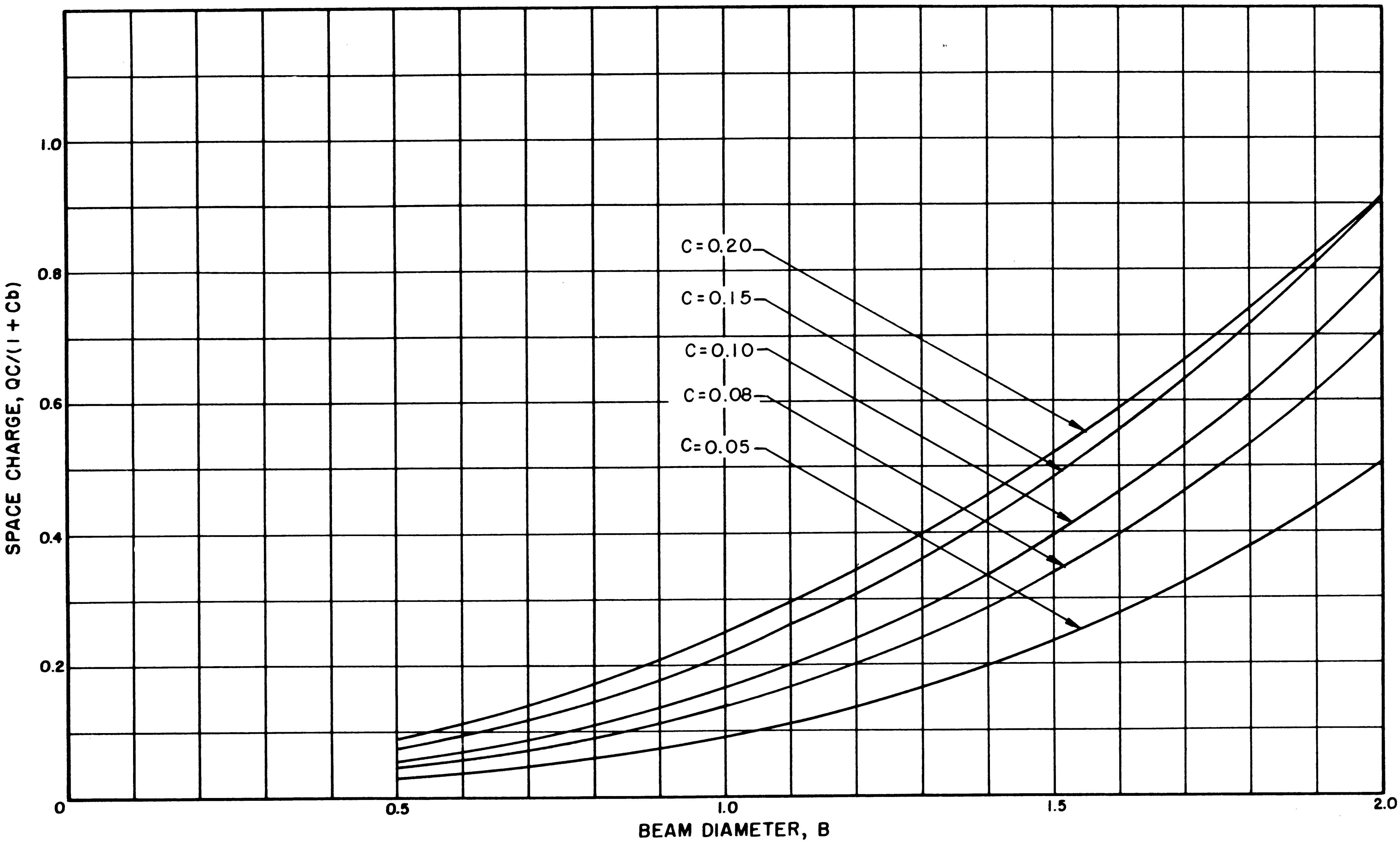


FIG. C.318 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.4$, $V_0 = 6$ KV, DLF = 100 %)

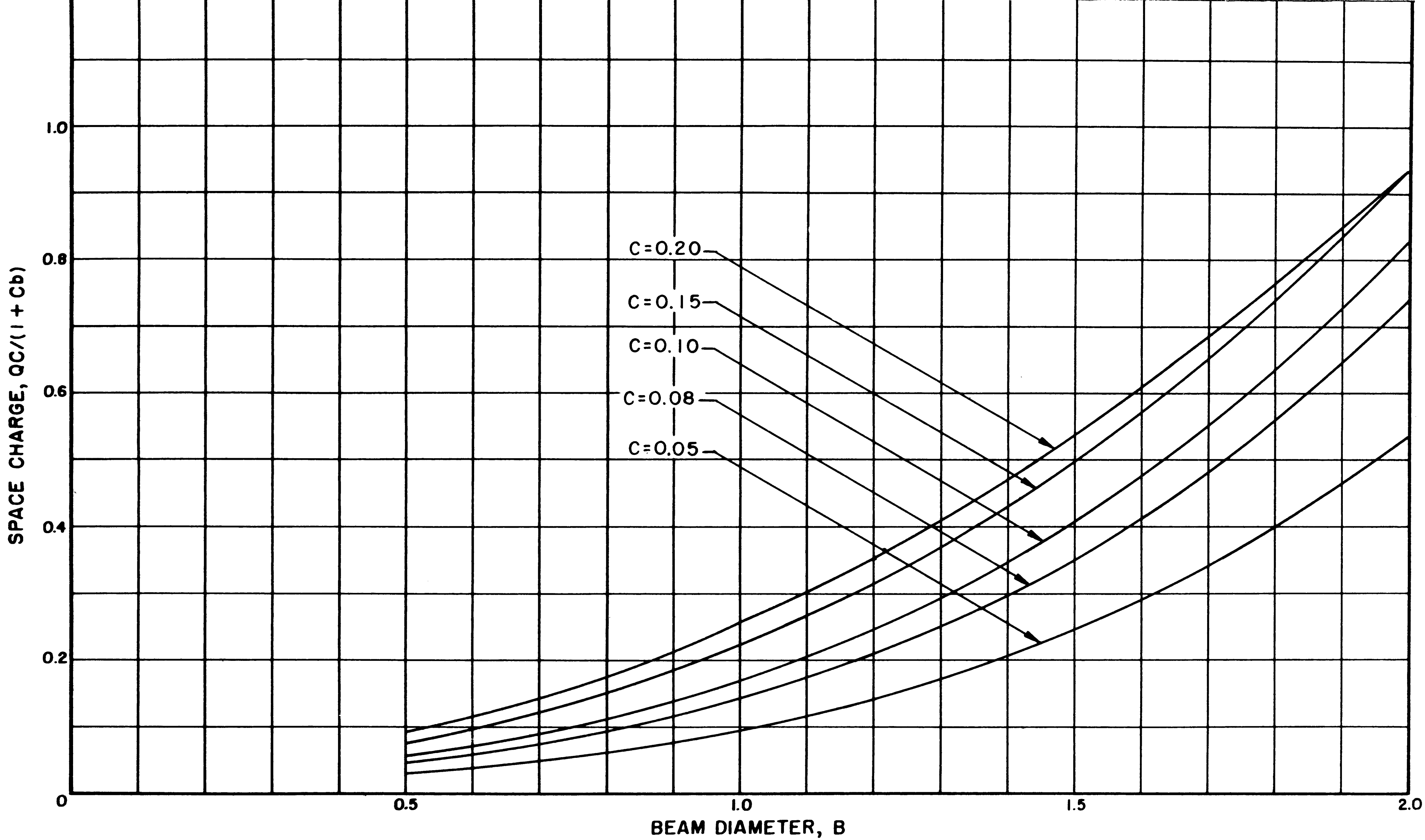


FIG. C. 319 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER. ($a'/b' = 1.4$, $V_0 = 7$ KV, DLF = 100 %)

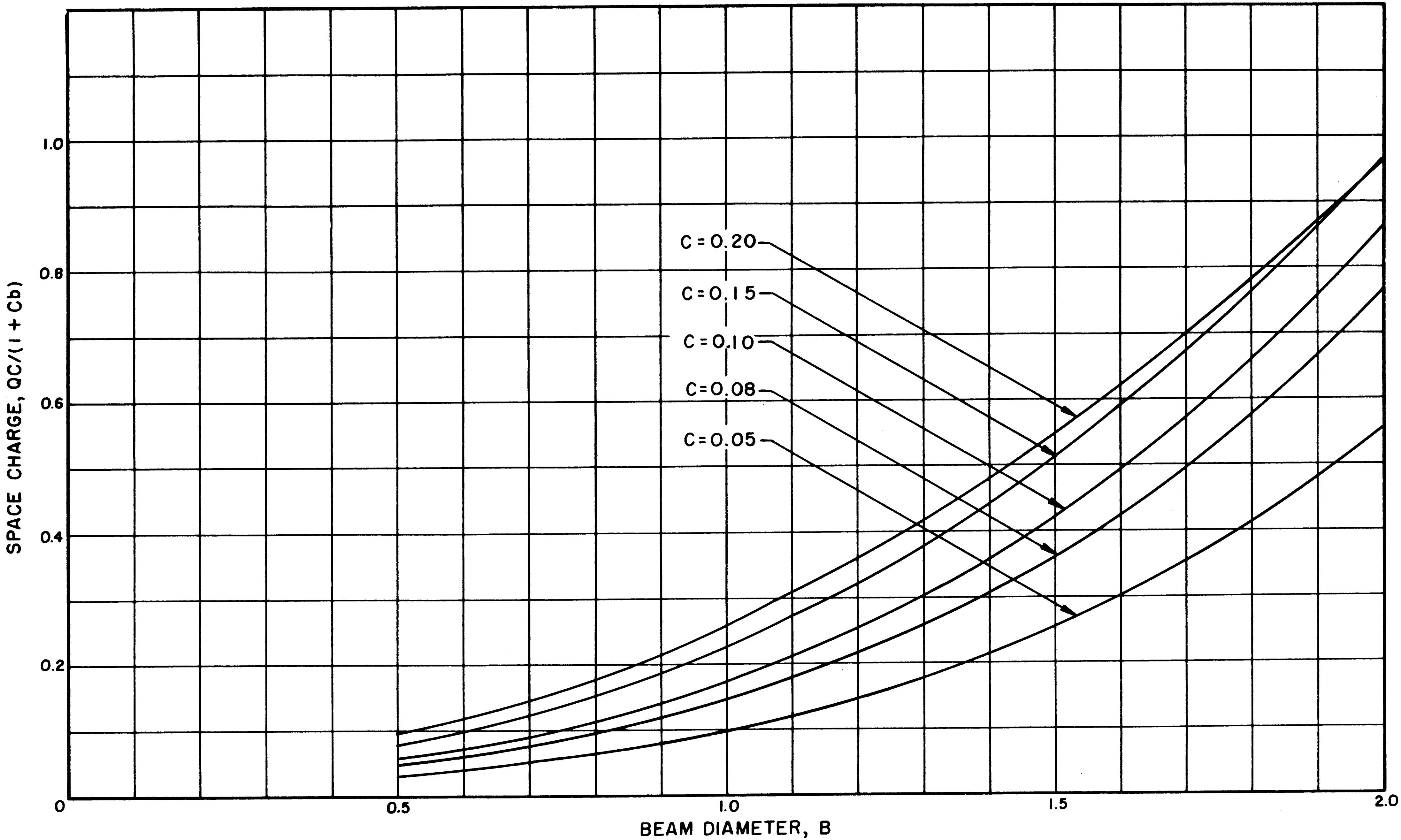


FIG. C.320 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.4$, $V_0 = 8$ KV, DLF = 100%)

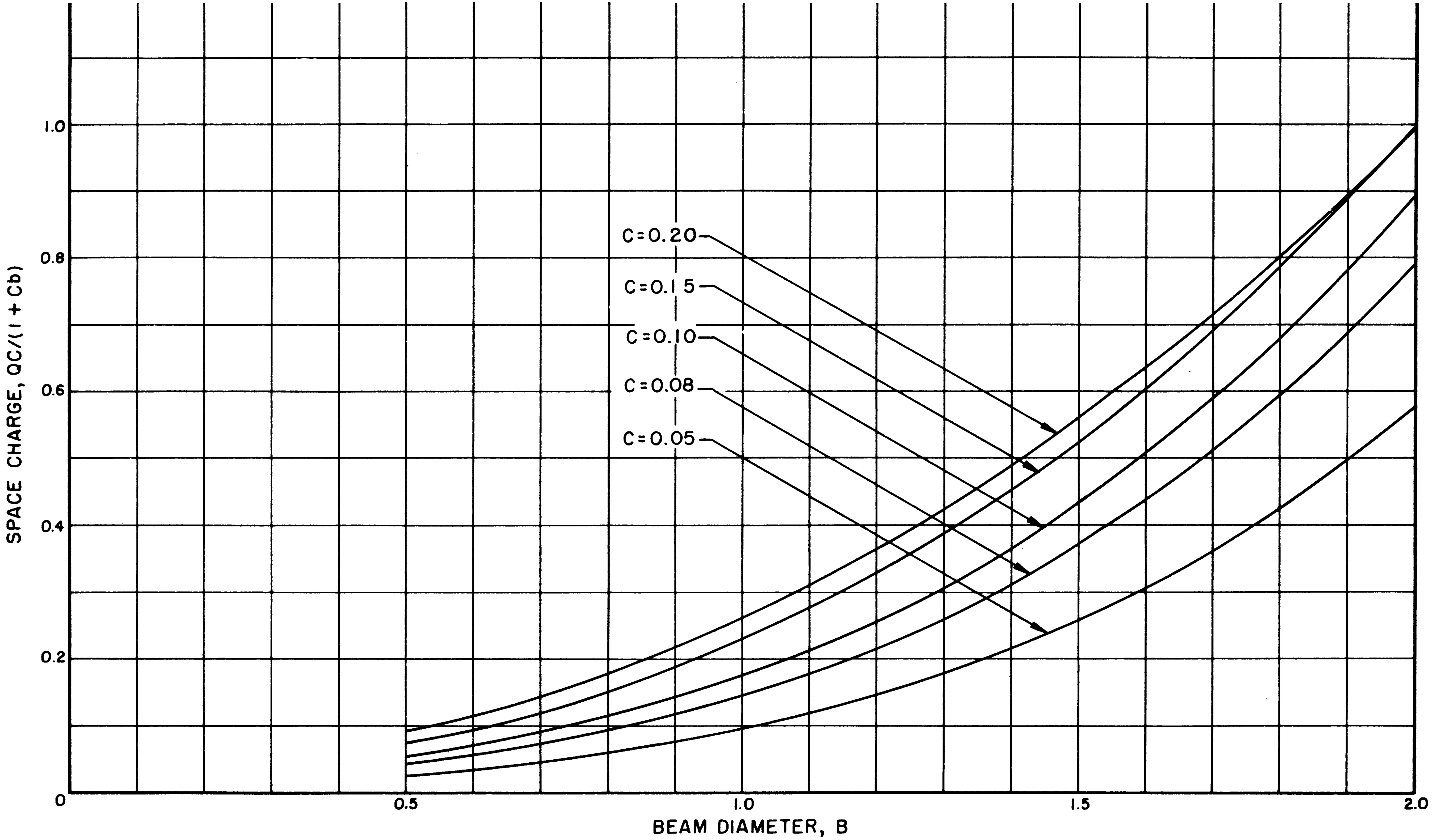


FIG. C.321 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER. ($a'/b' = 1.4$, $V_0 = 9$ KV, DLF = 100 %)

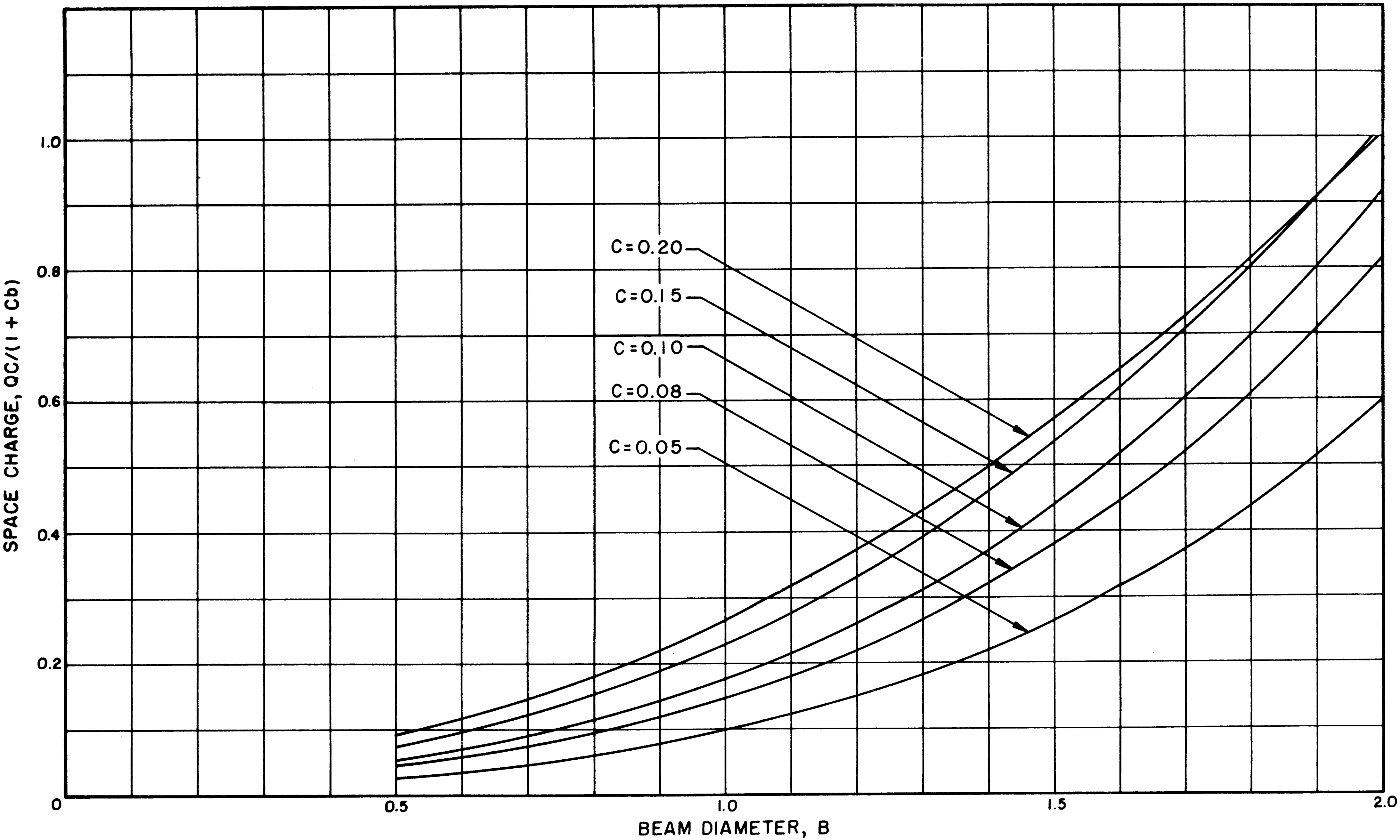


FIG. C.322 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.4$, $V_0 = 10$ KV, DLF = 100 %)

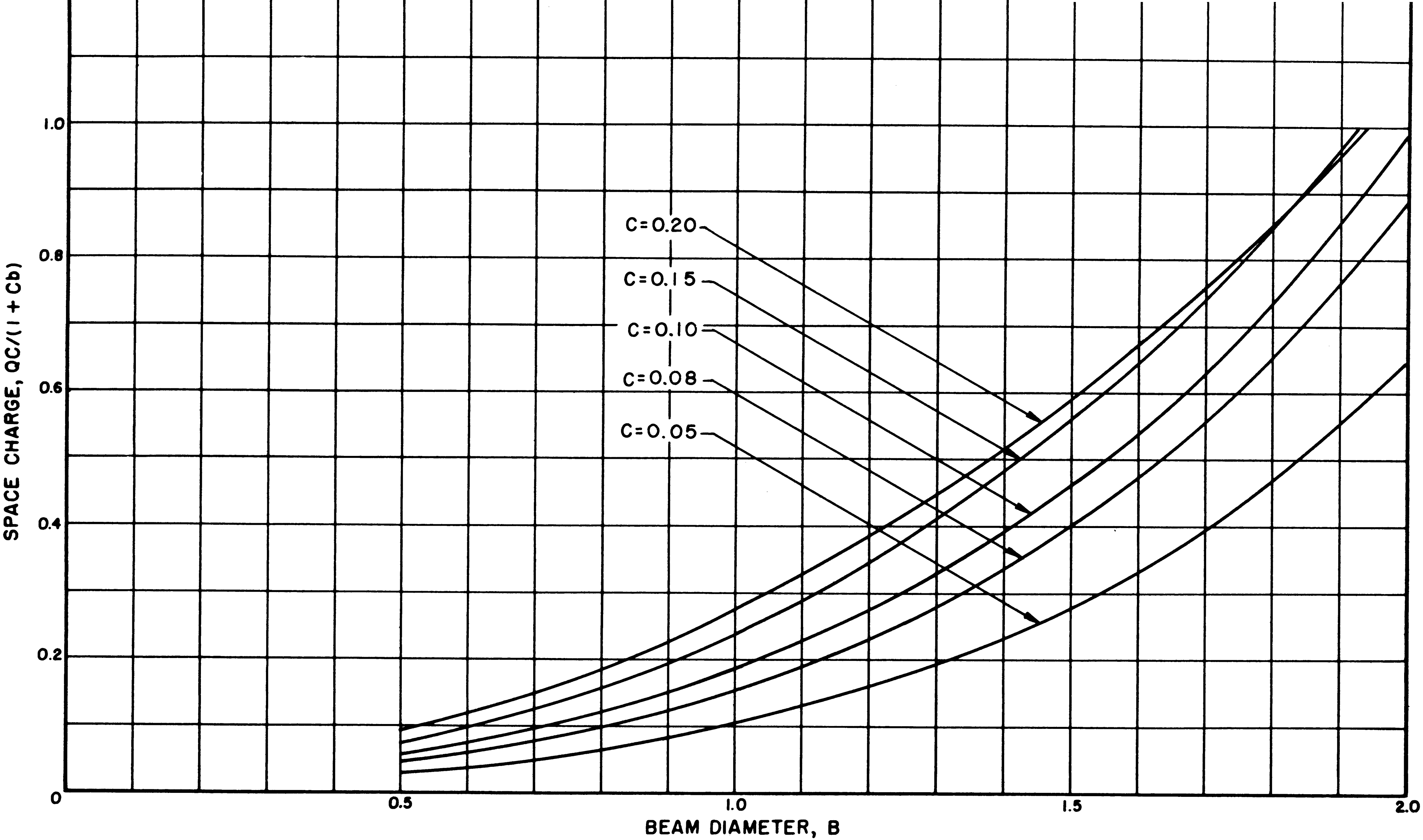


FIG. C.323 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.4$, $V_0 = 12$ KV, DLF = 100%)

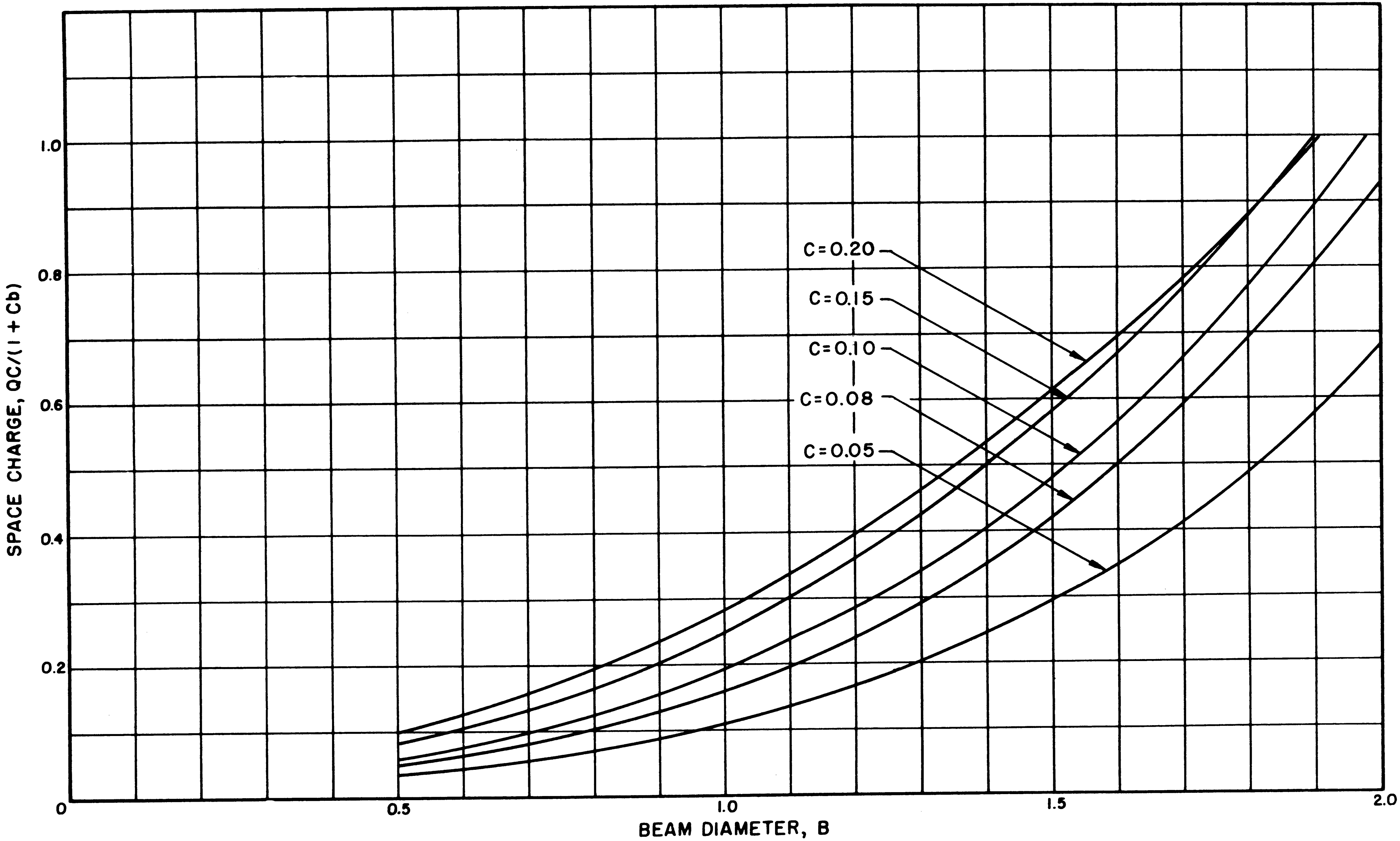


FIG. C.324 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.4$, $V_0 = 14$ KV, DLF = 100%)

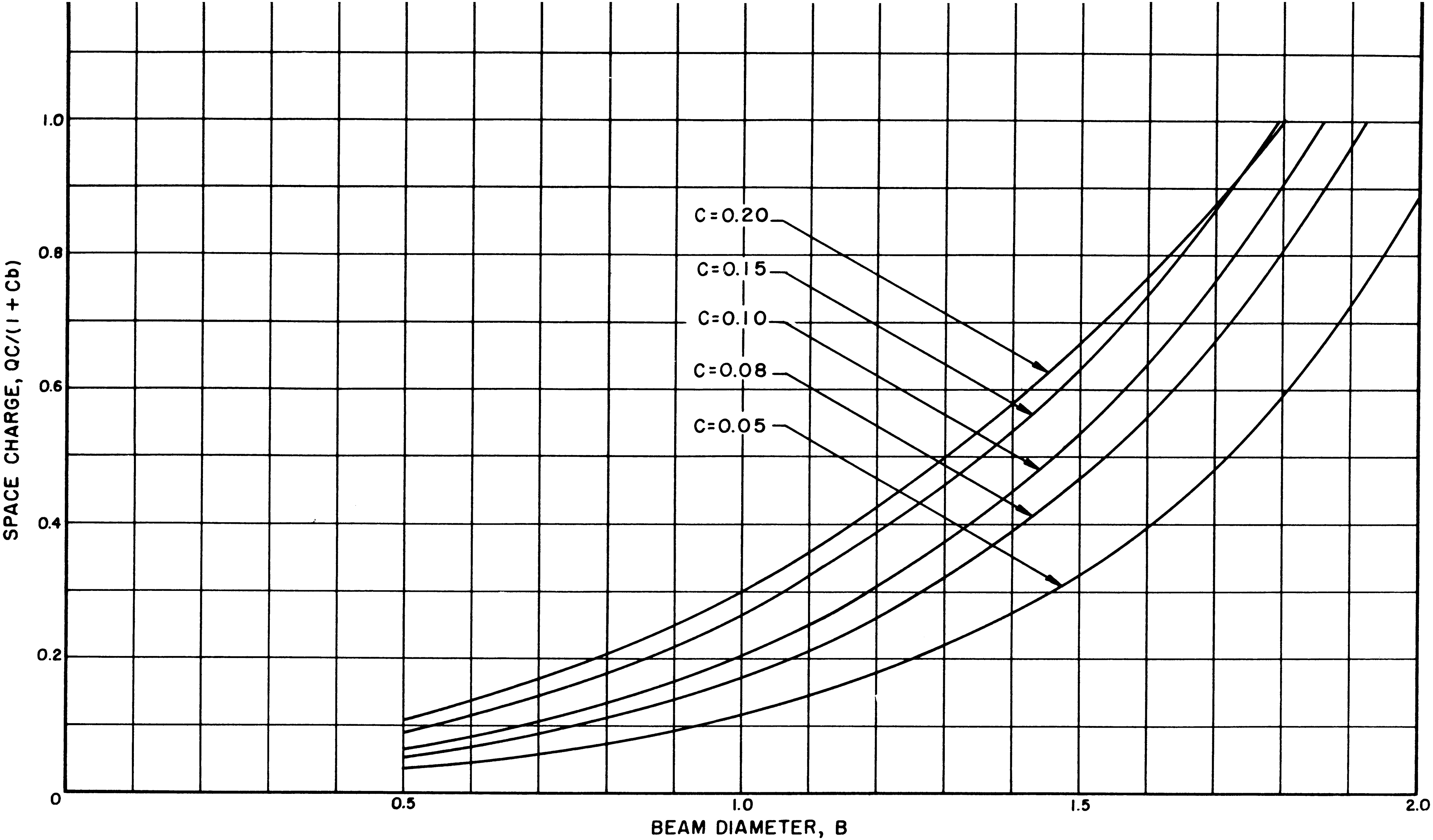


FIG. C.325 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.6$, $V_0 = 1$ KV, DLF = 100 %)

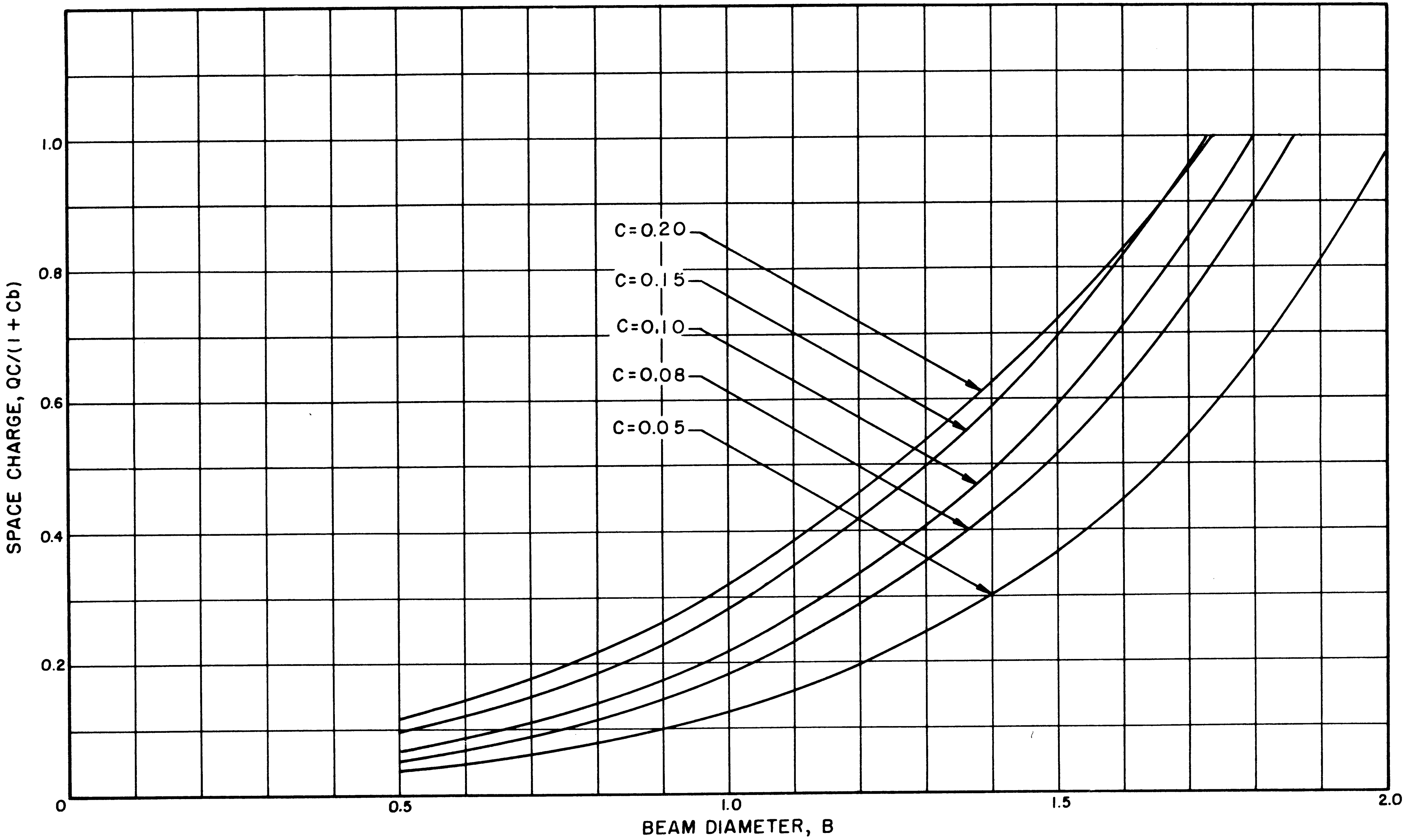


FIG. C.326 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.6$, $V_0 = 2$ KV, DLF = 100%)

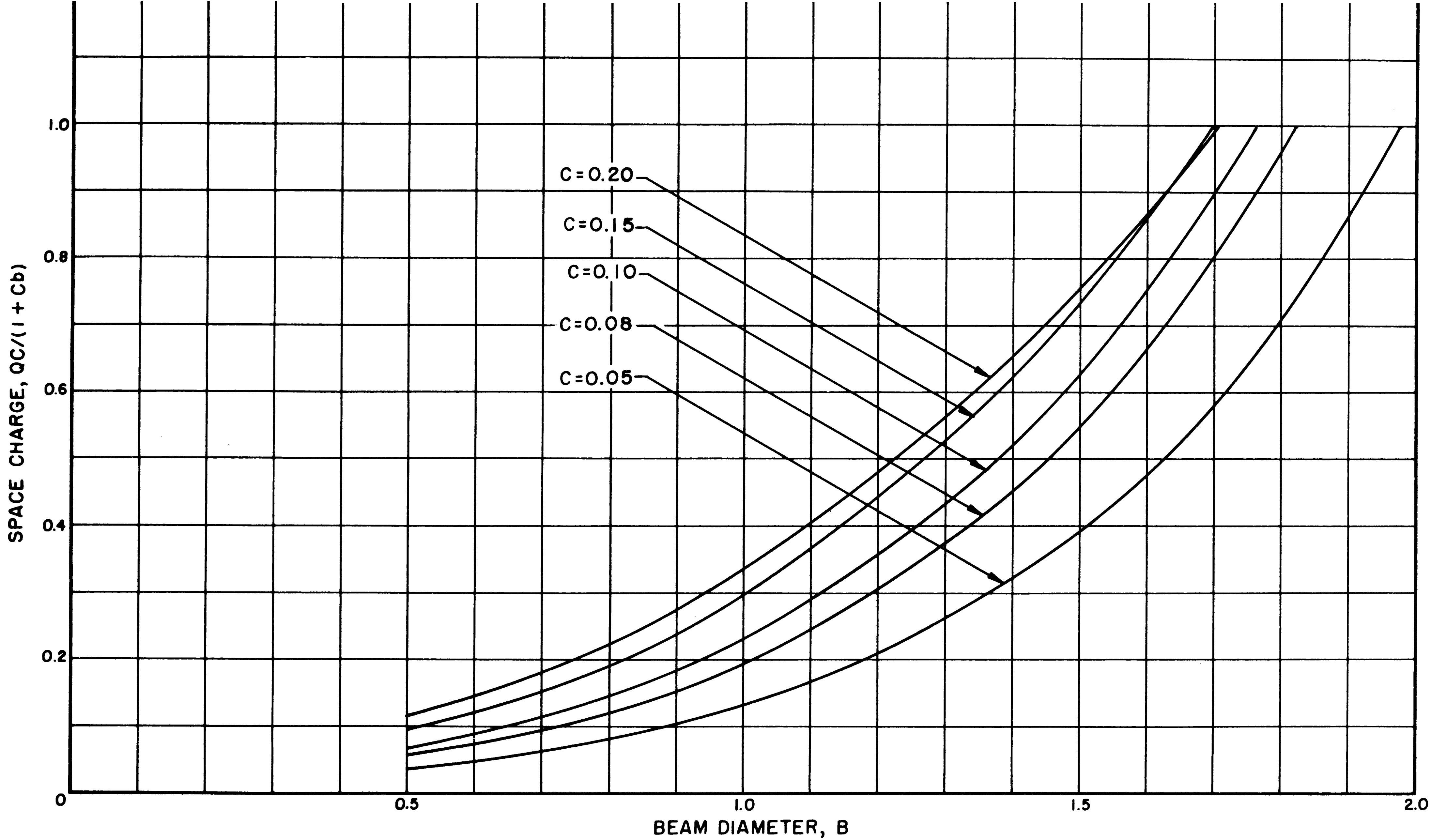


FIG. C.327 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.6$, $V_0 = 3$ KV, DLF = 100%)

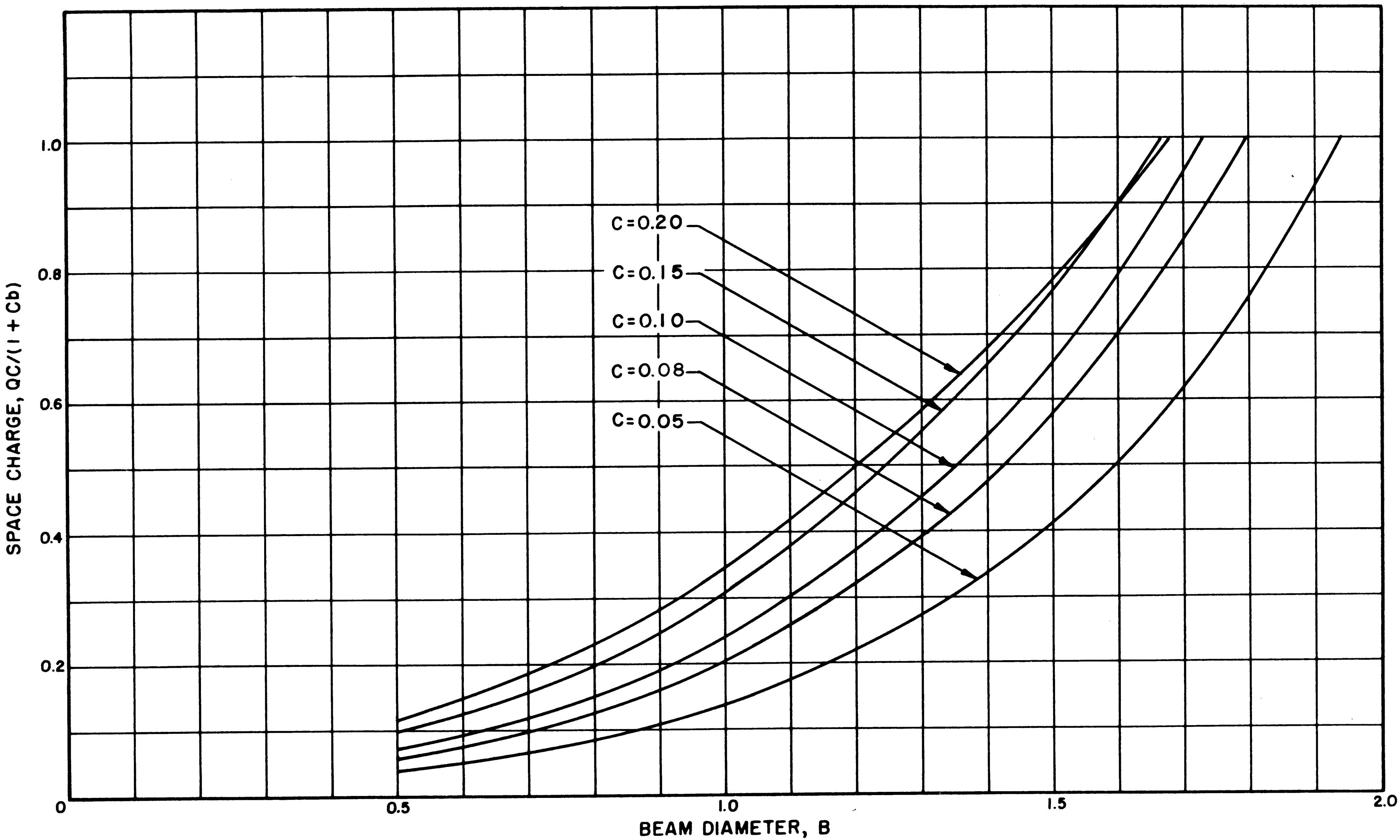


FIG. C.328 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
(a'/b' = 1.6, V_0 = 4 KV, D.L.F. = 100%)

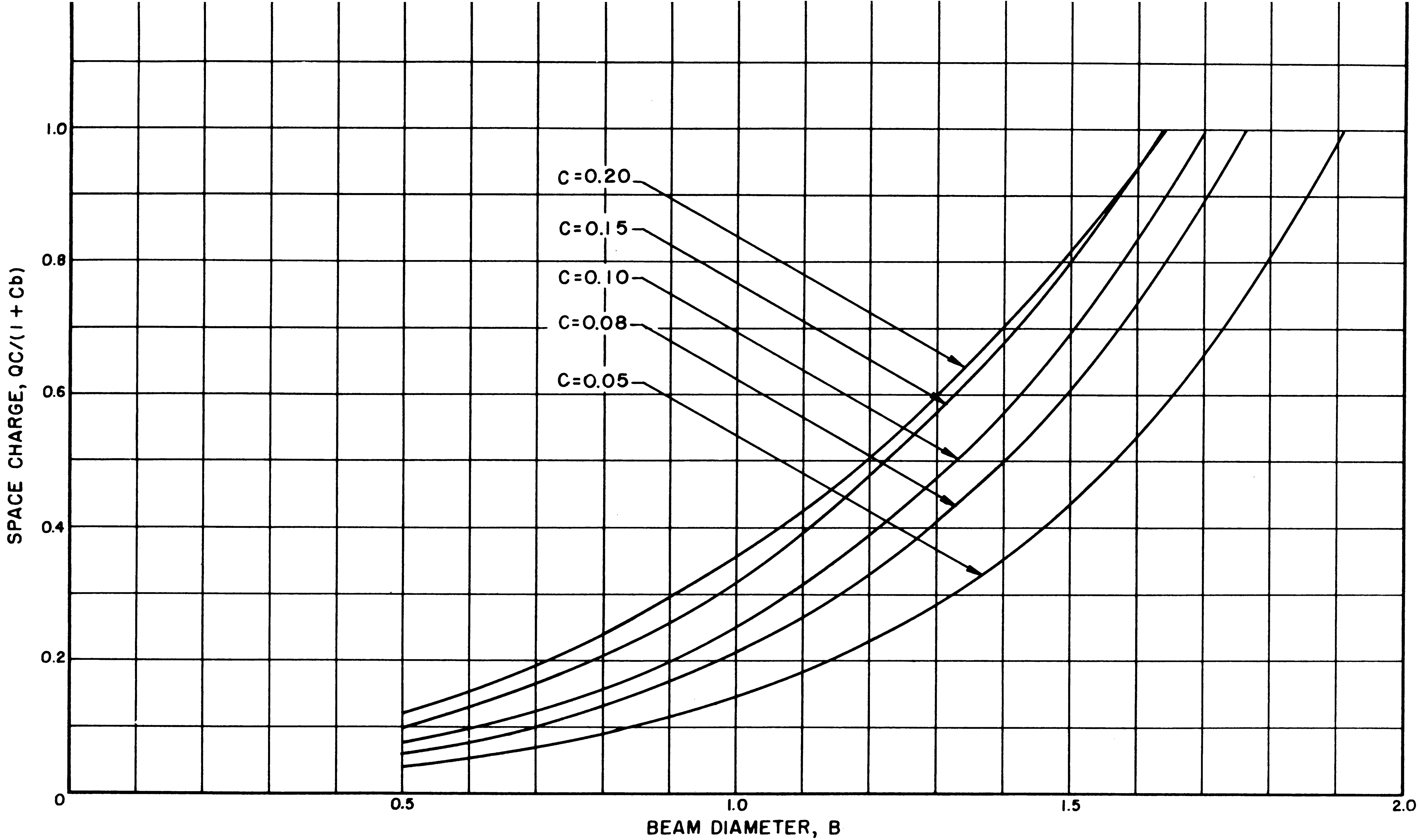


FIG. C.329 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.6$, $V_0 = 5$ KV, DLF = 100%)

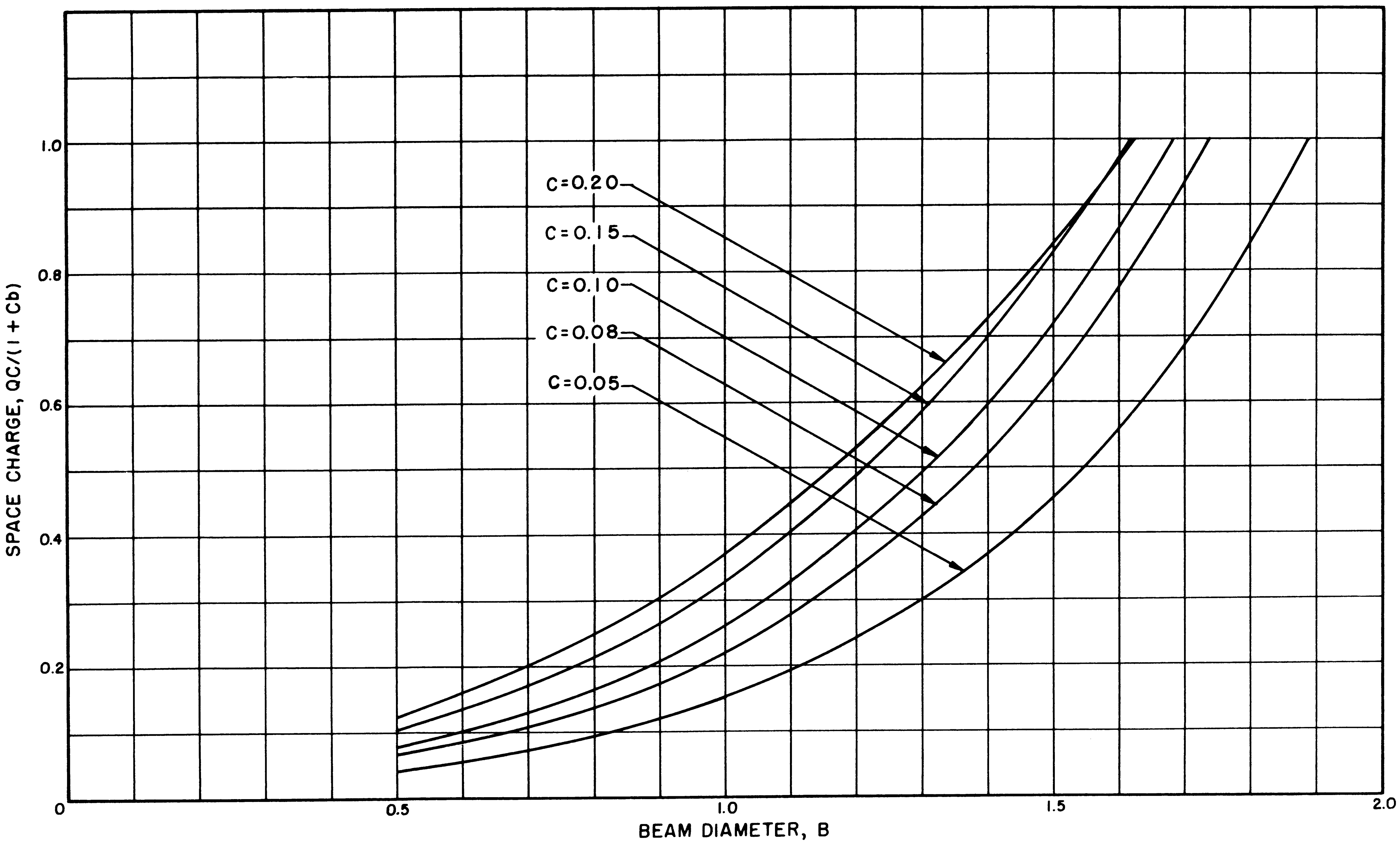


FIG. C. 330 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.6$, $V_0 = 6$ KV, DLF = 100%)

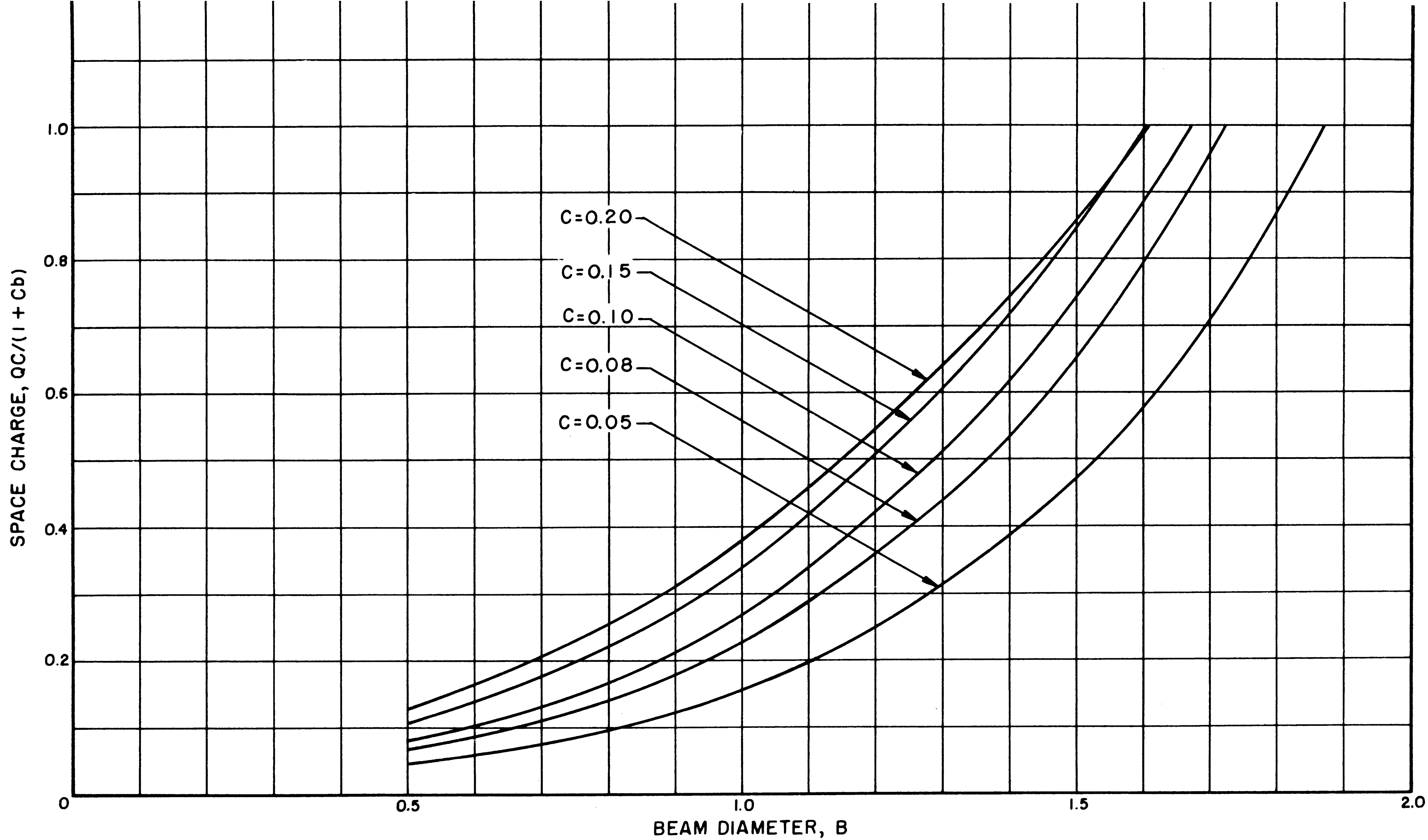


FIG. C. 331 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.6$, $V_0 = 7$ KV, DLF = 100%)

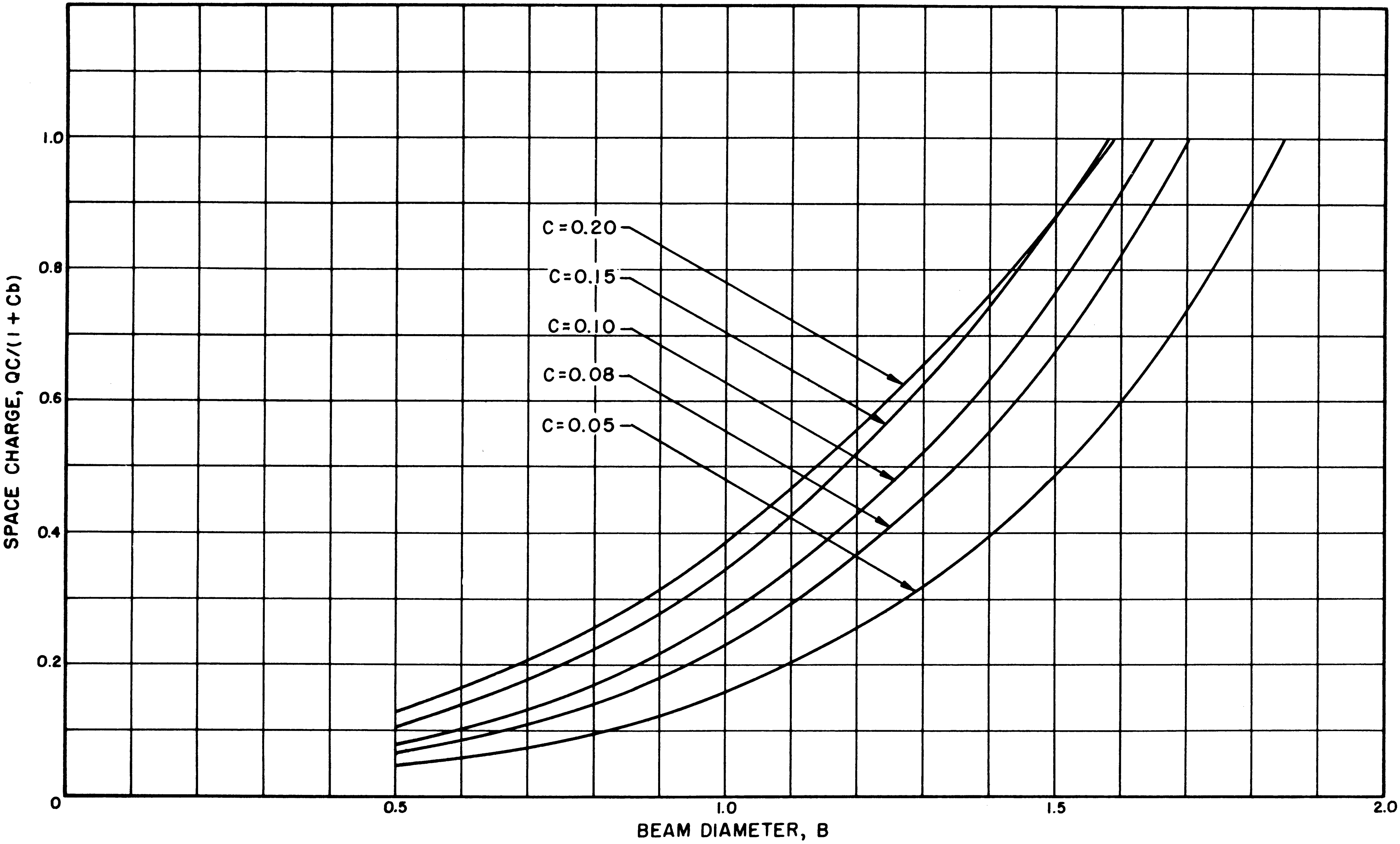


FIG. C.332 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.6$, $V_0 = 8$ KV, DLF $= 100\%$)

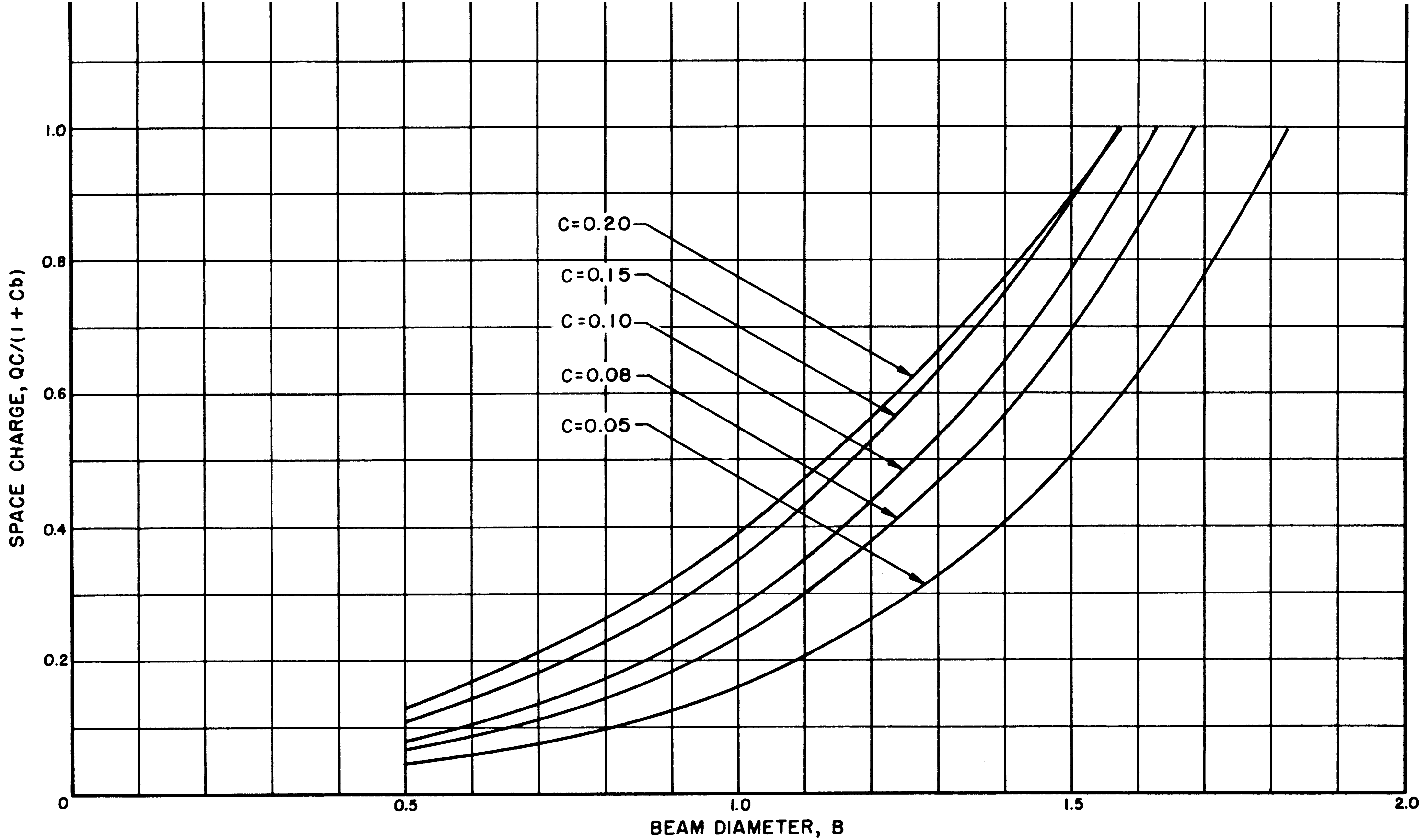


FIG. C.333 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.6$, $V_0 = 9$ KV, DLF = 100%)

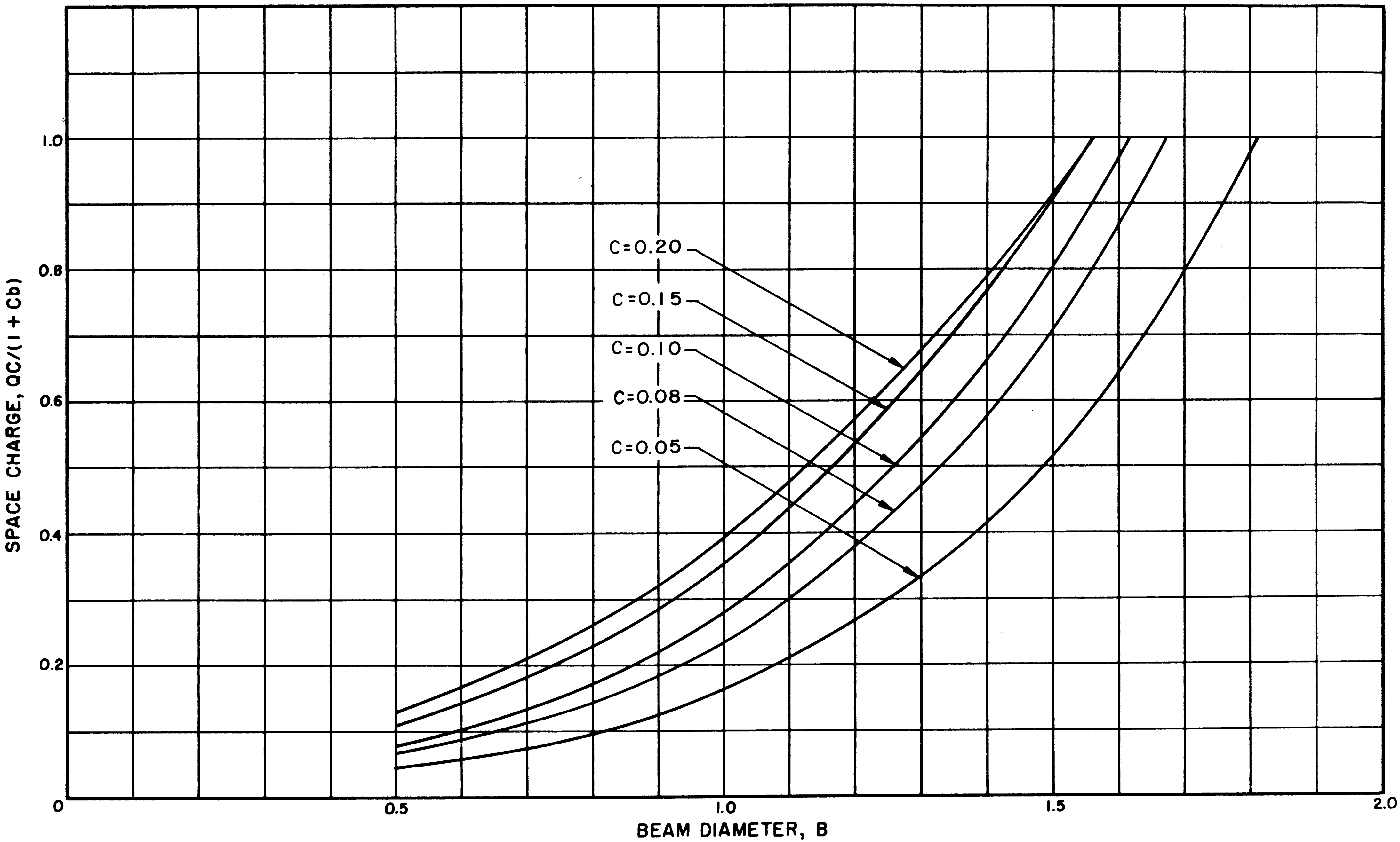


FIG. C.334 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.6$, $V_0 = 10$ KV. DLF $= 100$ %)

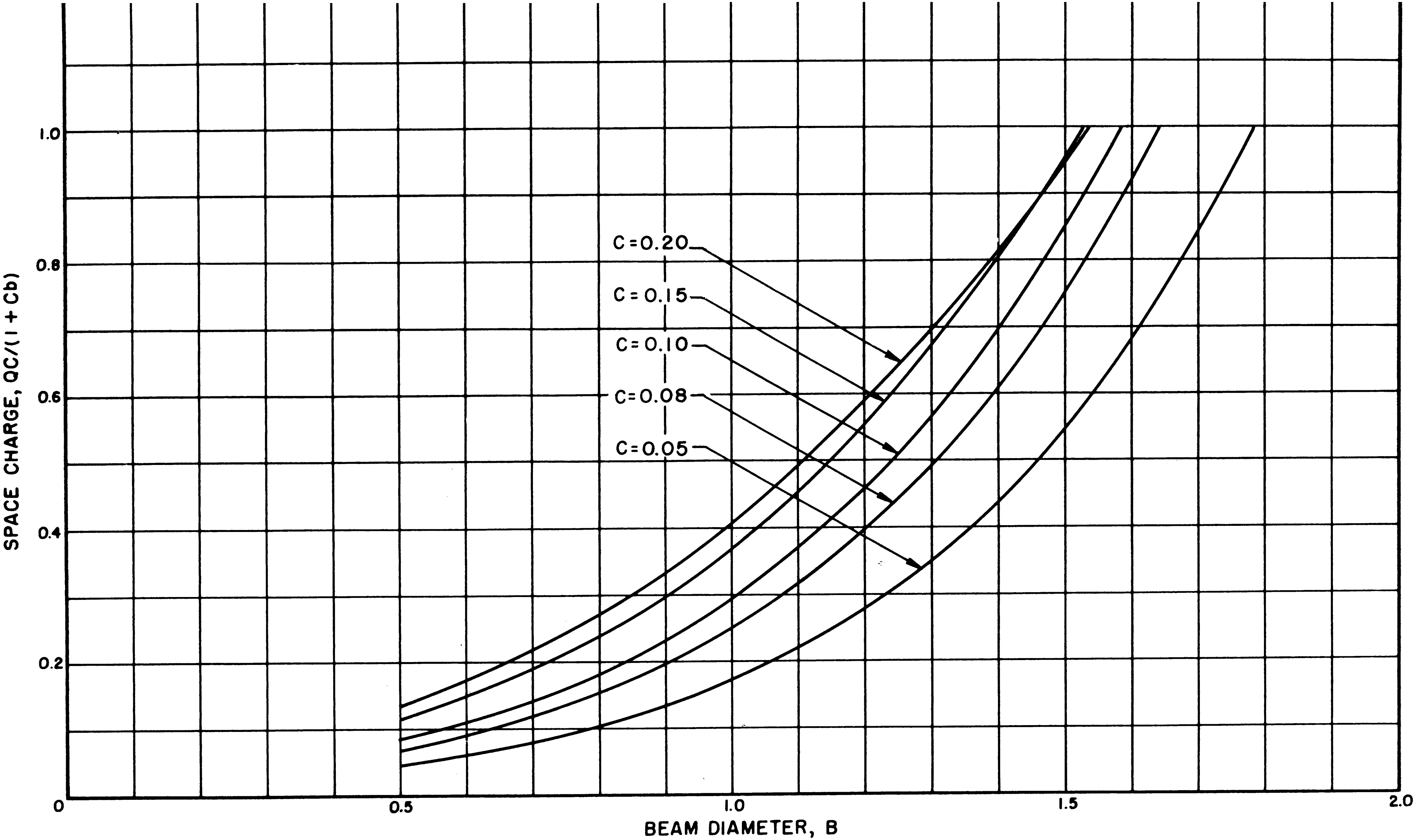


FIG. C.335 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.6$, $V_0 = 12$ KV, DLF = 100%)

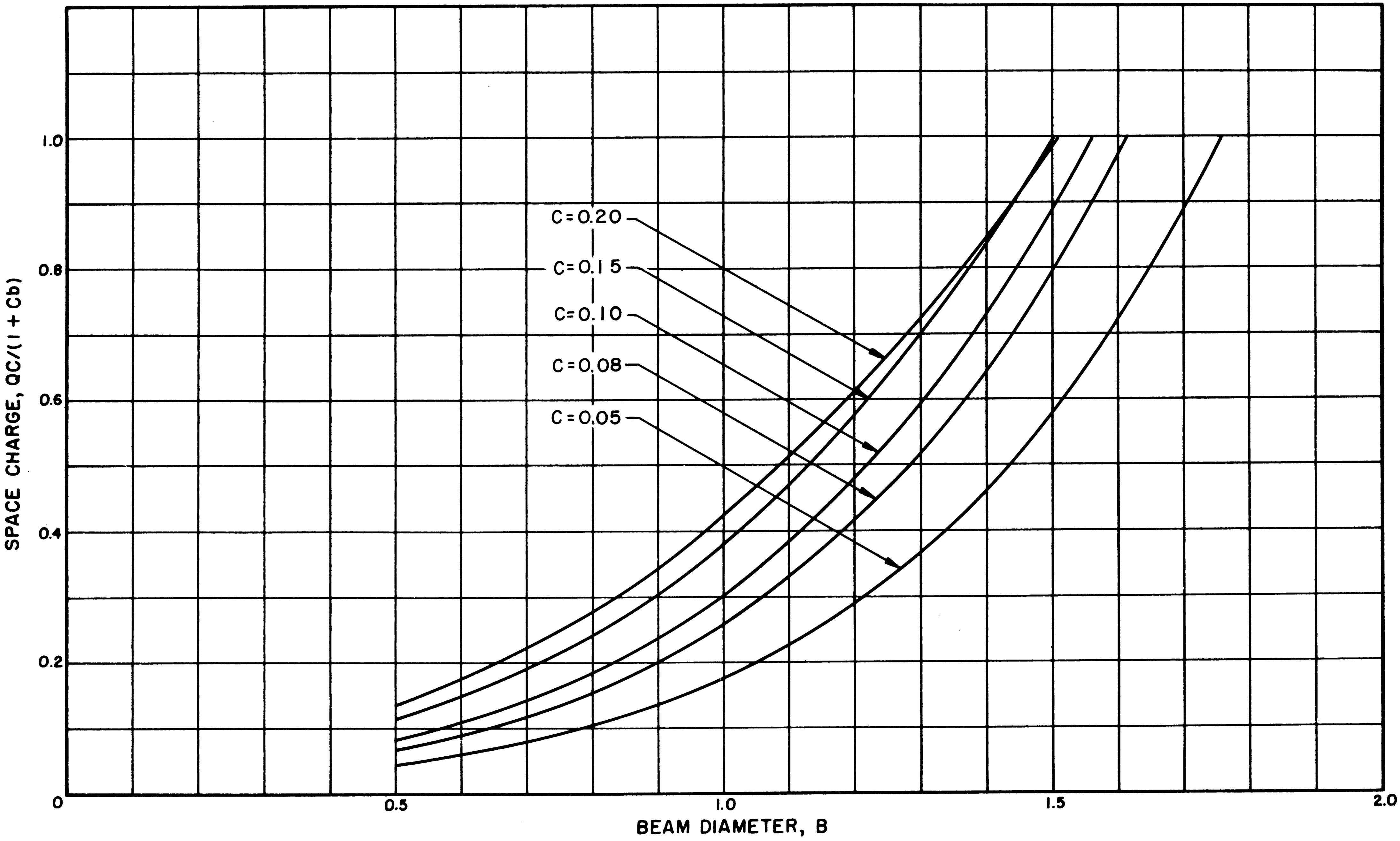


FIG. C.336 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.6$, $V_0 = 14$ KV, DLF = 100%)

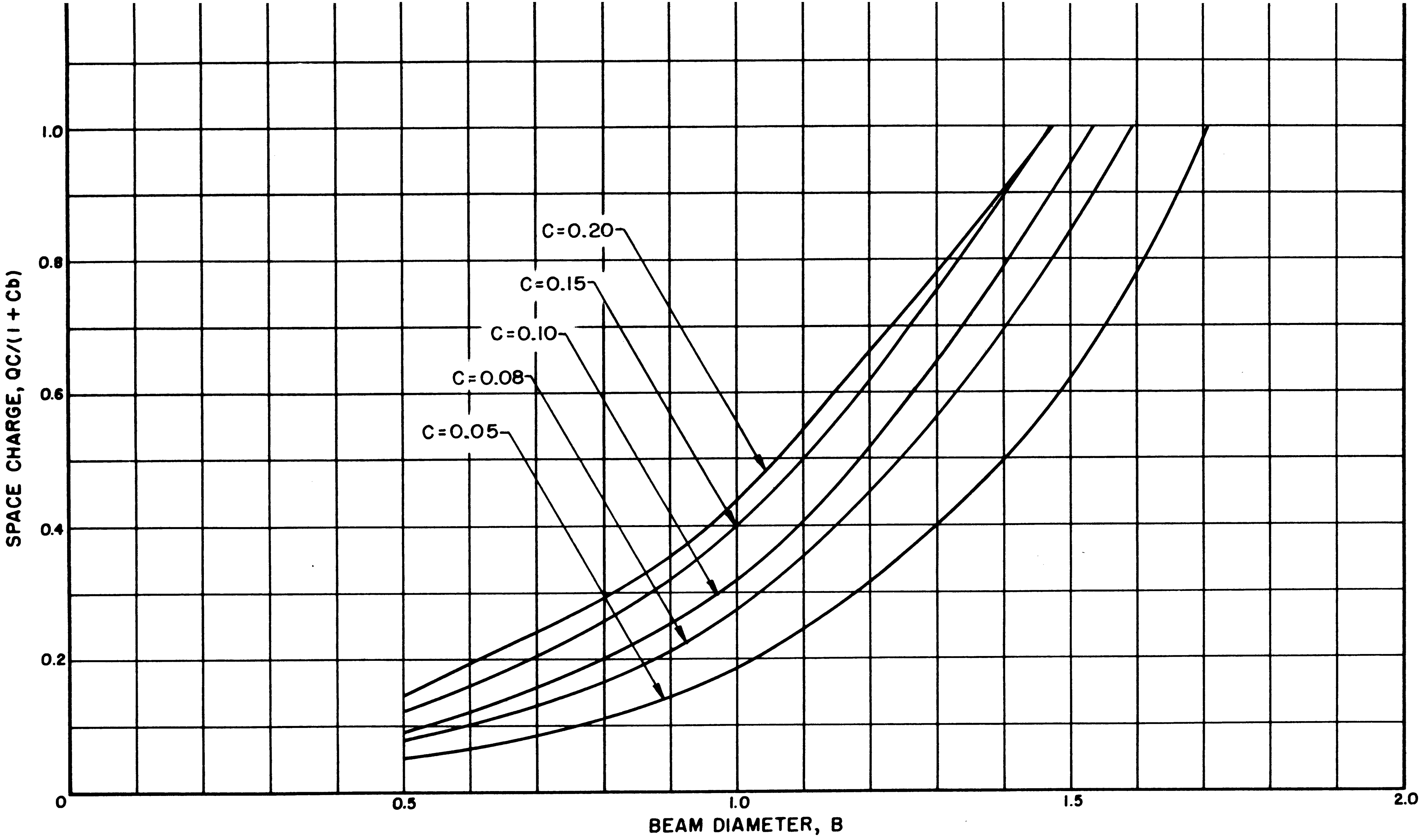


FIG. C.337 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.8$, $V_0 = 1$ KV, DLF = 100%)

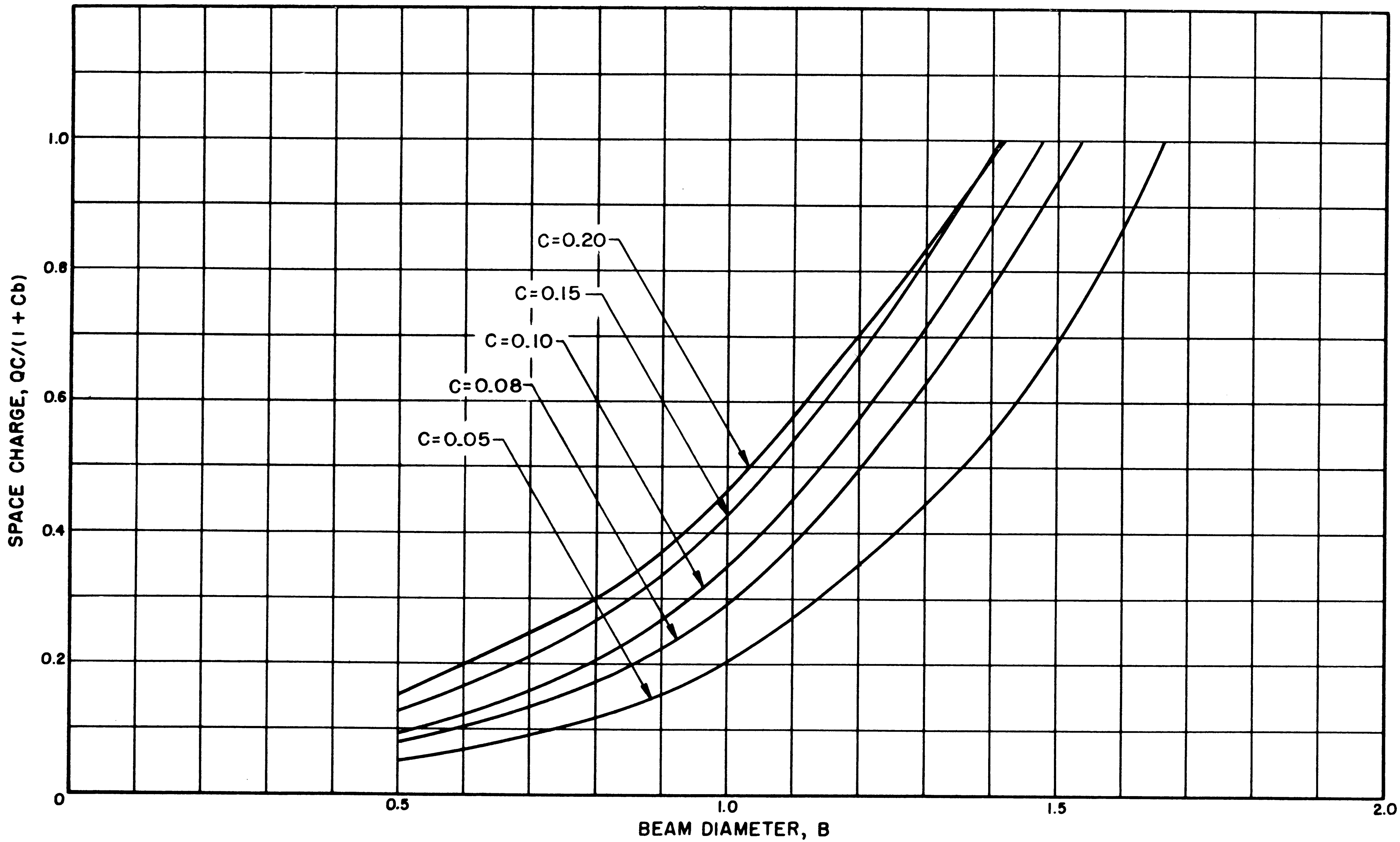


FIG. C.338 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.8$, $V_0 = 2$ KV, DLF = 100%)

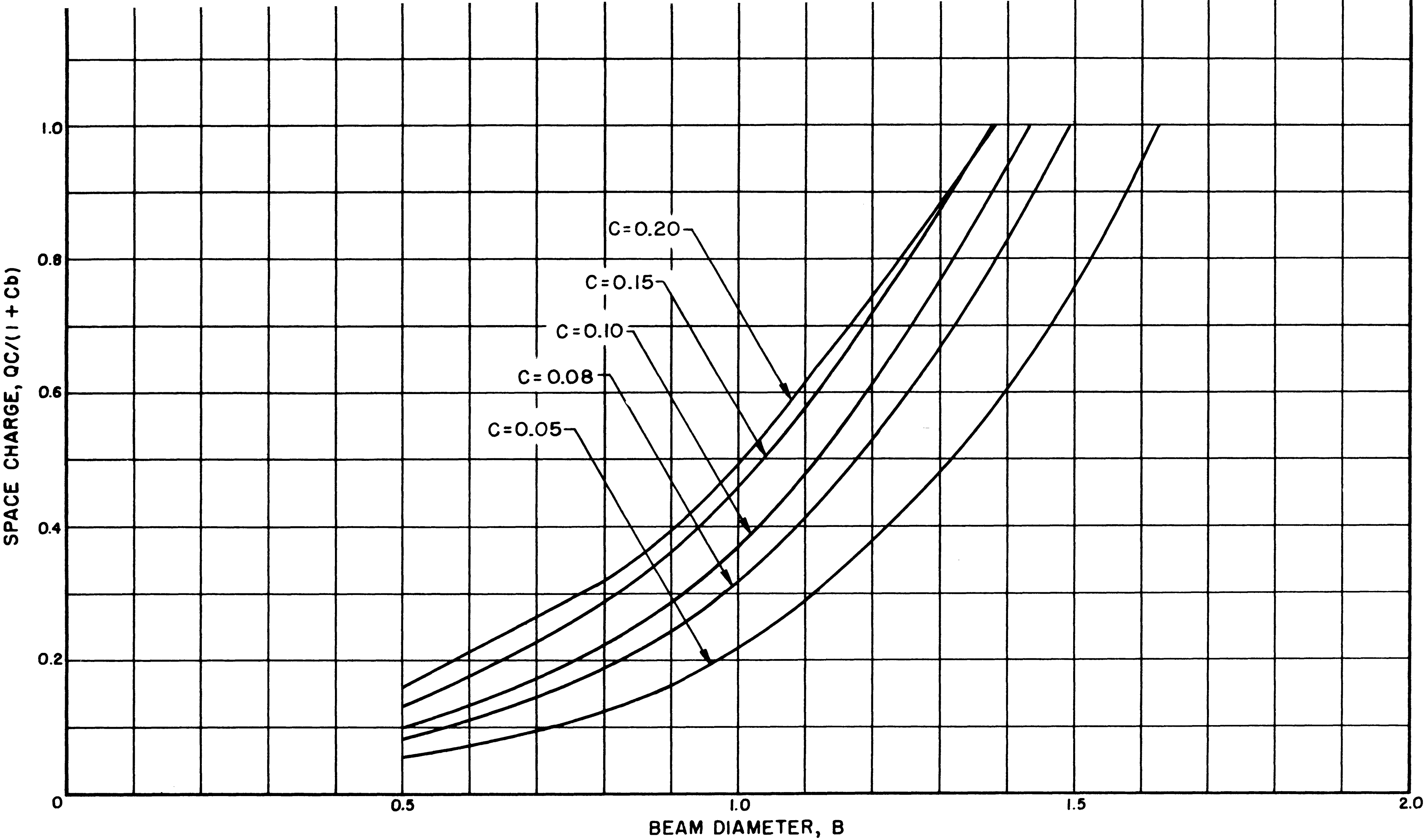


FIG. C.339 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b'=1.8$, $V_0 =$ 3 KV, DLF = 100%)

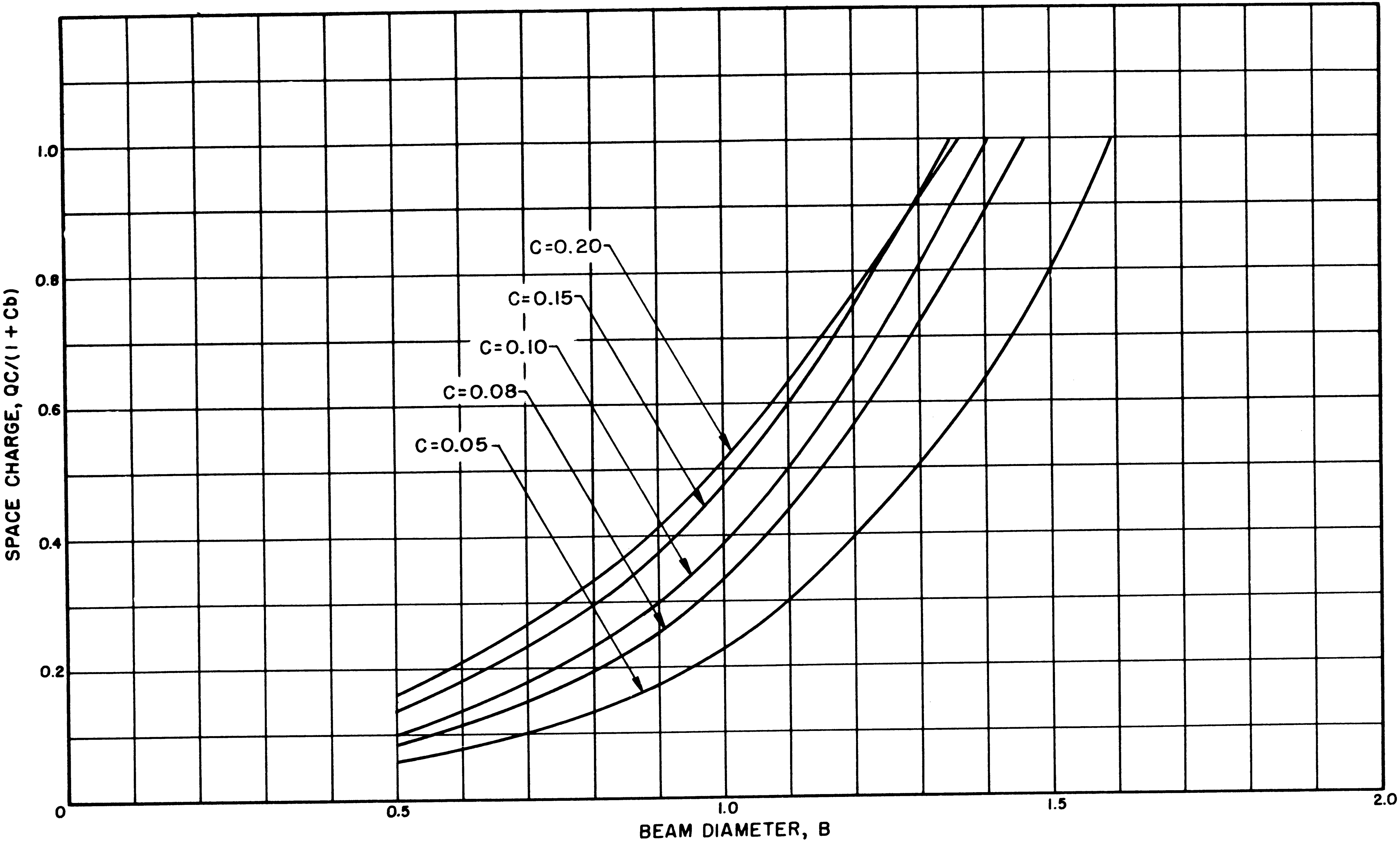


FIG. C.340 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.8$, $V_0 = 4$ KV, DLF = 100%)

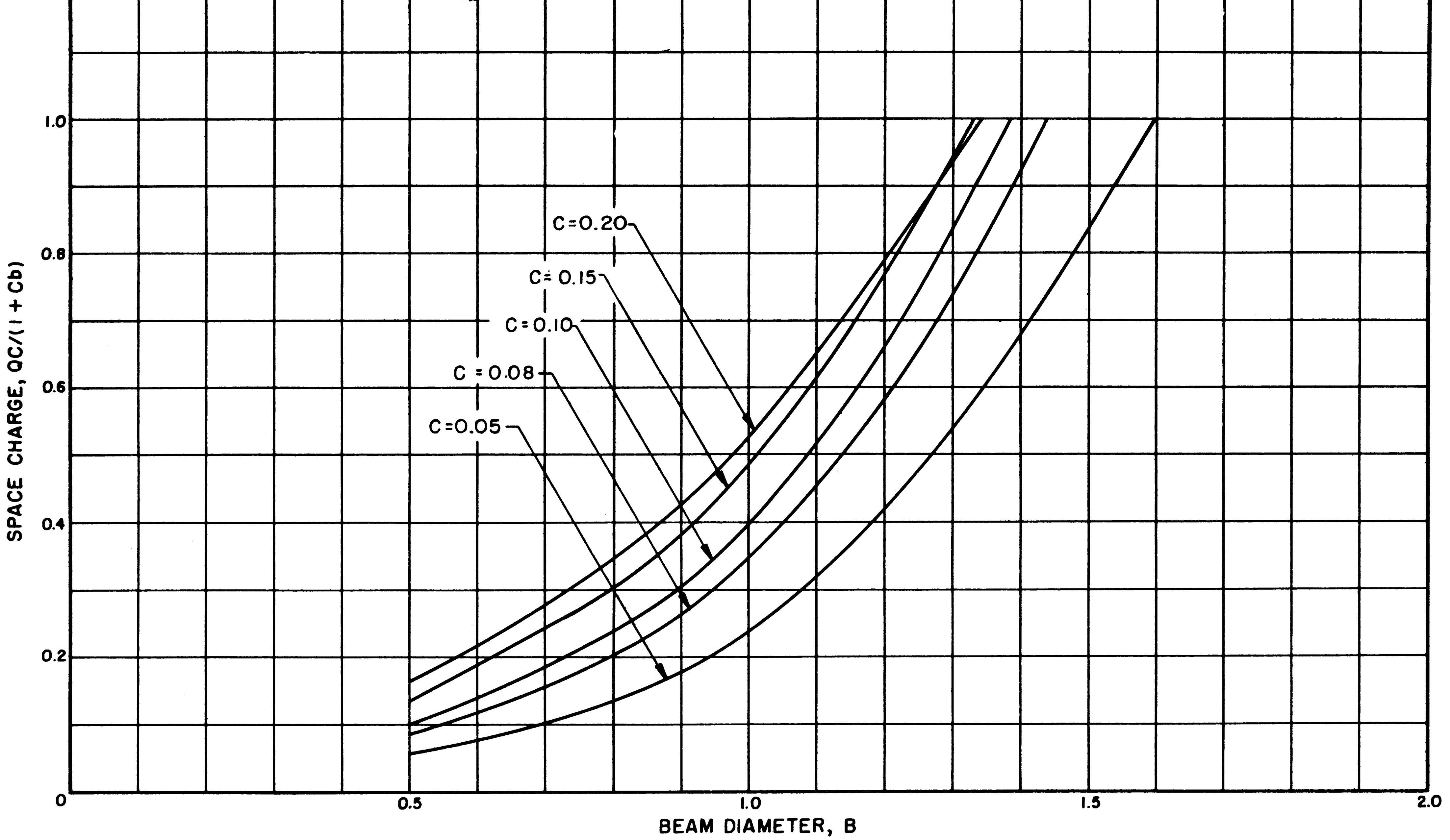


FIG. C.341 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b'=1.8$, $V_0 = 5$ KV, DLF = 100%)

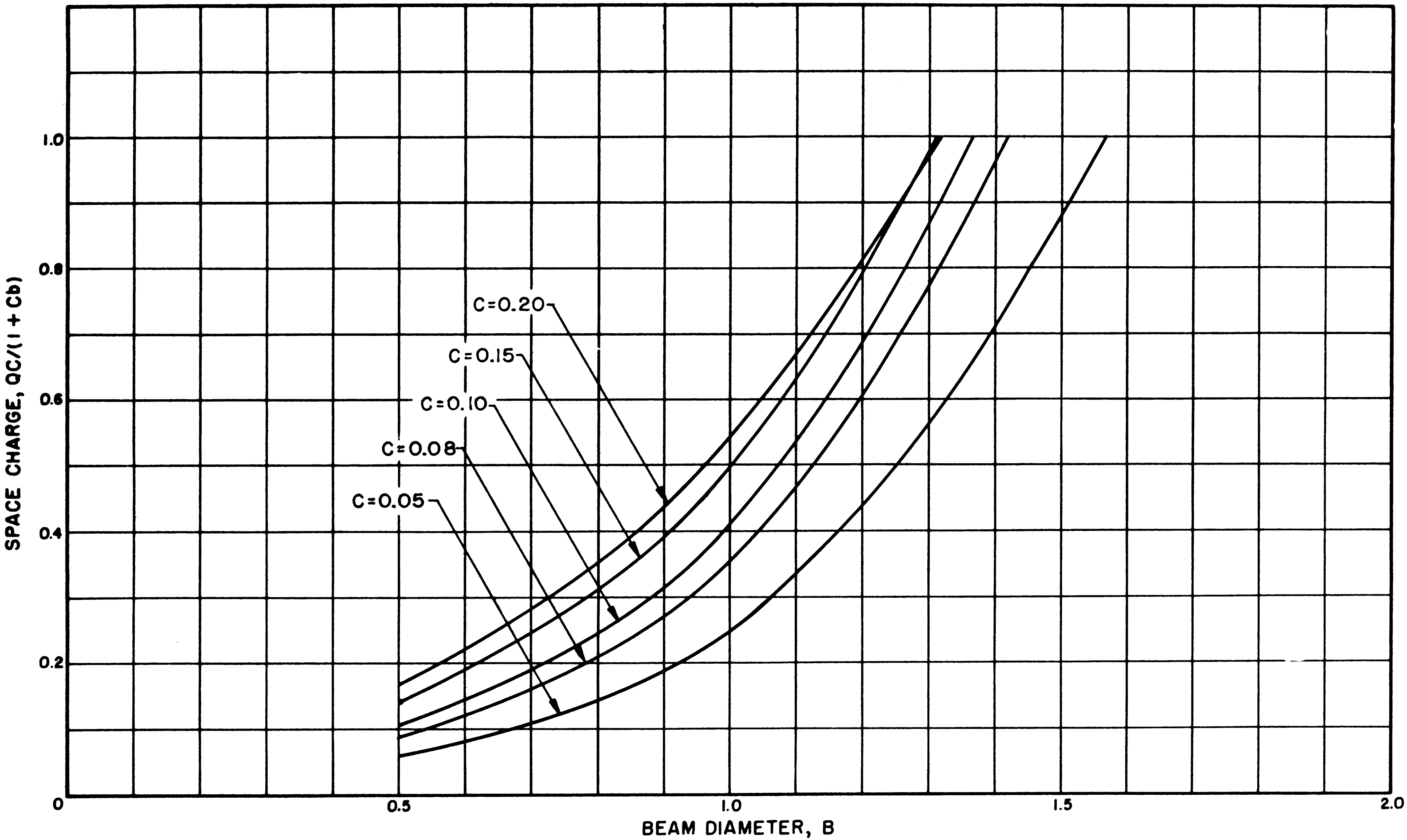


FIG. C.342 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
(a'/b' = 1.8, V_0 = 6 KV, D.L.F. = 100%)

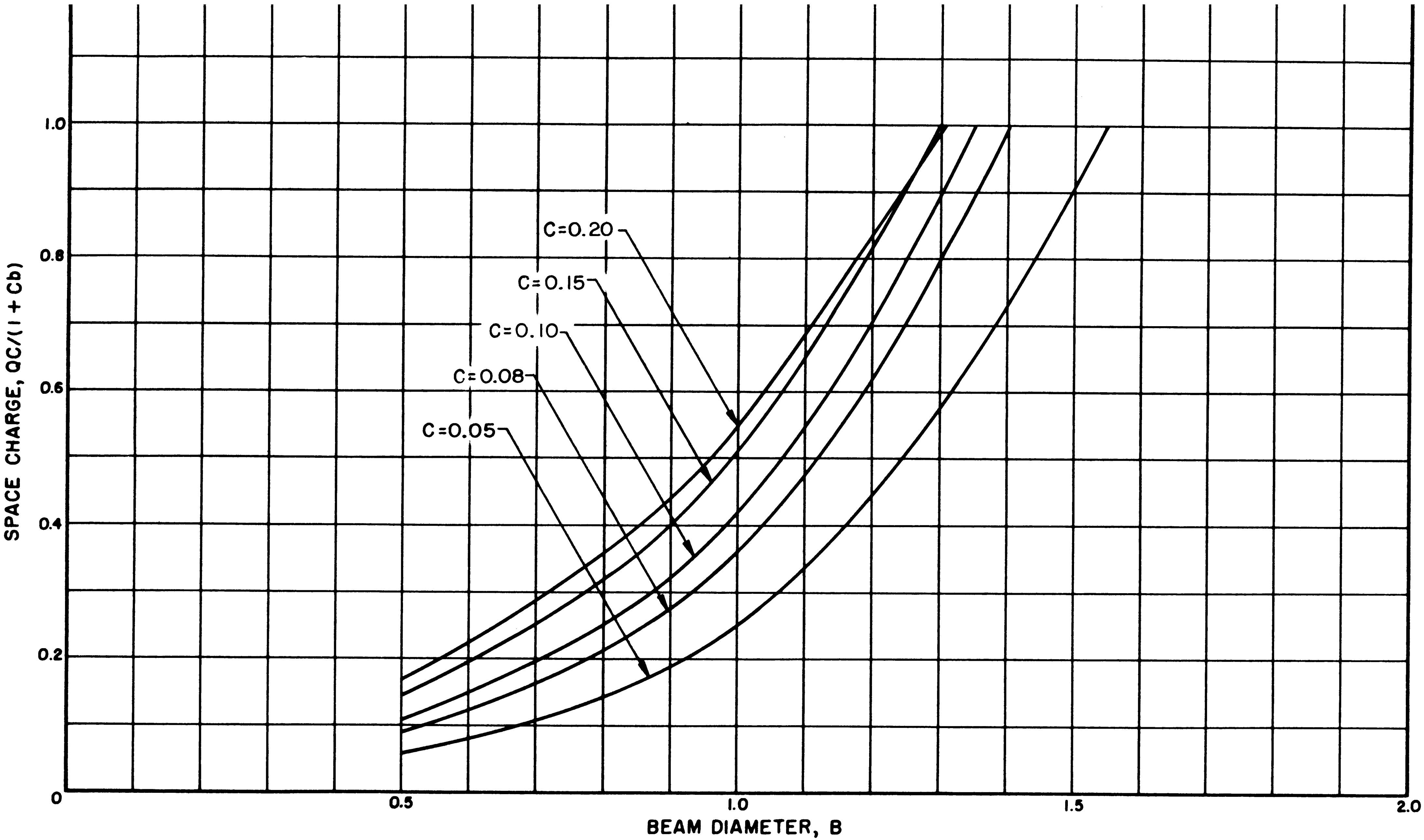


FIG. C.343 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.8$, $V_0 = 7$ KV, DLF = 100%)

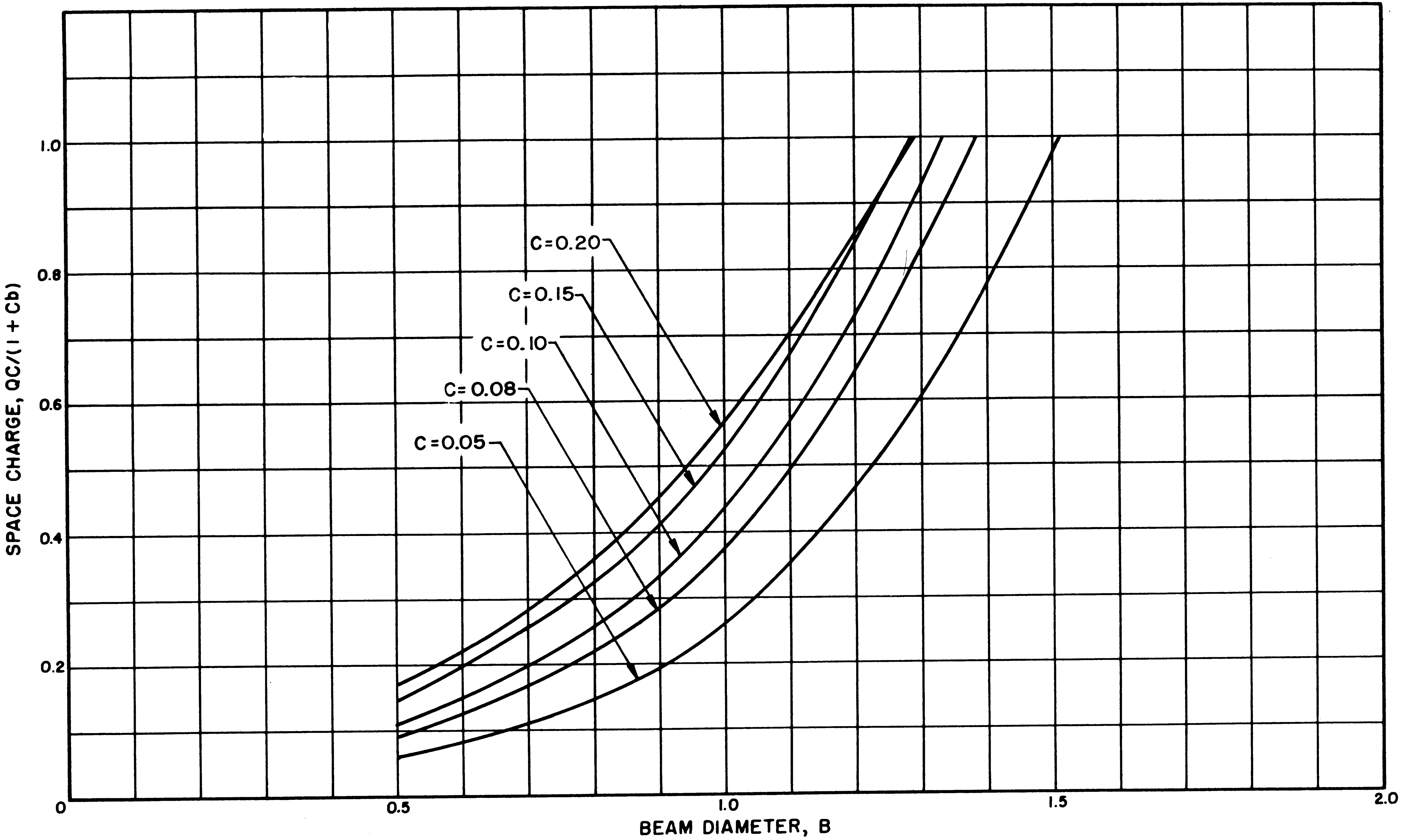


FIG. C.344 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
(a'/b' = 1.8 , V_0 = 8 KV, DLF = 100%)

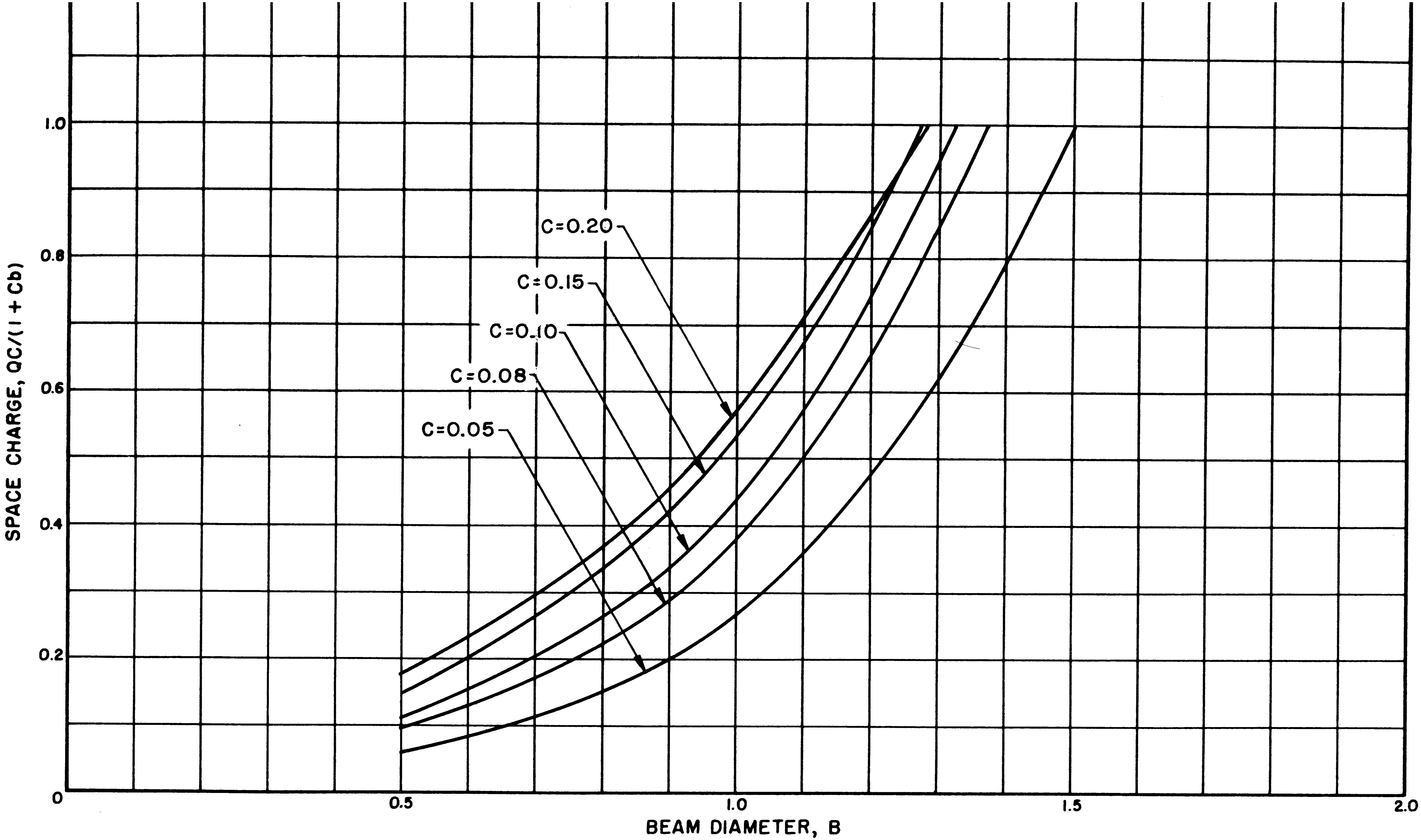


FIG. C.345 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER. ($a'/b' = 1.8$, $V_0 = 9$ KV, DLF = 100%)

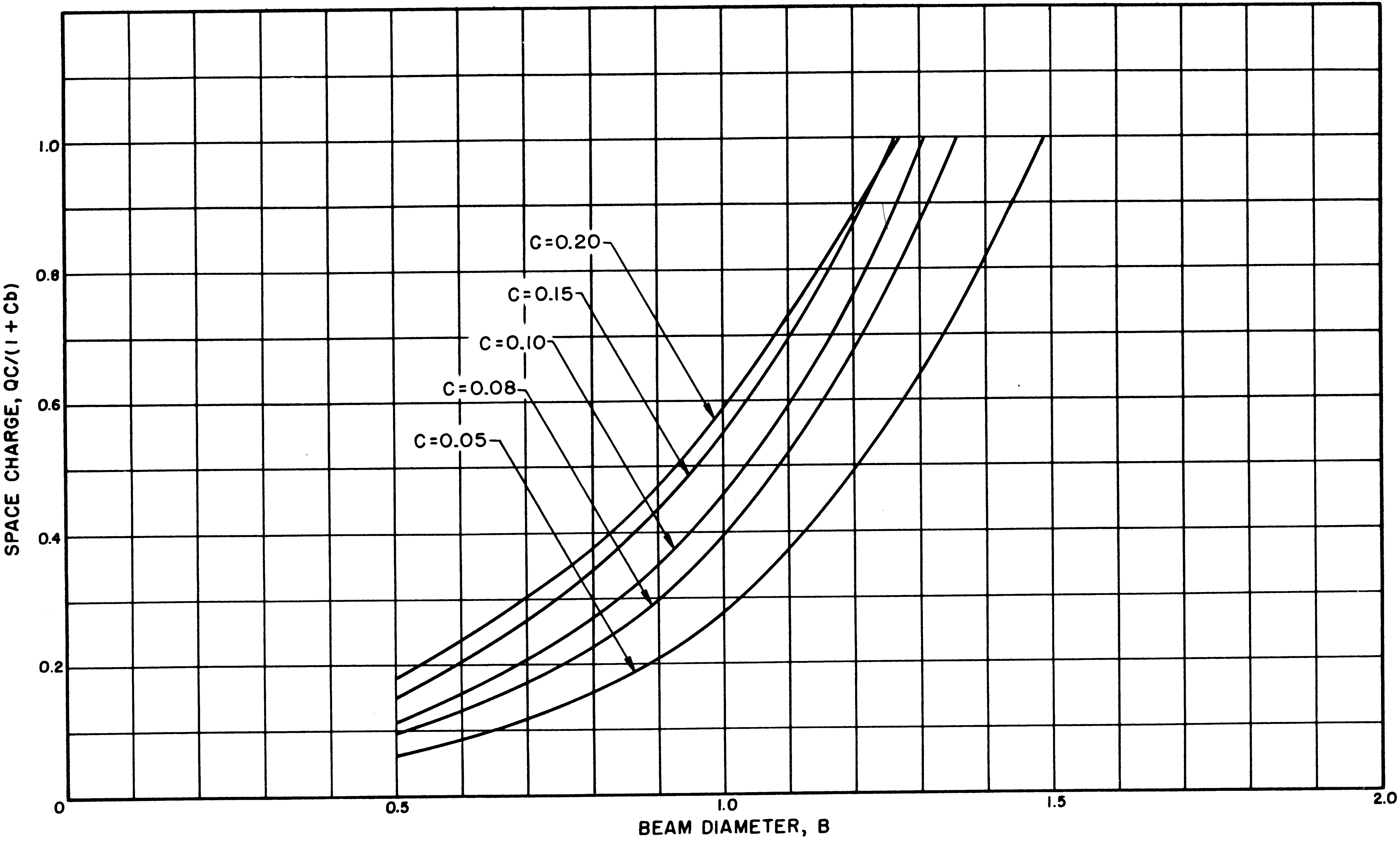


FIG. C.346 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
(a'/b' = 1.8 , V_0 = 10 KV, DLF = 100%)

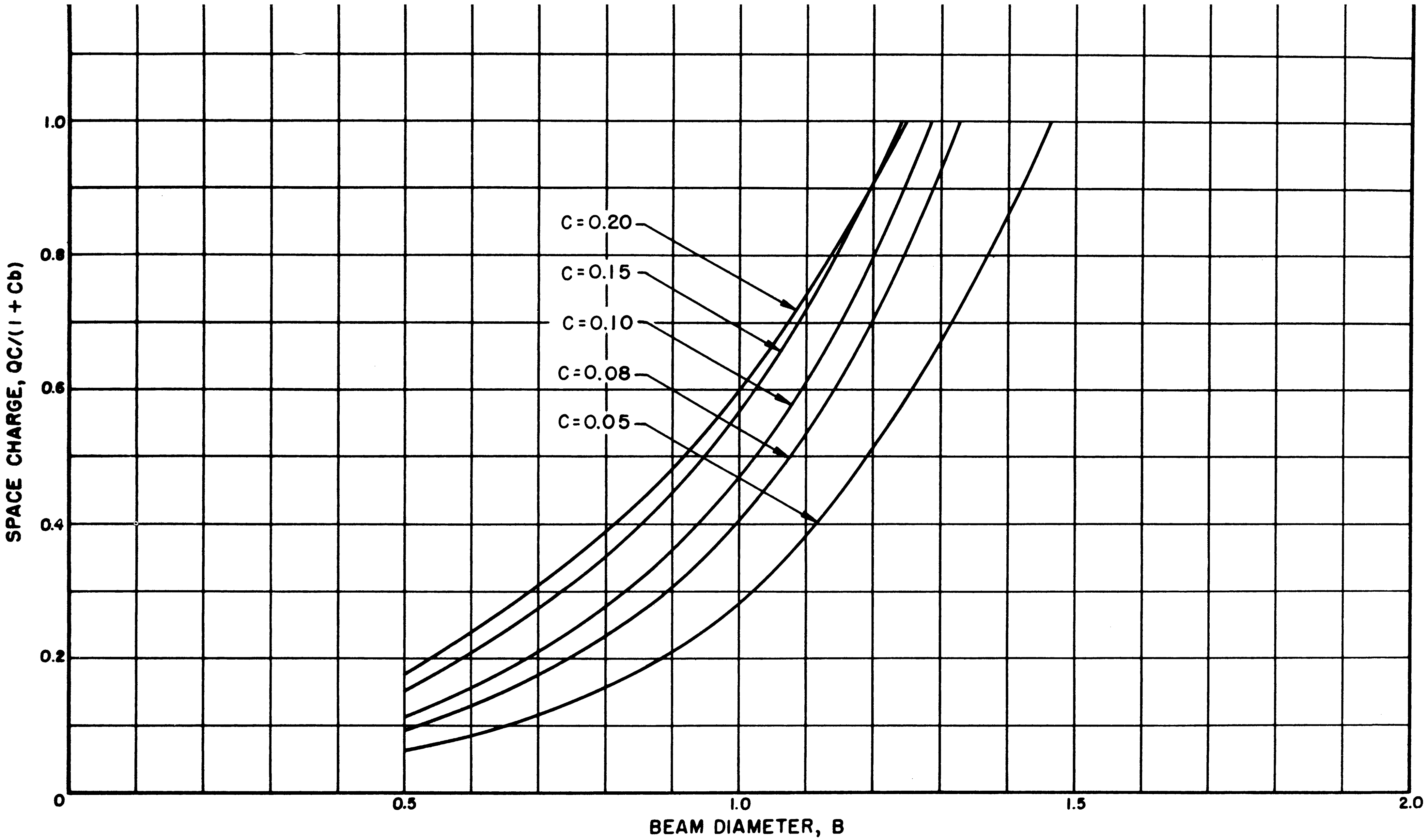


FIG. C.347 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.8$, $V_0 = 12$ KV, DLF = 100%)

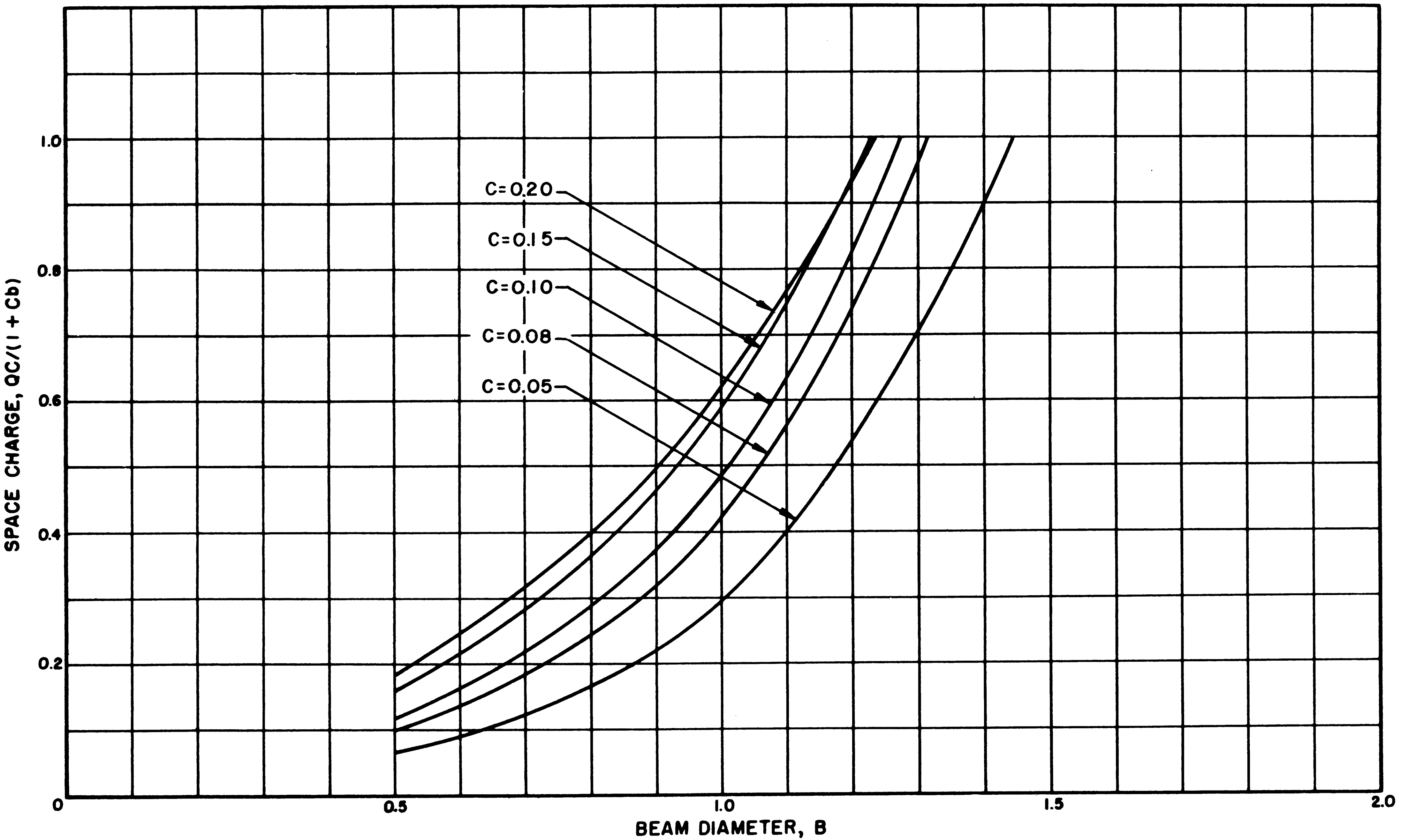


FIG. C.348 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
(a'/b' = 1.8, V = 14 KV, DLF = 100%)

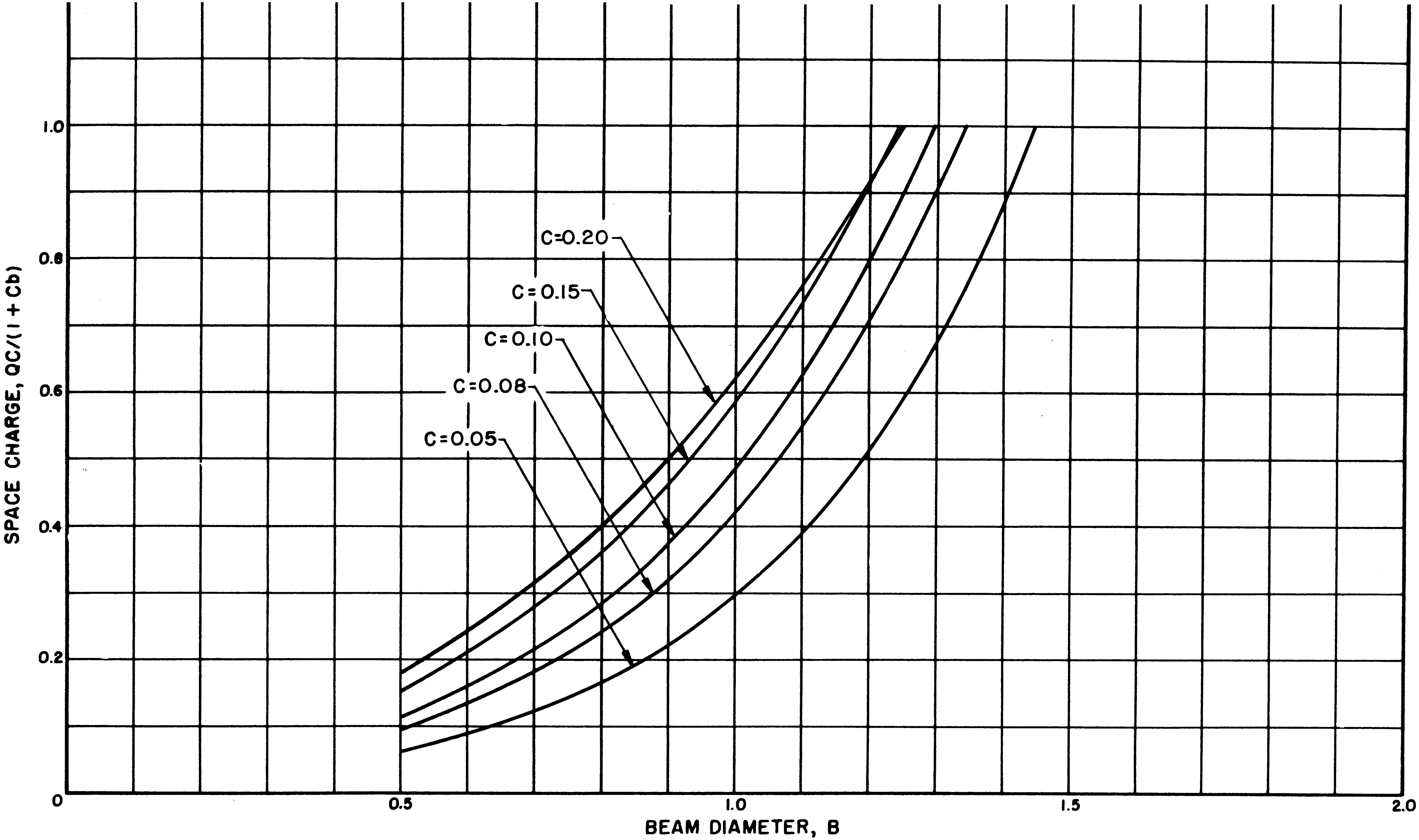


FIG. C.349 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER. ($a'/b' = 2.0$, $V_0 =$ 1 KV, DLF =100 %)

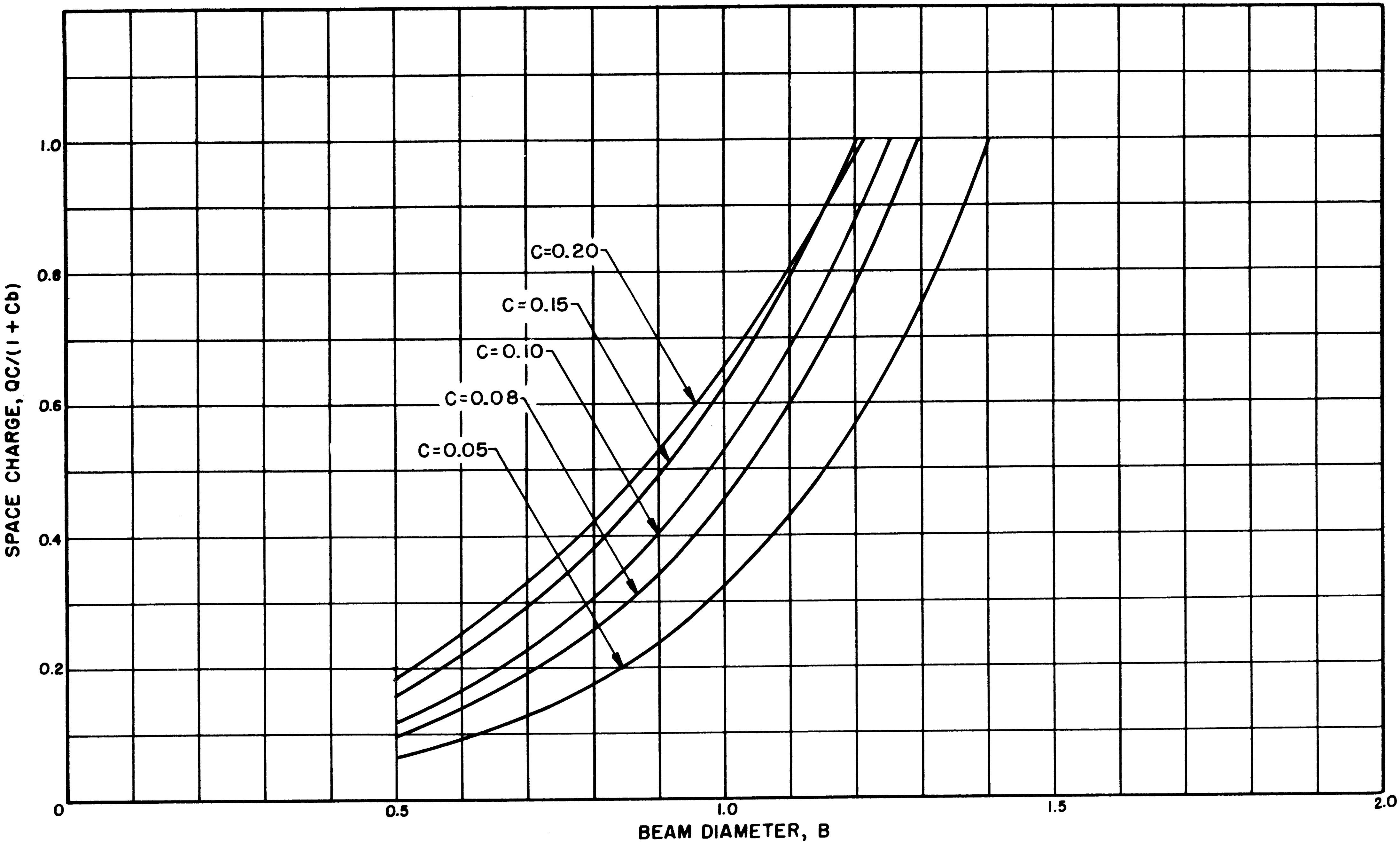


FIG. C.350 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
(a'/b' = 2.0, V_0 = 2 KV, DLF = 100%)

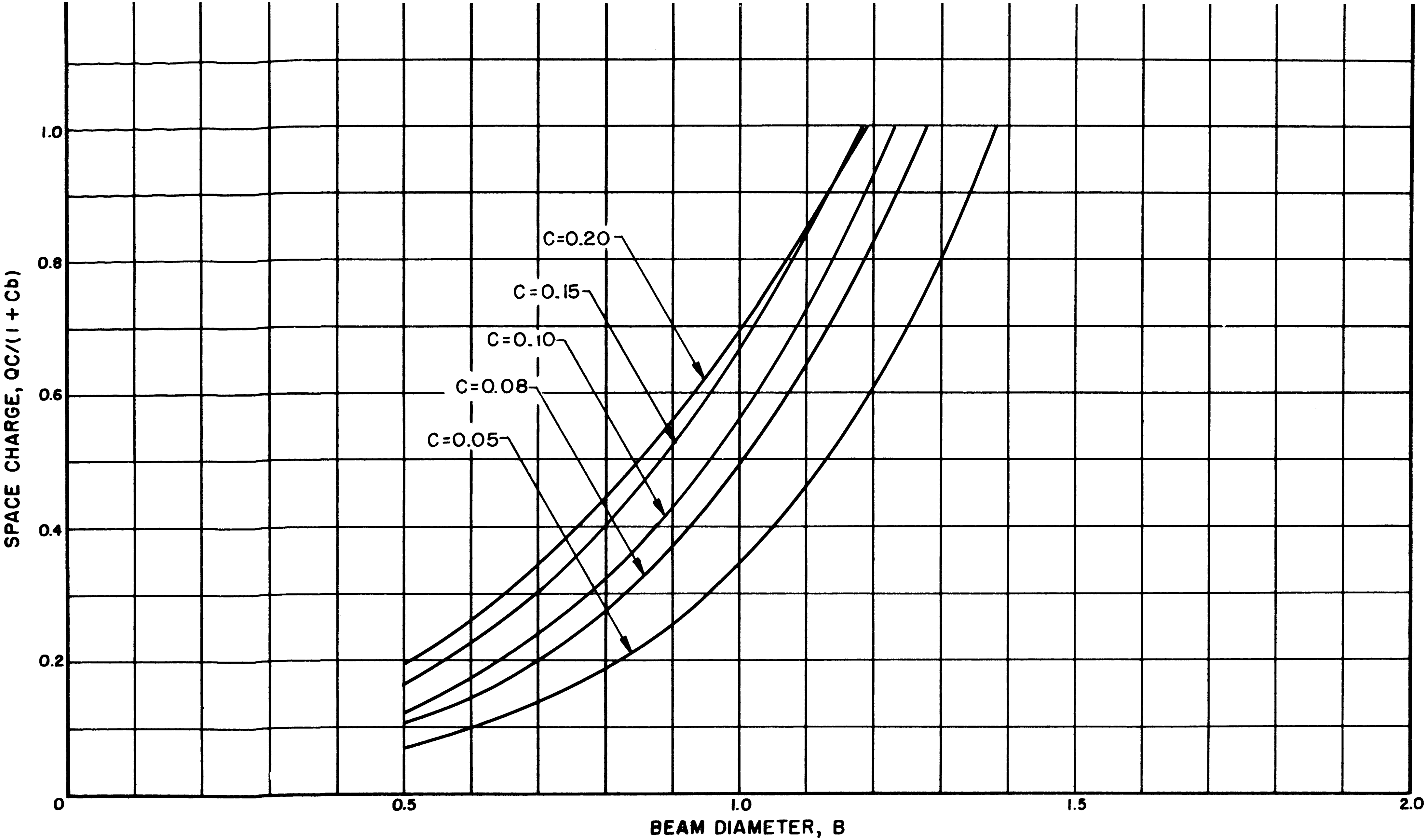


FIG. C.351 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 2.0$, $V_0 =$ 3 KV, DLF = 100%)

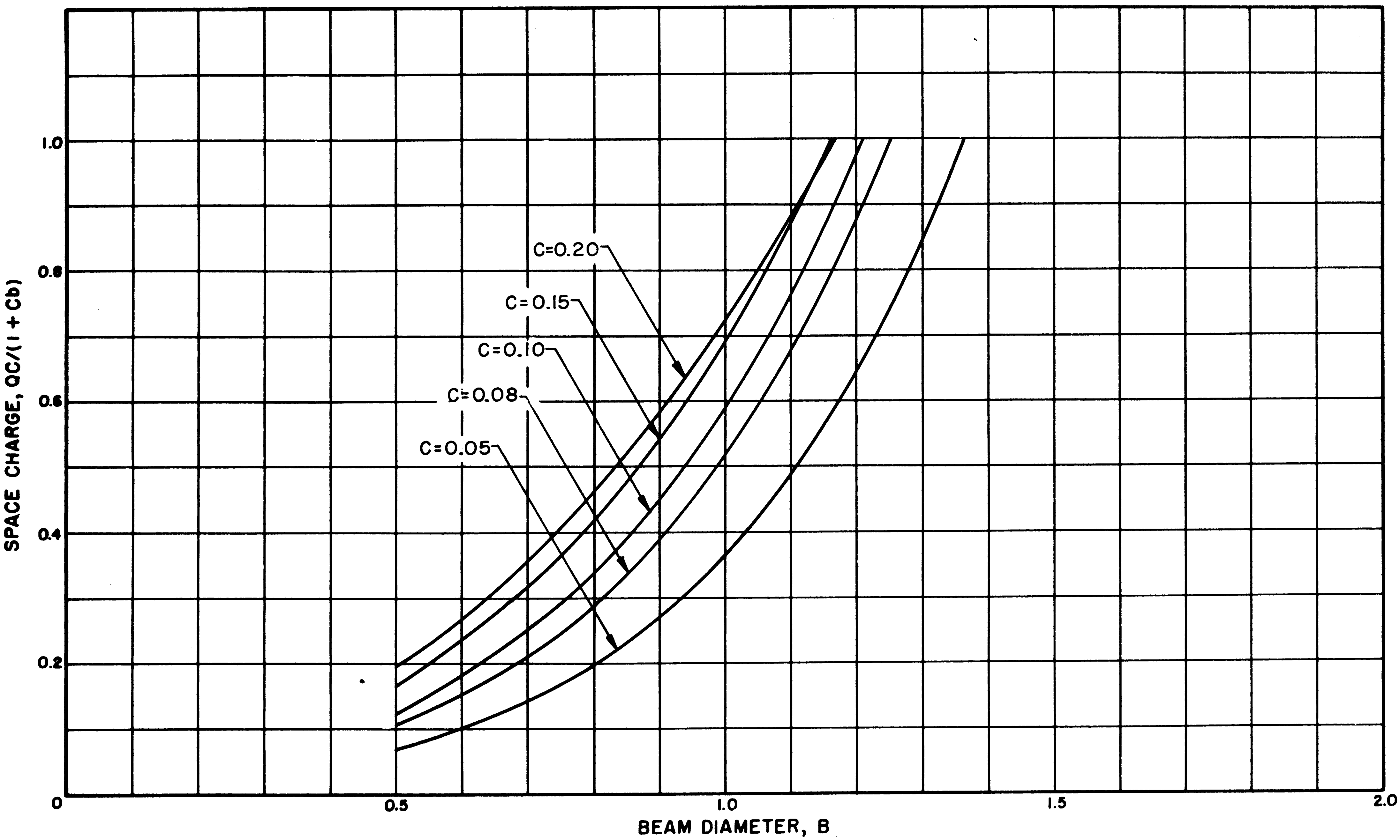


FIG. C.352 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 2.0$, $V_0 = 4$ KV, DLF = 100%)

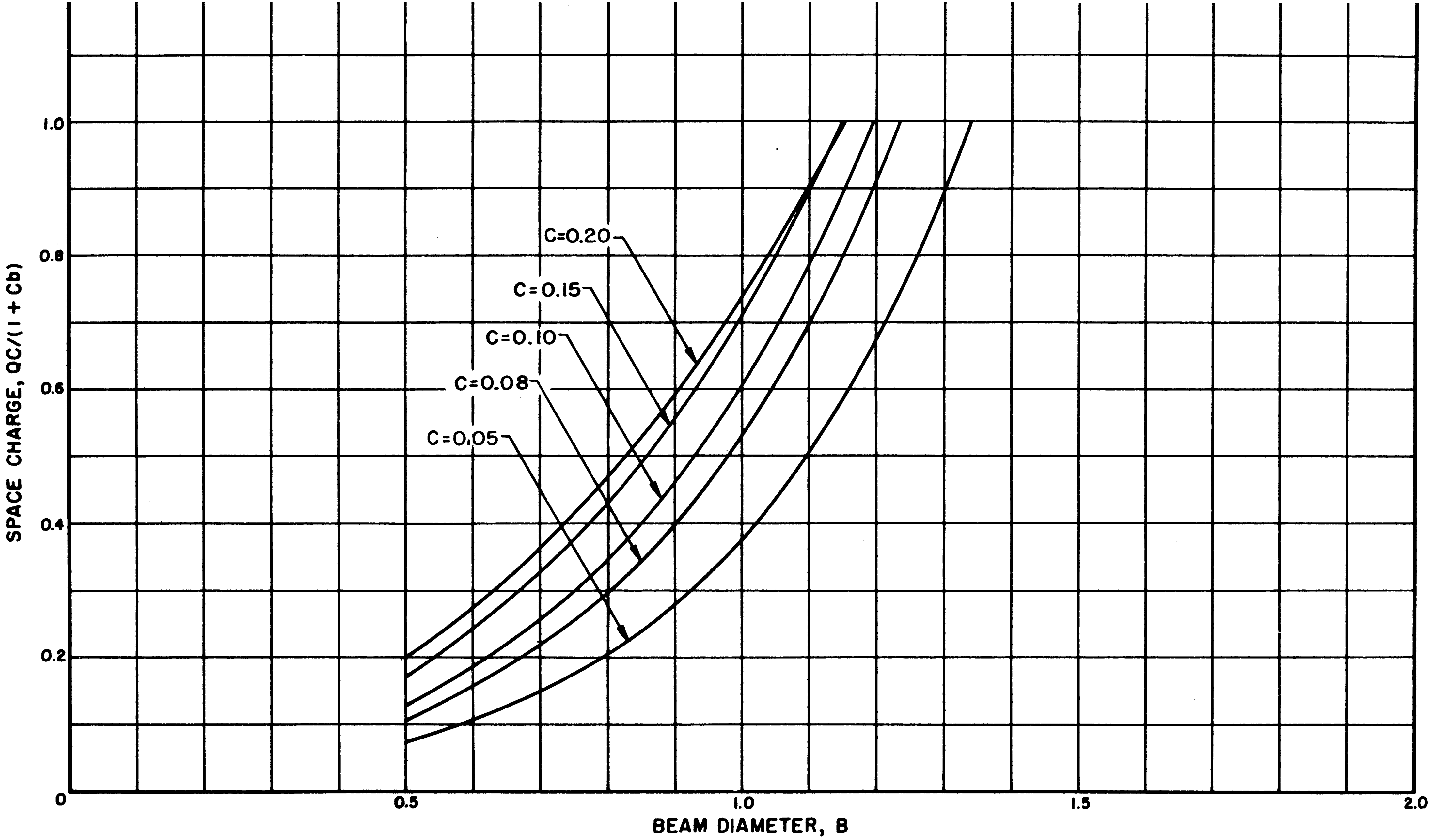


FIG. C.353 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER. ($a'/b' = 2.0$, $V_0 = 5$ KV, DLF = 100%)

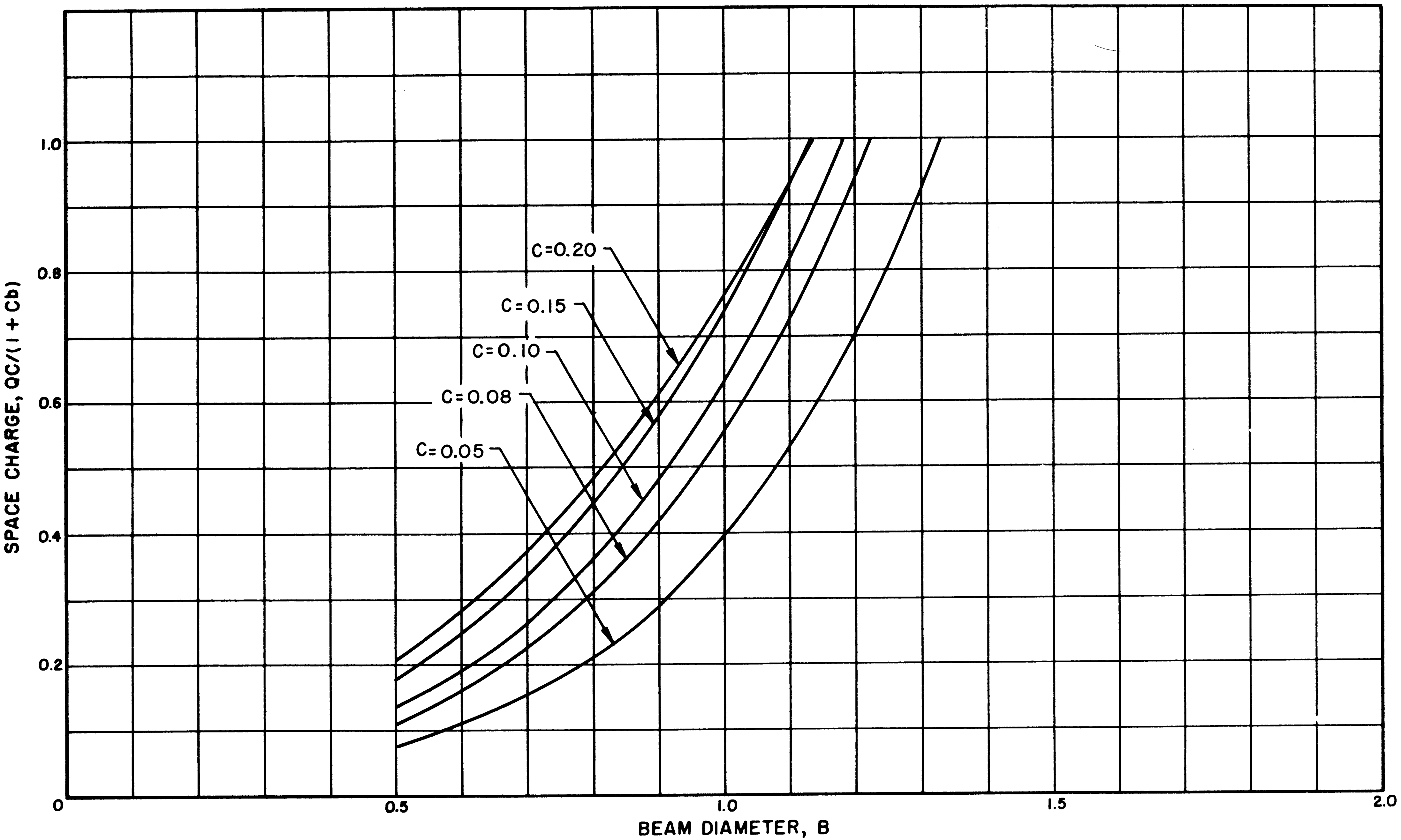


FIG. C.354 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 2.0$, $V_0 =$ 6 KV, DLF = 100%)

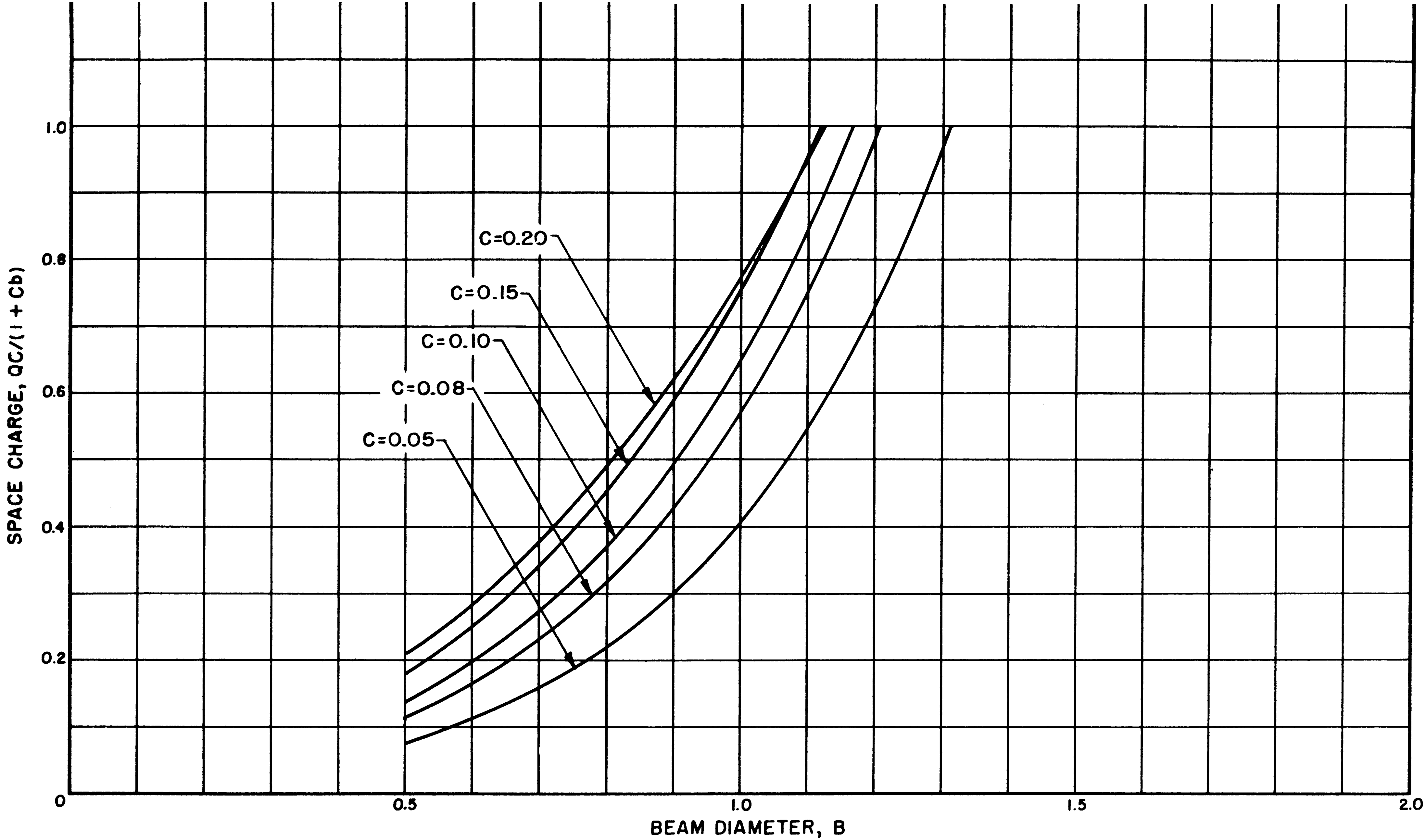


FIG. C.355 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER. ($a'/b' = 2.0$, $V_0 = 7$ KV, DLF = 100%)

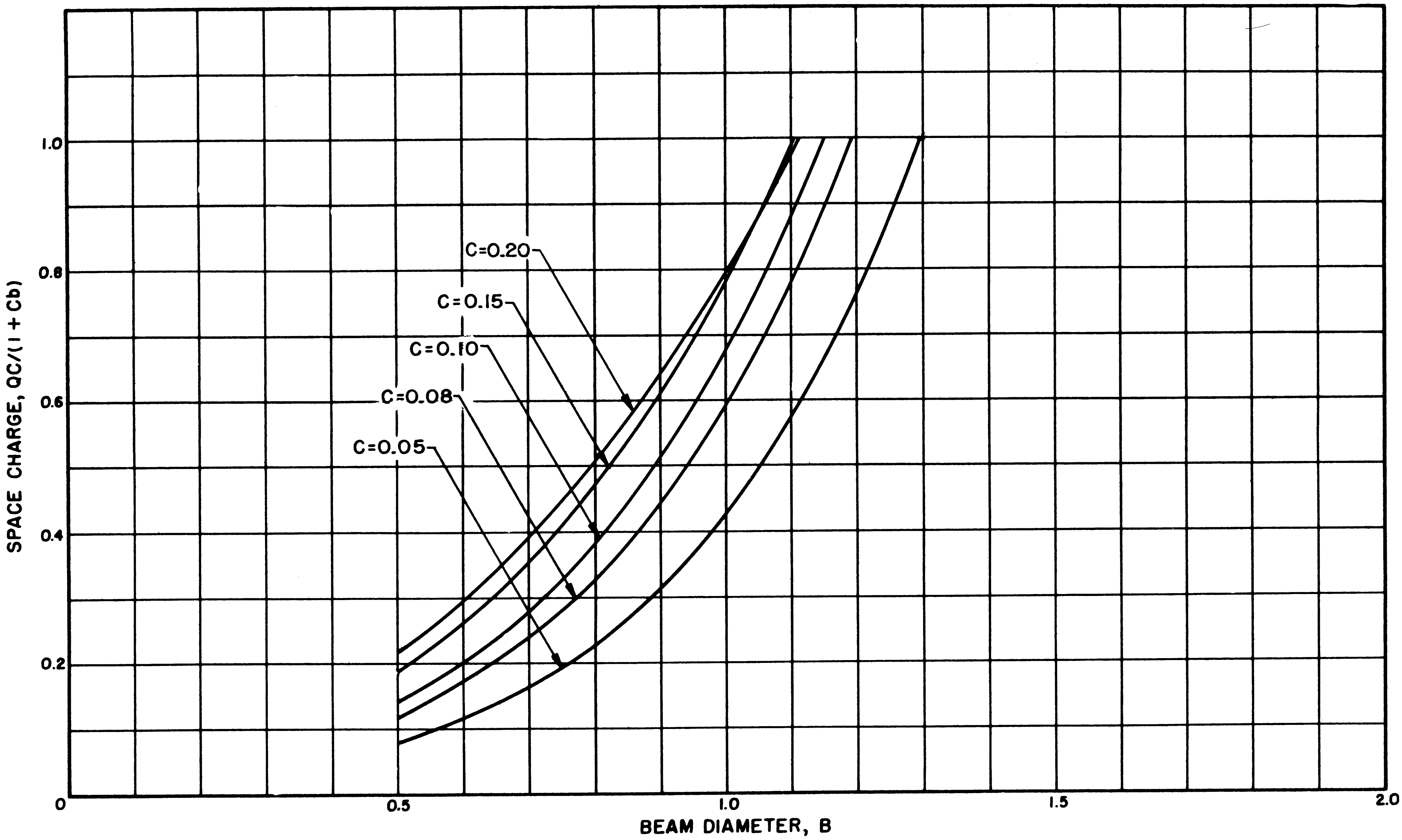


FIG. C.356 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 2.0$, $V_0 = 8$ KV, DLF = 100%)

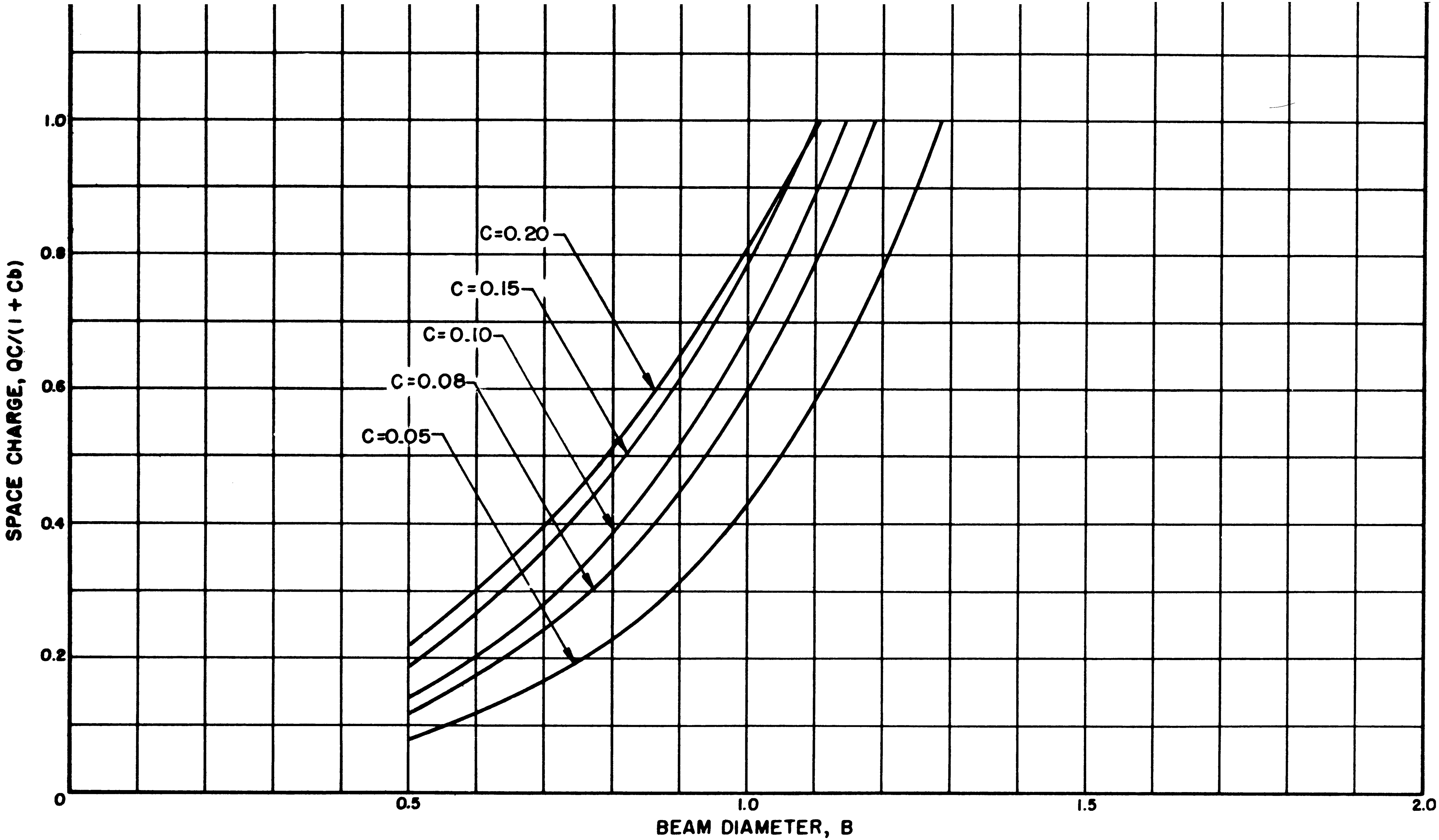


FIG. C.357 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER. ($a'/b' = 2.0$, $V_0 = 9$ KV, DLF = 100%)

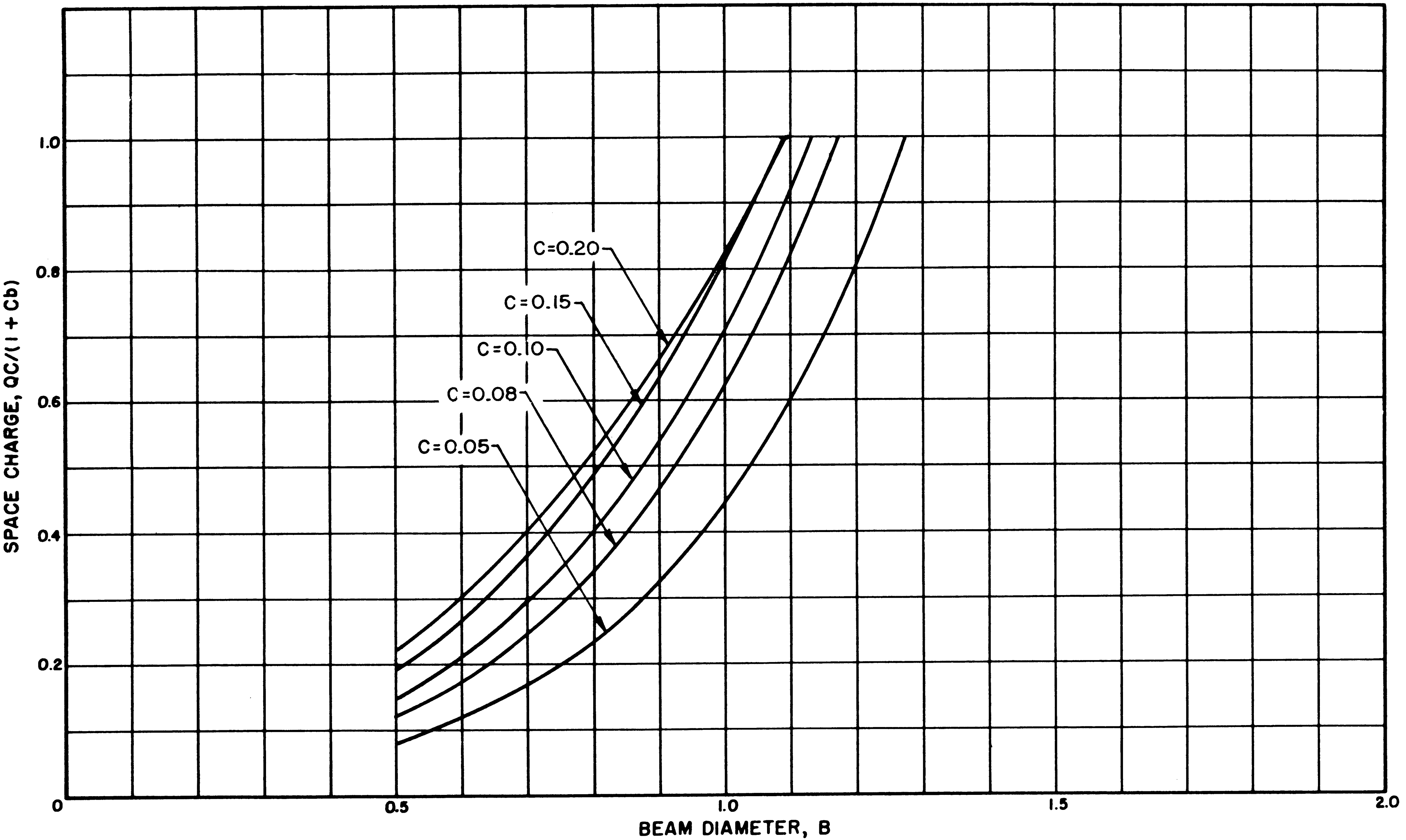


FIG. C.358 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 2.0$, $V_0 = 10$ KV. DLF = 100%)

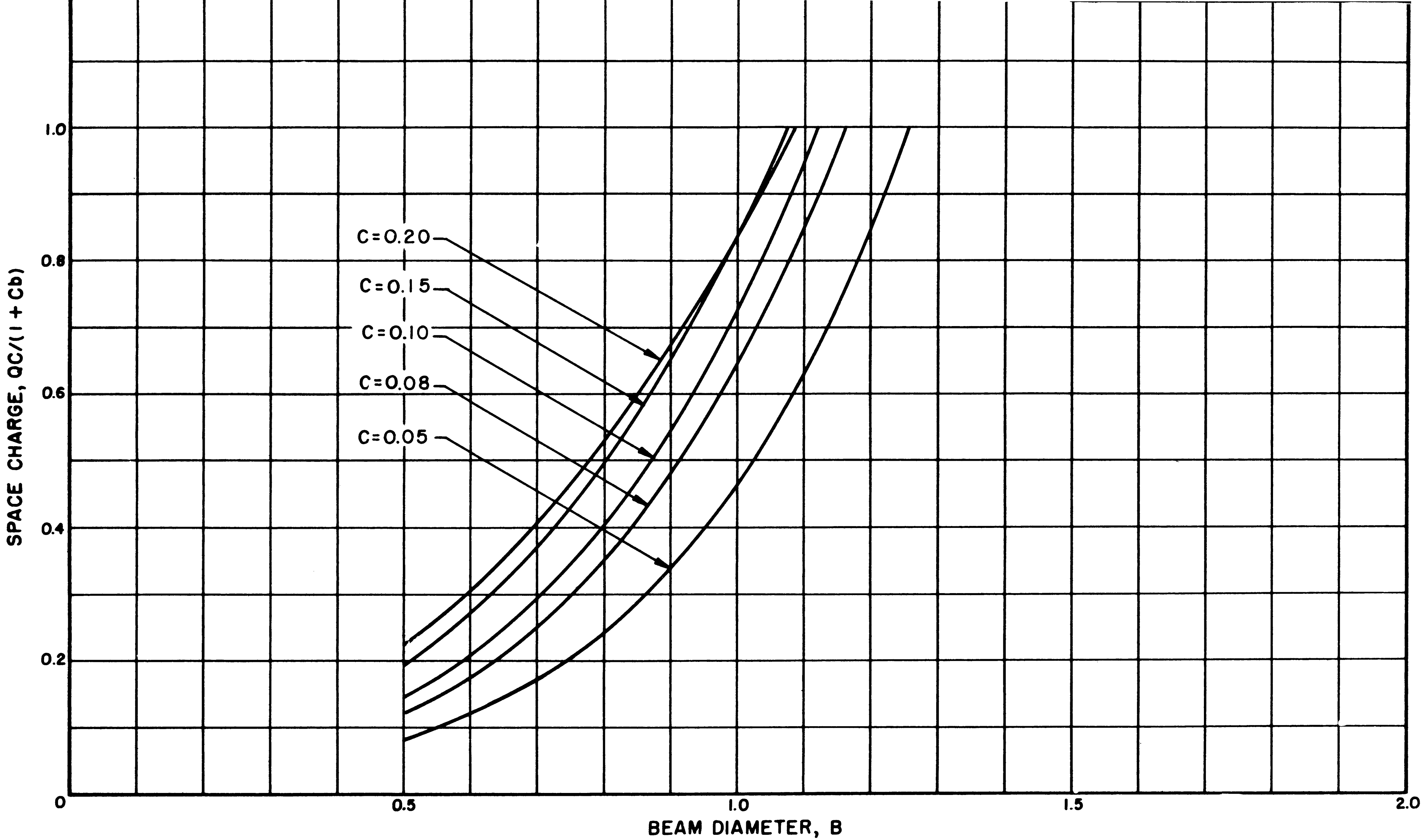


FIG. C.359 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 2.0$, $V_0 = 12$ KV, DLF = 100%)

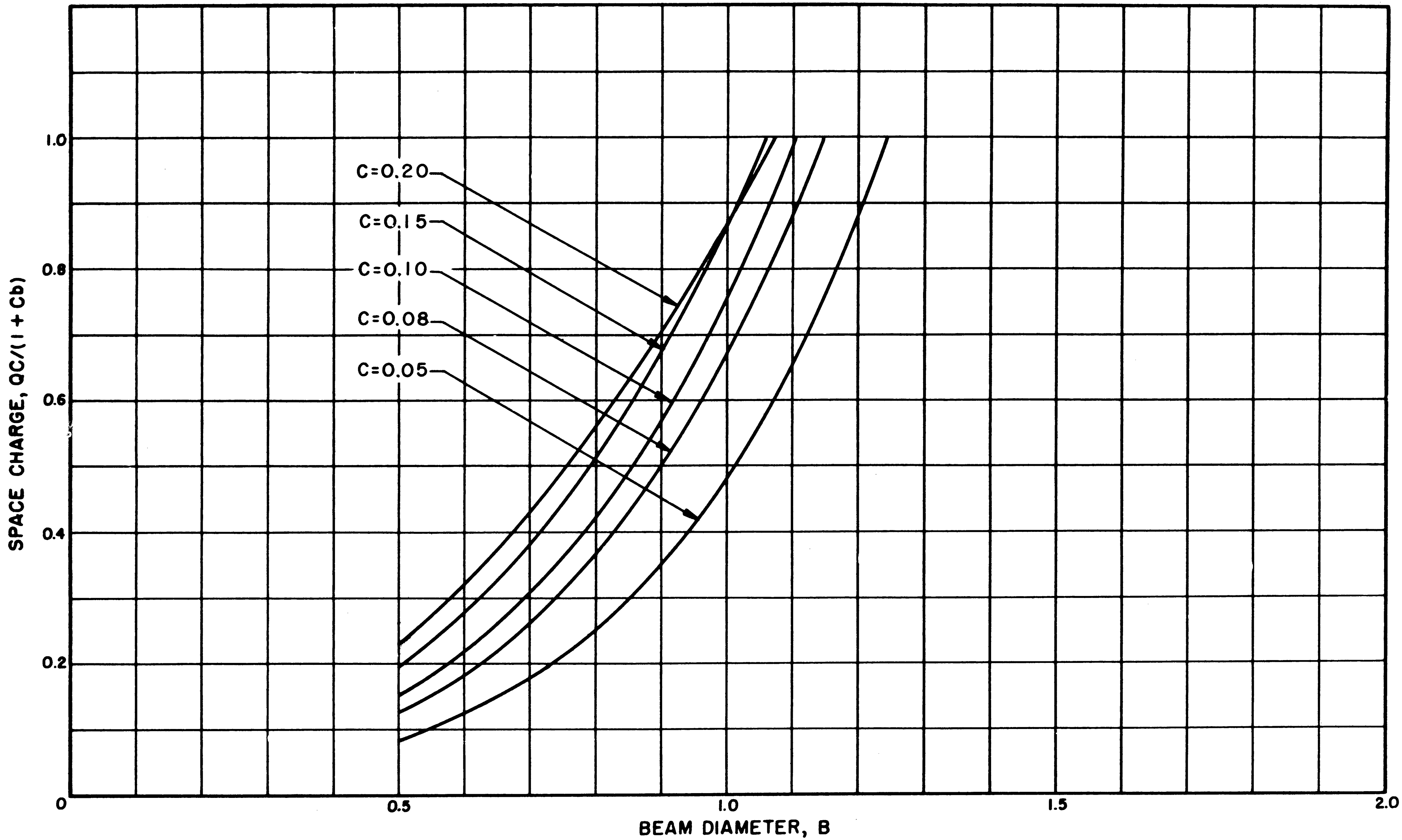


FIG. C.360 SPACE CHARGE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 2.0$, $V_0 = 14$ KV, DLF = 100 %)

SECTION D

SPACE CHARGE vs. VOLTAGE

The plots of the space-charge parameter vs. the stream voltage are arranged according to increasing values of the parameters B and DLF successively at a fixed value of a'/b'.

Parameter	Range
B	0.5 to 1.5
DLF	70 to 100
a'/b'	1.4

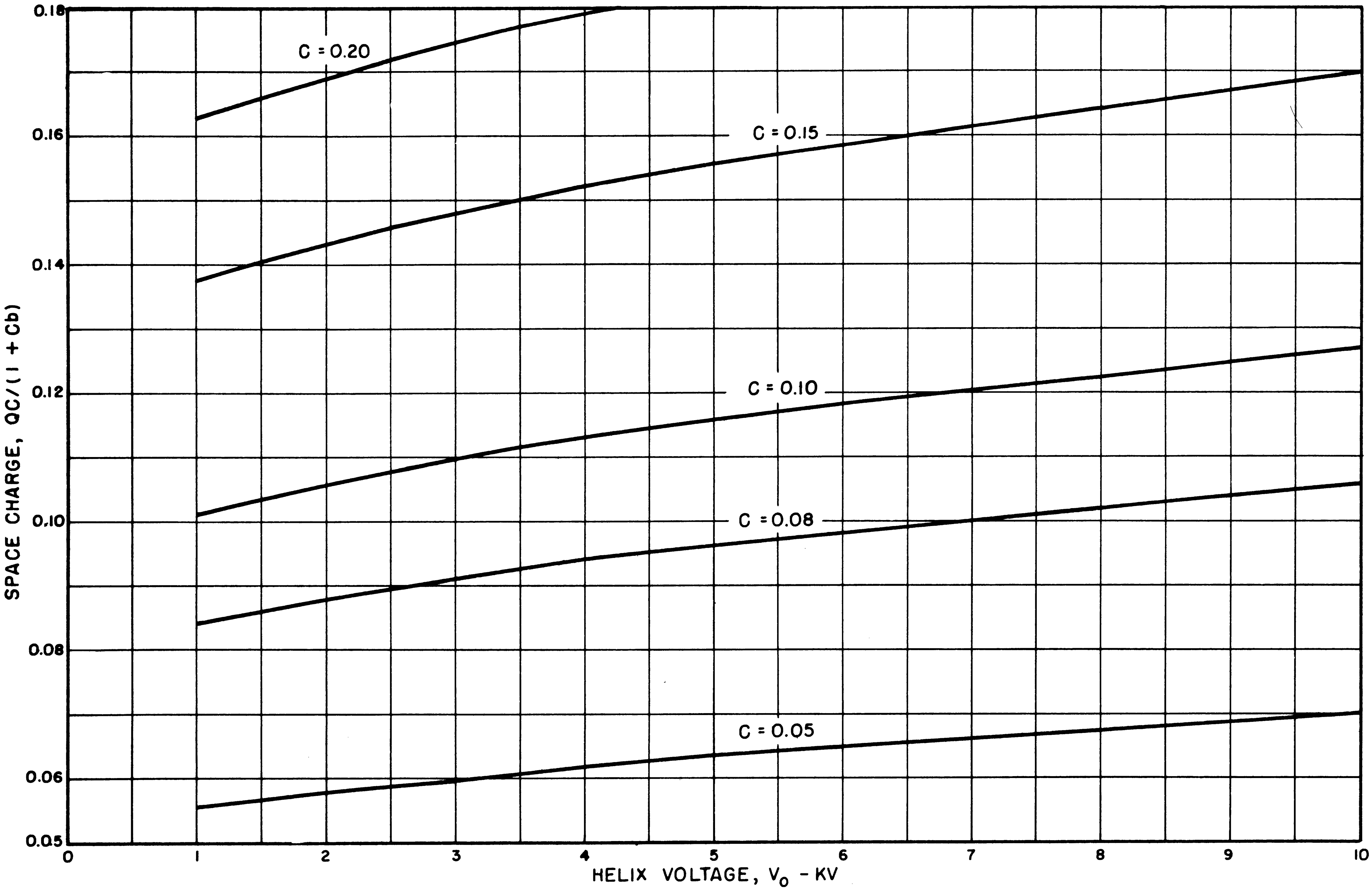


FIG. D.1 SPACE CHARGE VS. HELIX VOLTAGE FOR VARIOUS VALUES OF THE GAIN PARAMETER.

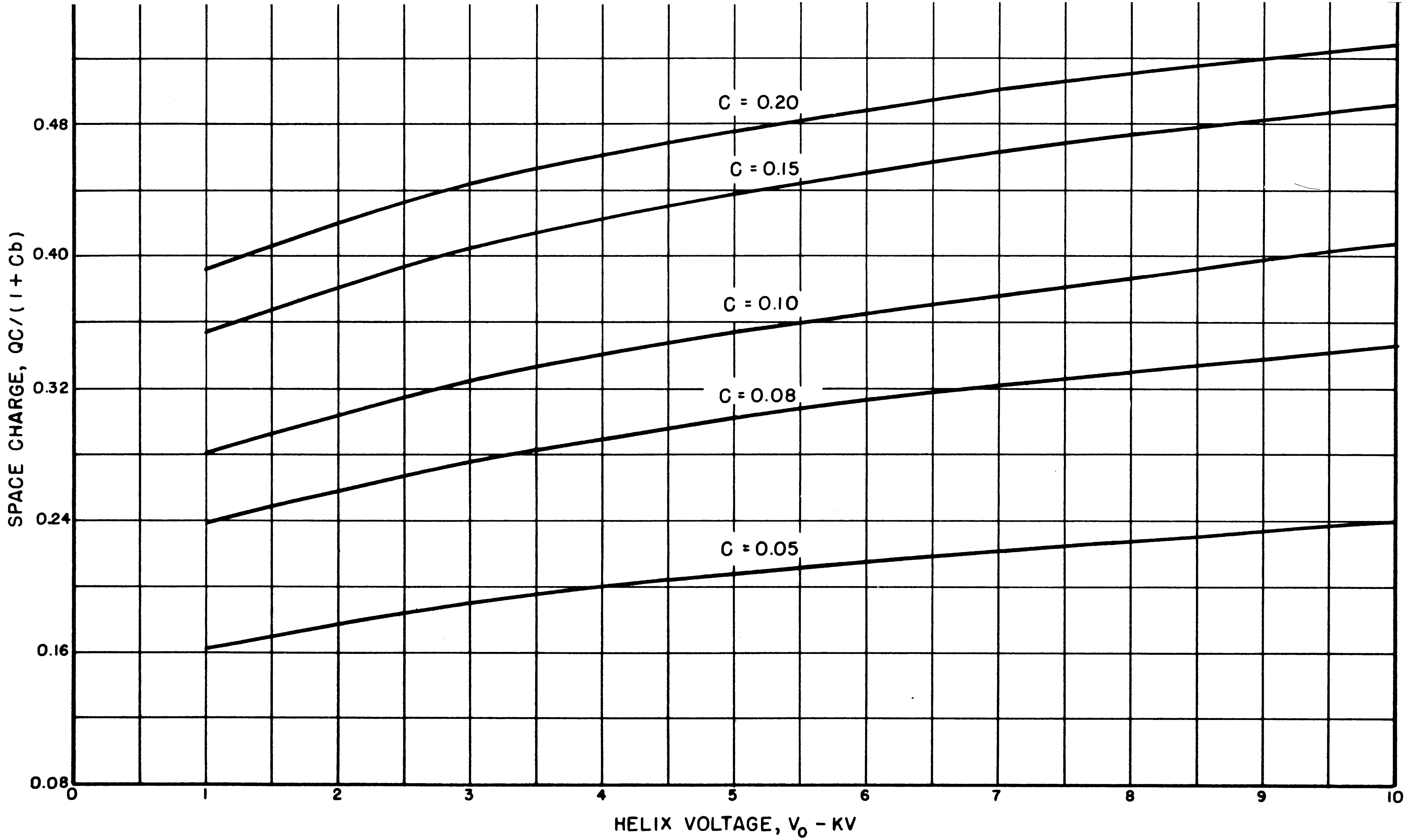


FIG. D.2 SPACE CHARGE VS. HELIX VOLTAGE FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.4$, $B = 1.0$, DLF = 70 %)

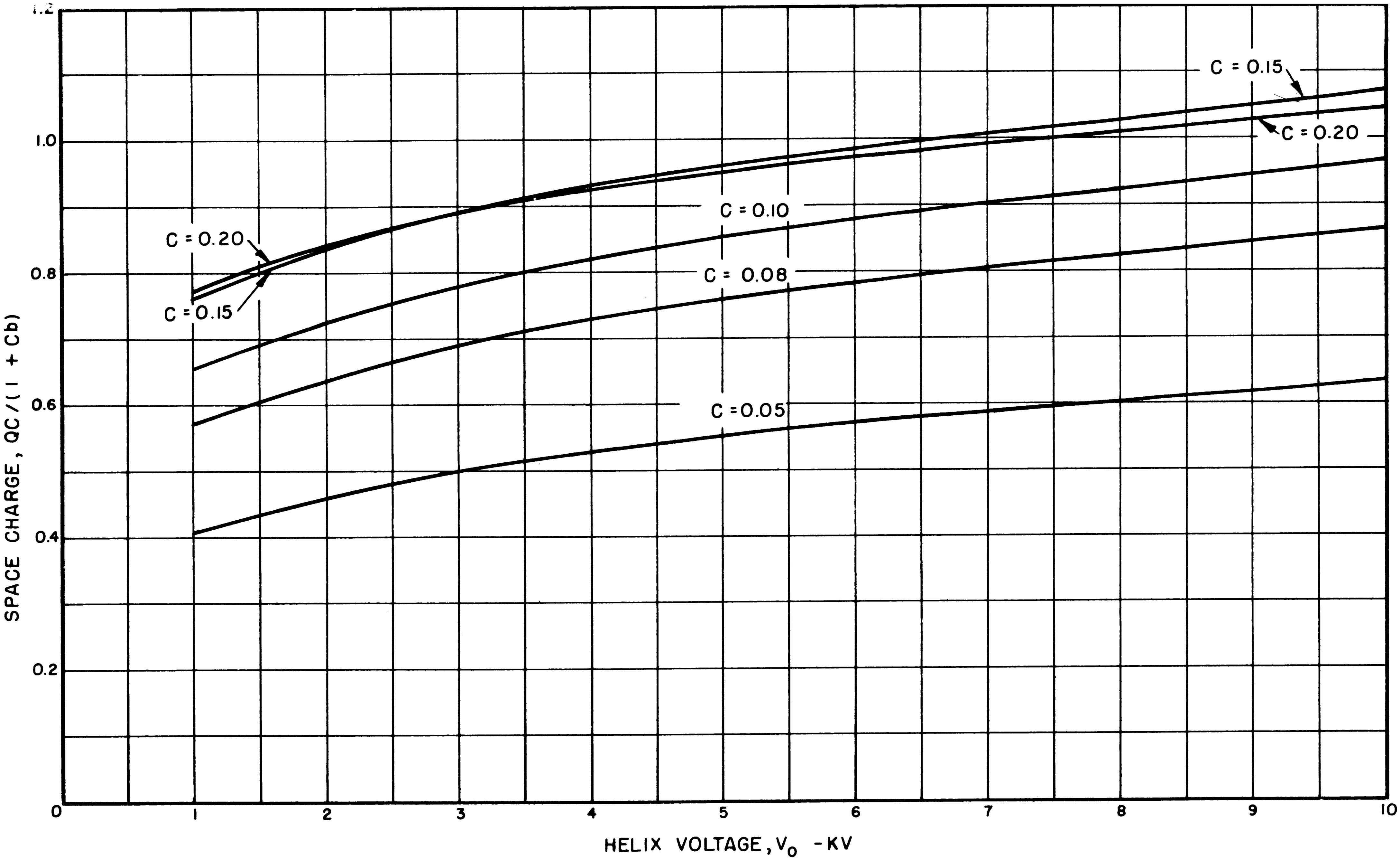


FIG. D.3 SPACE CHARGE VS. HELIX VOLTAGE FOR VARIOUS VALUES OF THE GAIN PARAMETER.

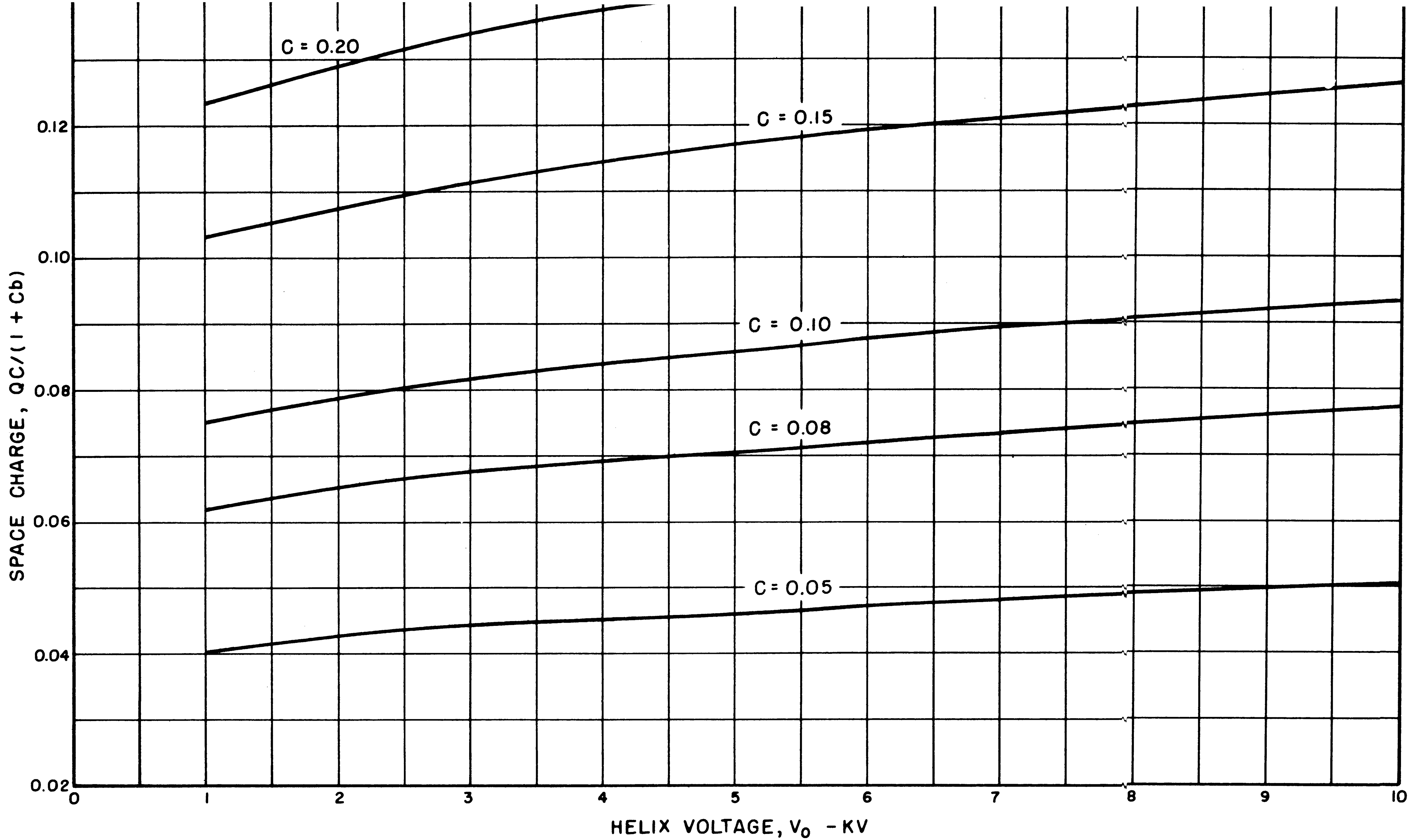


FIG. D.4 SPACE CHARGE VS. HELIX VOLTAGE FOR VARIOUS VALUES OF THE GAIN PARAMETER. (a'/b' = 1.4, B = 0.50, DLF = 80 %)

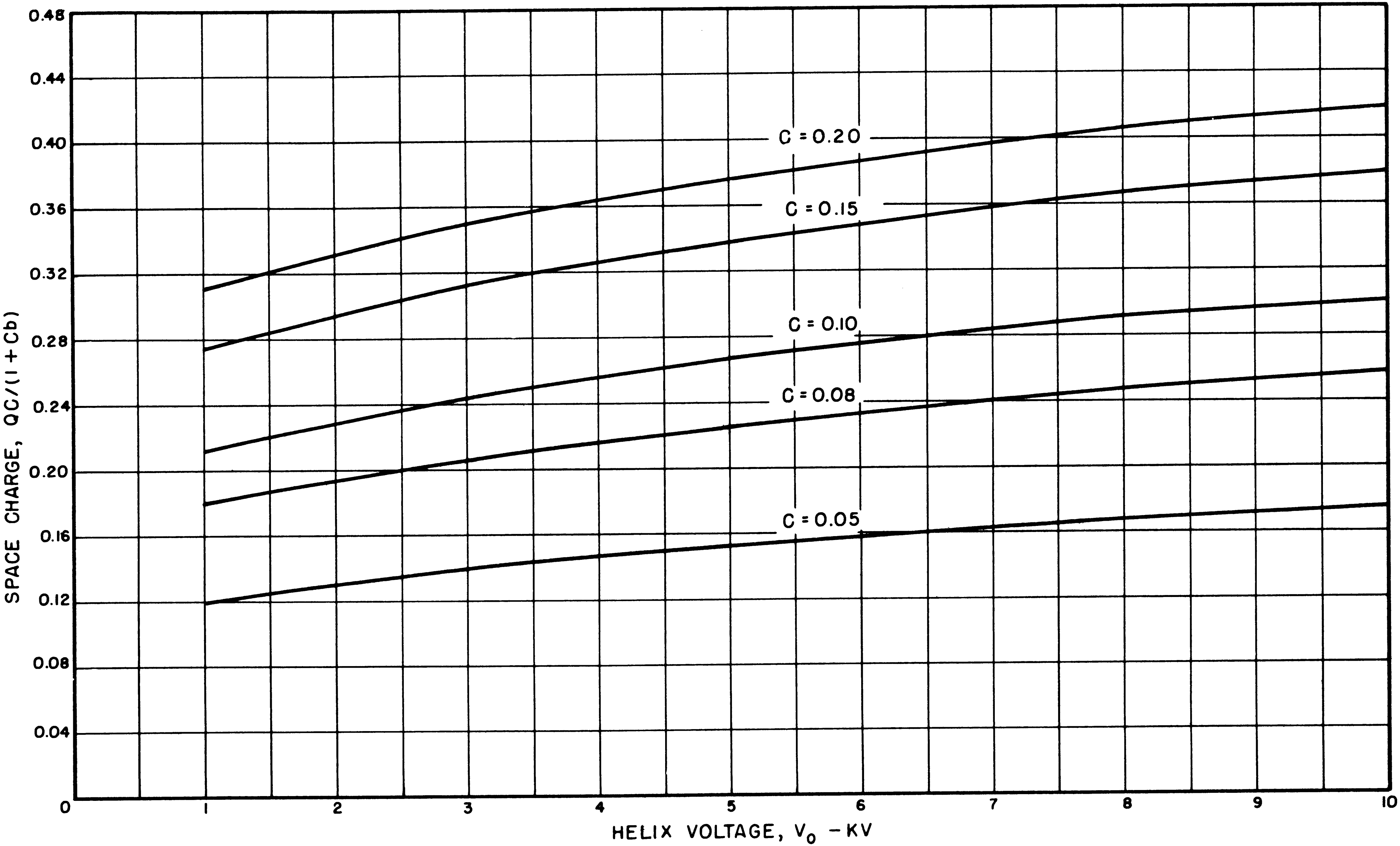


FIG. D.5 SPACE CHARGE VS. HELIX VOLTAGE FOR VARIOUS VALUES OF THE GAIN PARAMETER.
(a'/b' = 1.4, B = 1.0, DLF = 80 %)

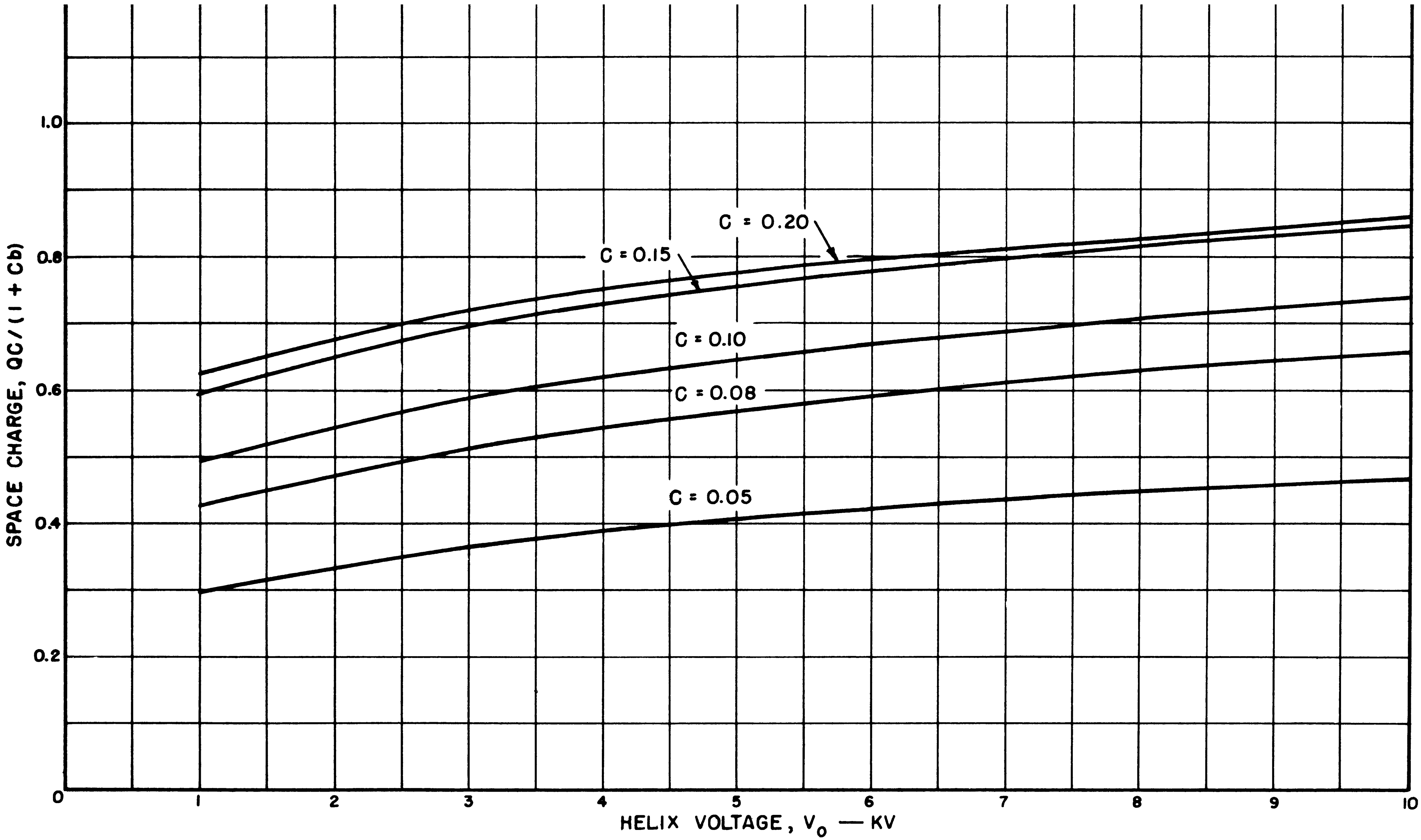


FIG. D.6 SPACE CHARGE VS. HELIX VOLTAGE FOR VARIOUS VALUES OF THE GAIN PARAMETER.
(a'/b' = 1.4, B = 1.50, DLF = 80 %)

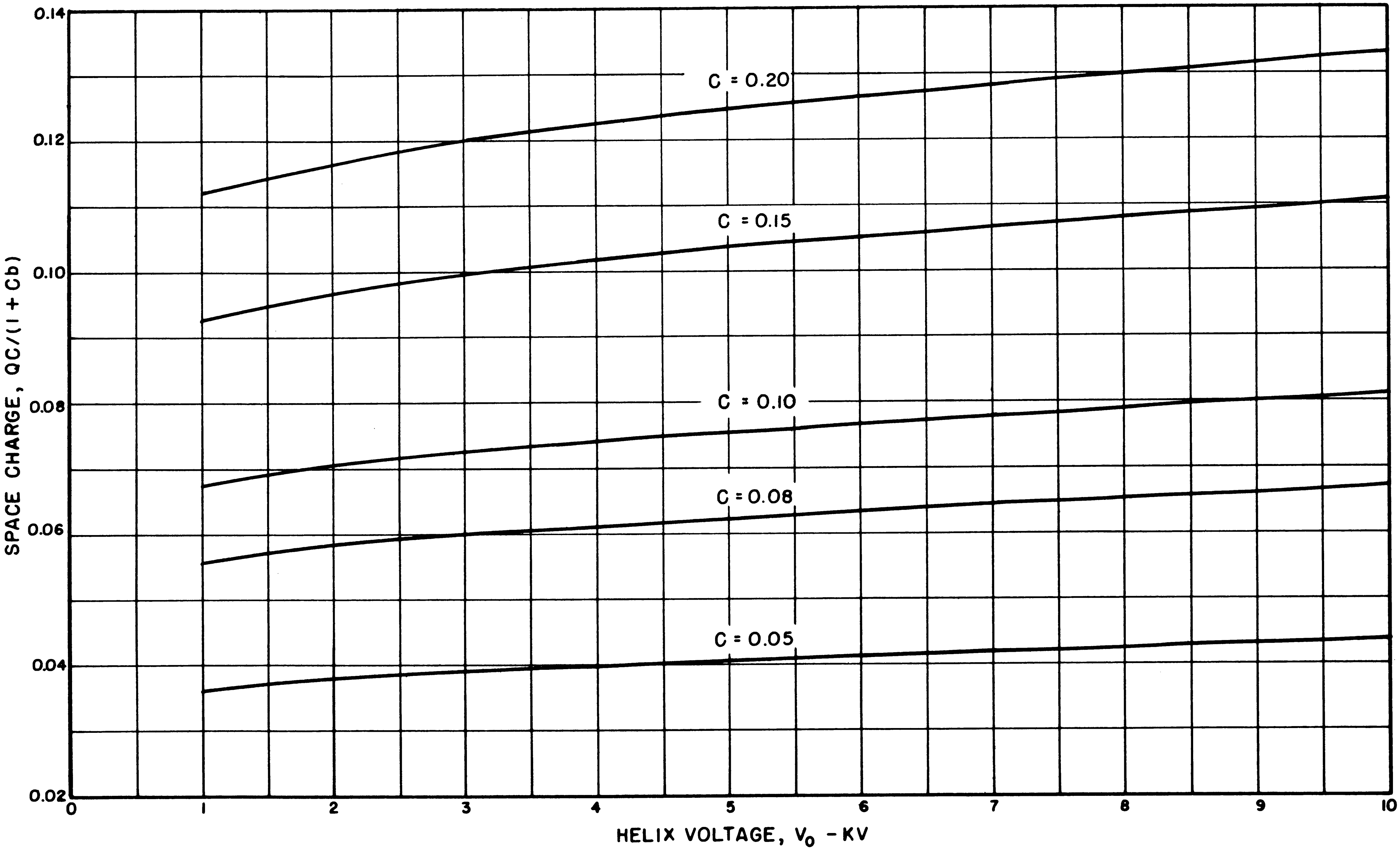


FIG. D.7 SPACE CHARGE VS. HELIX VOLTAGE FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.4$, $B = 0.5$, DLF = 85 %)

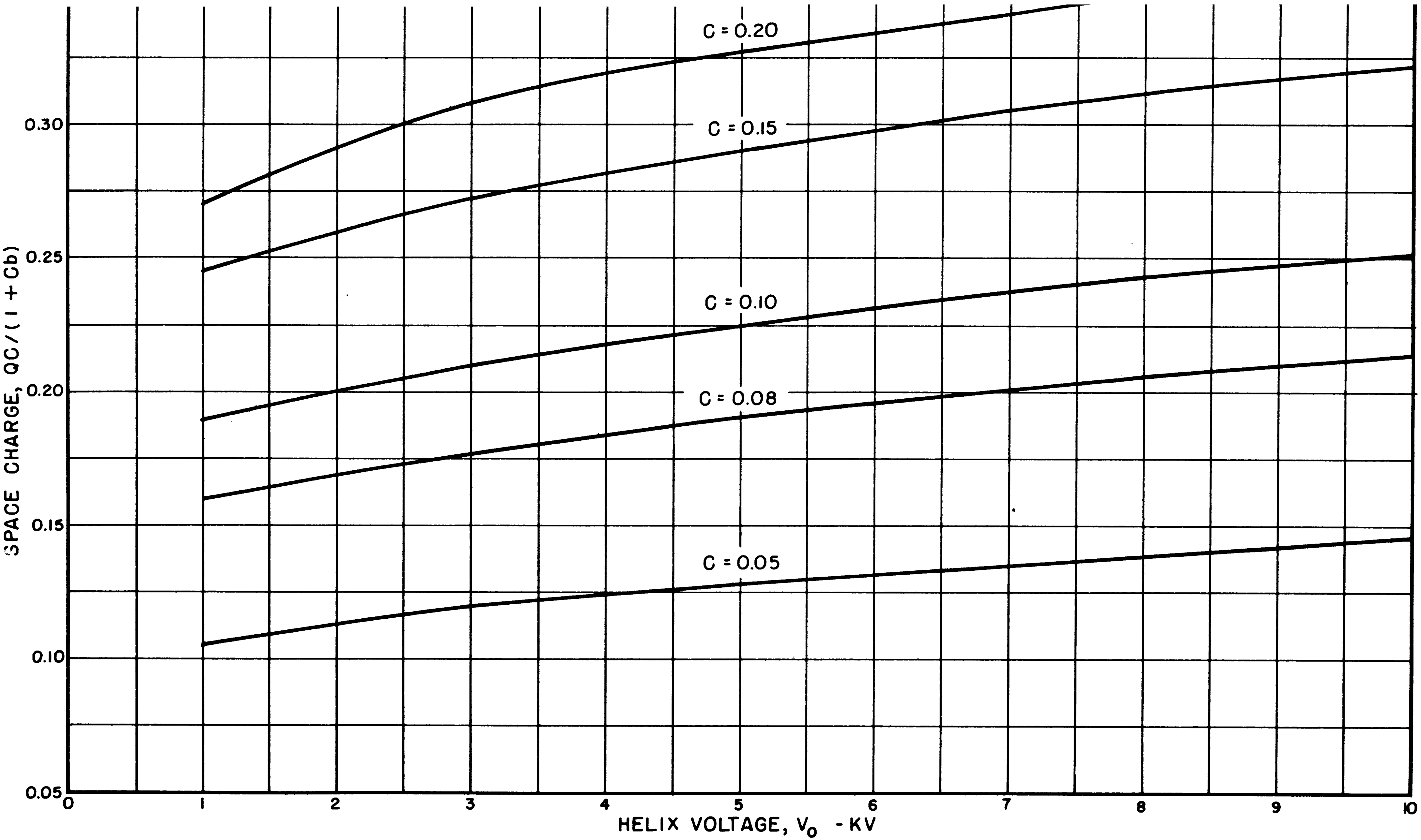


FIG. D.8 SPACE CHARGE VS. HELIX VOLTAGE FOR VARIOUS VALUES OF THE GAIN PARAMETER. (a'/b' = 1.4, B = 1.0, DLF ≈ 85 %)

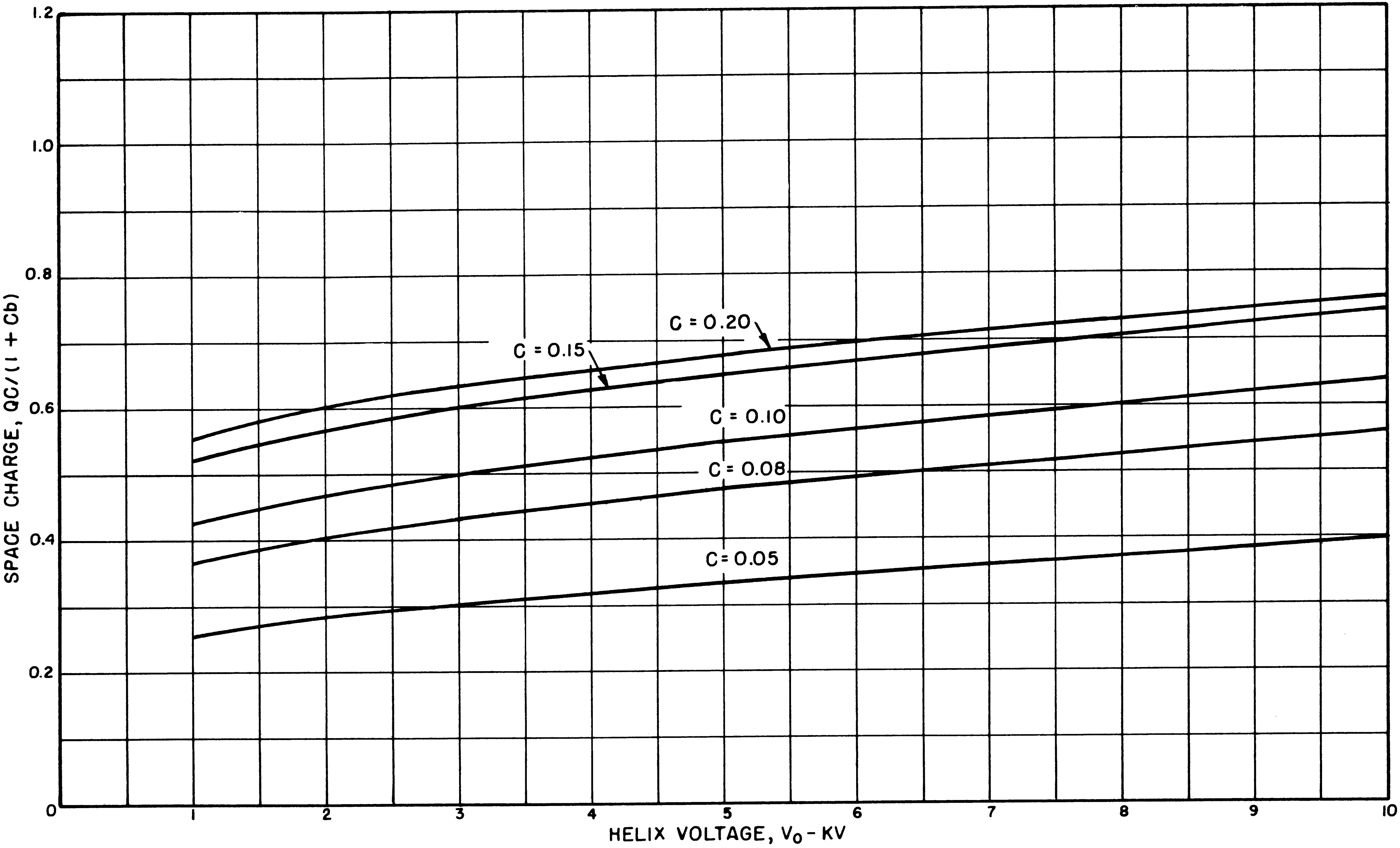


FIG. D.9 SPACE CHARGE VS. HELIX VOLTAGE FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.4$, $B = 1.50$, DLF = 85 %)

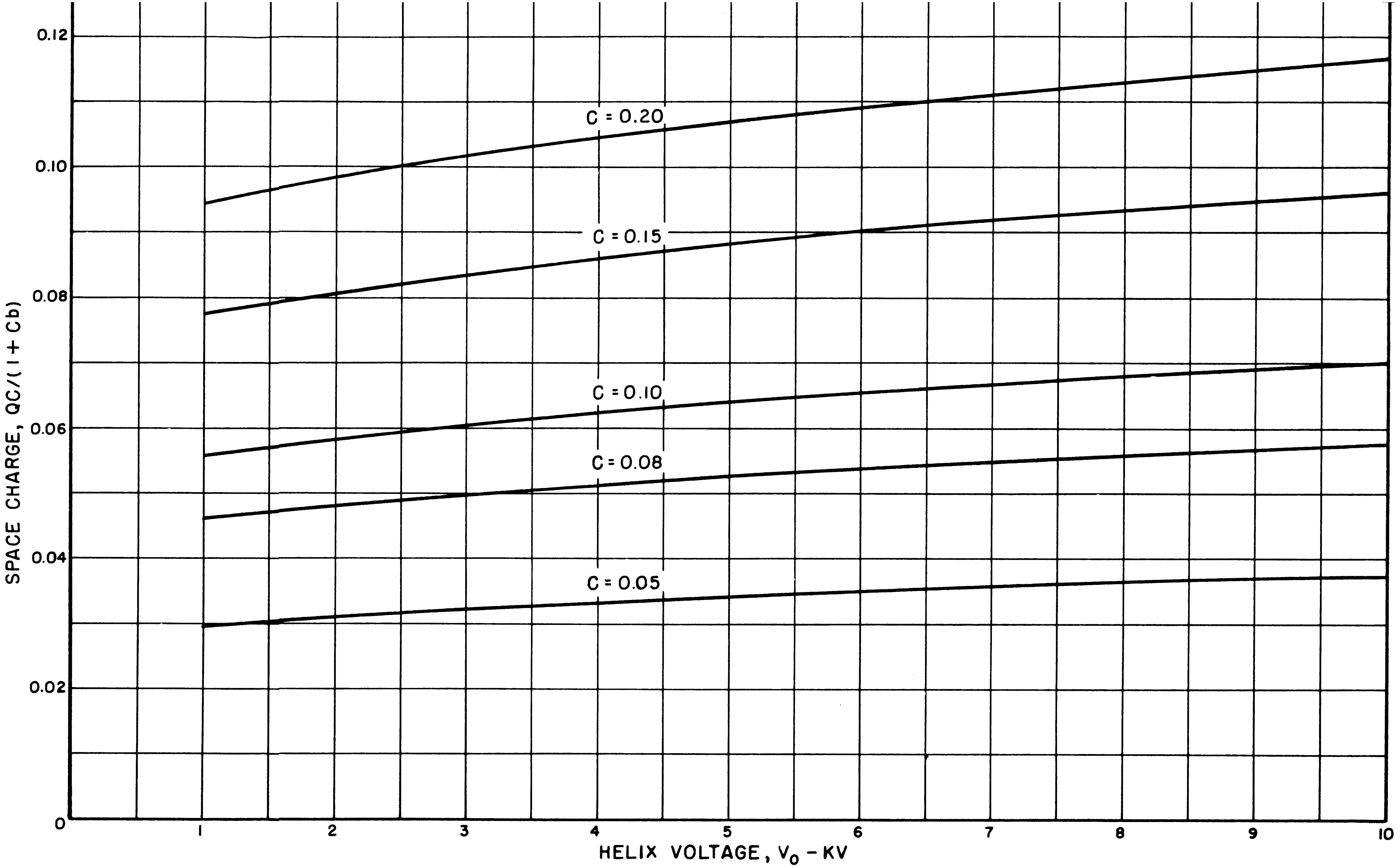


FIG. D.10 SPACE CHARGE VS. HELIX VOLTAGE FOR VARIOUS VALUES OF THE GAIN PARAMETER. ($a'/b' = 1.4$, $B = 0.50$, DLF = 90 %)

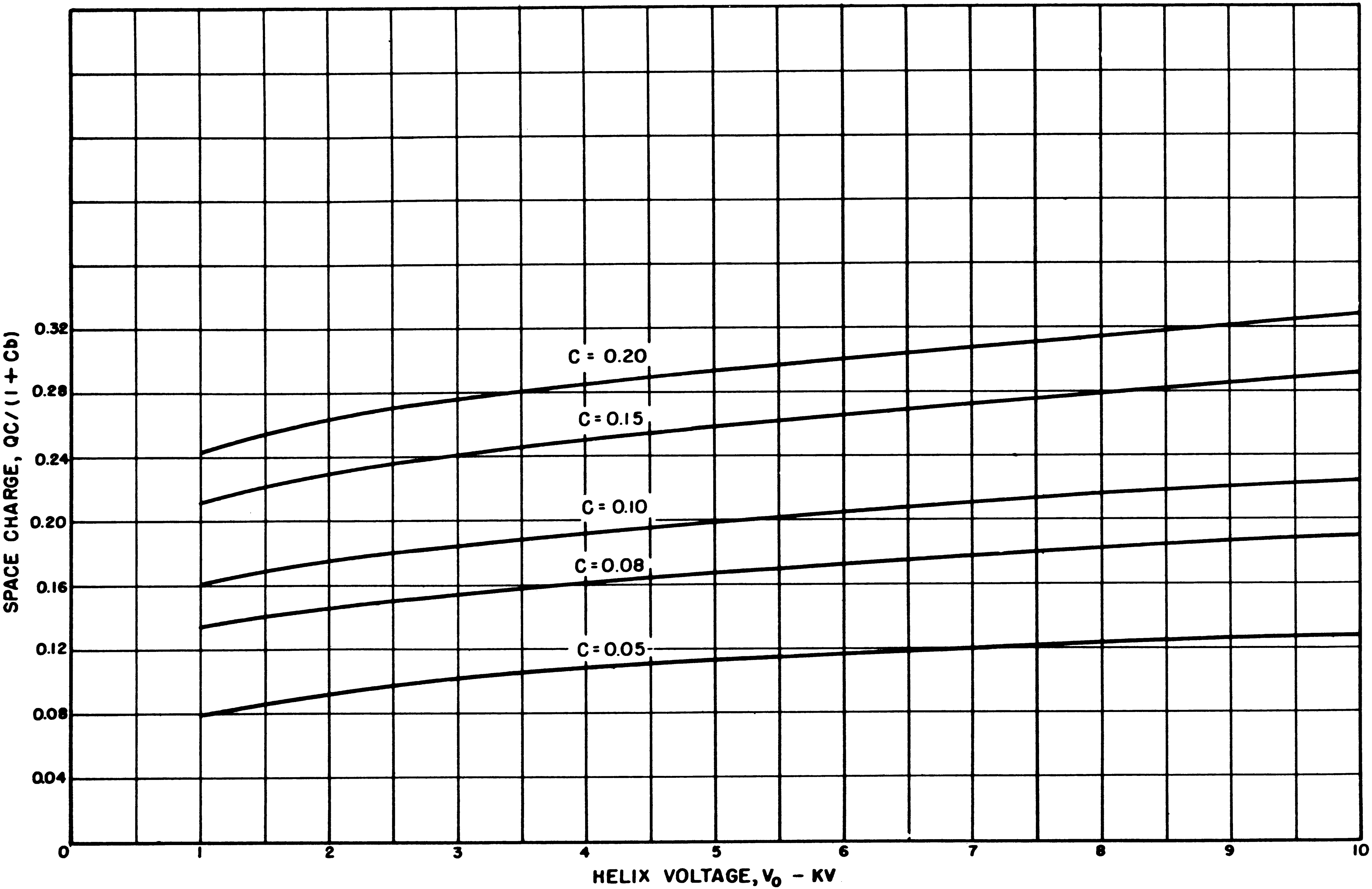


FIG. D.11 SPACE CHARGE VS. HELIX VOLTAGE FOR VARIOUS VALUES OF THE GAIN PARAMETER.

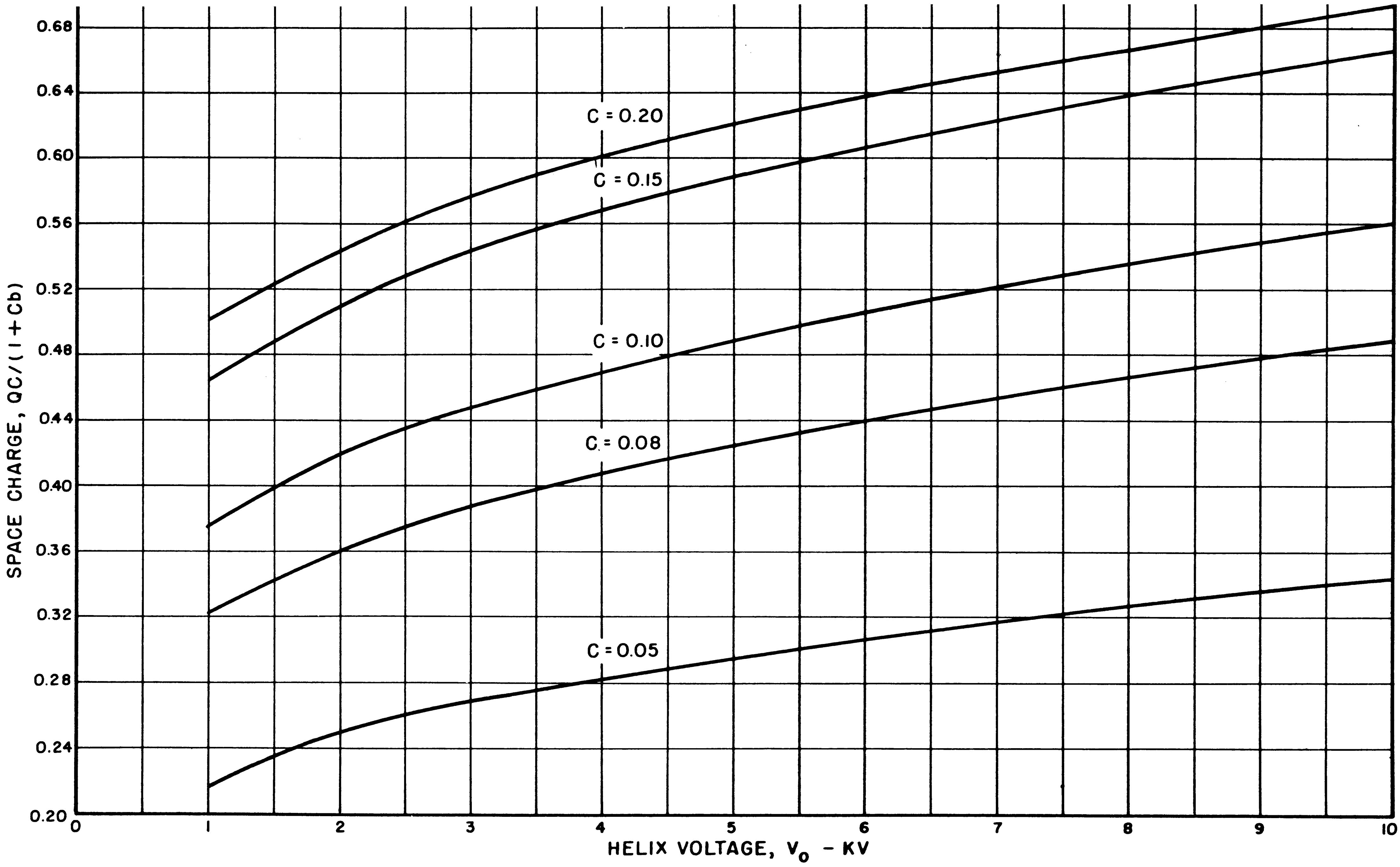


FIG. D.12 SPACE CHARGE VS. HELIX VOLTAGE FOR VARIOUS VALUES OF THE GAIN PARAMETER. (a'/b = 1.4, B = 1.50, DLF = 90 %)

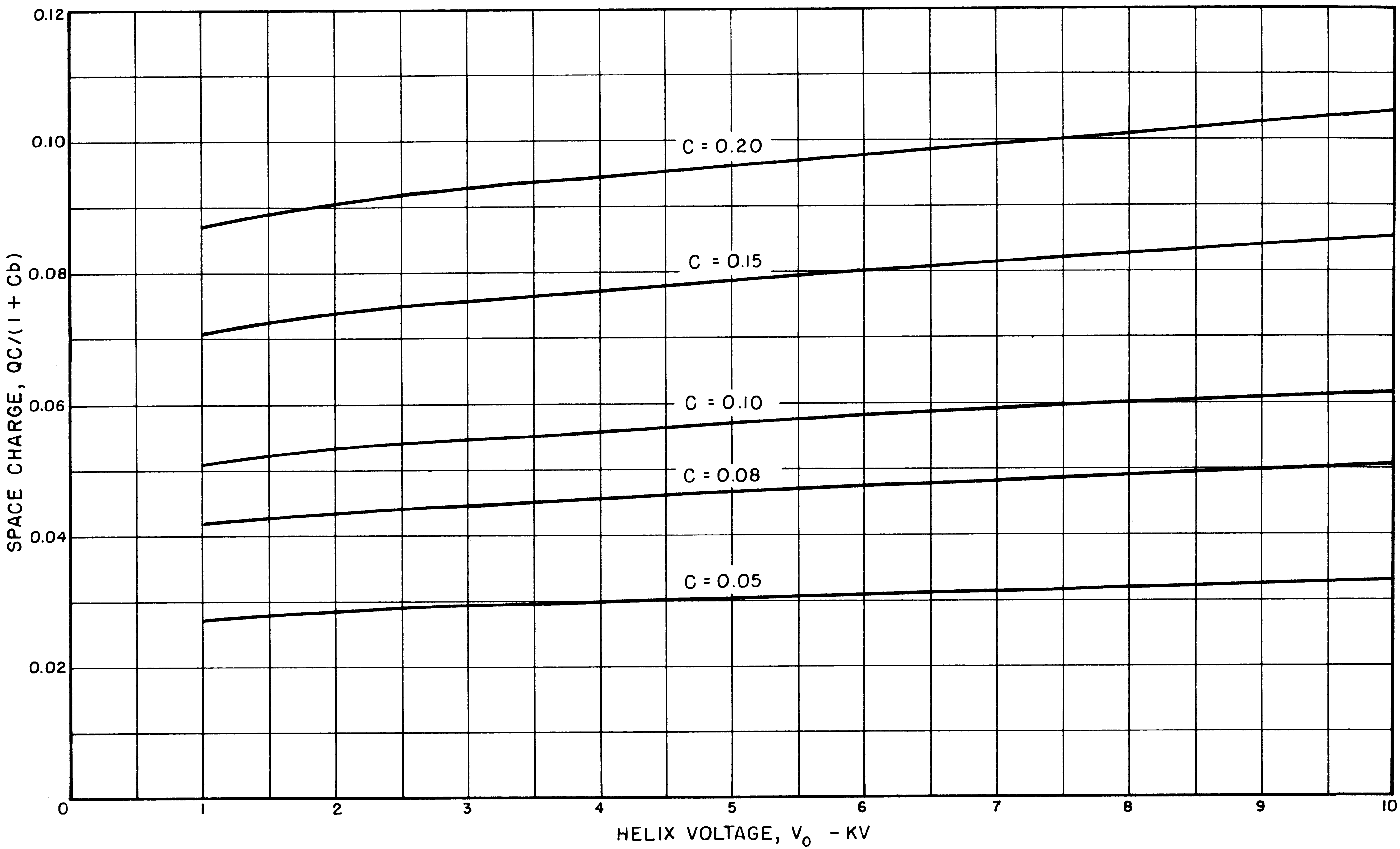


FIG. D.13 SPACE CHARGE VS. HELIX VOLTAGE FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.4$, $B = 0.50$, DLF = 95 %)

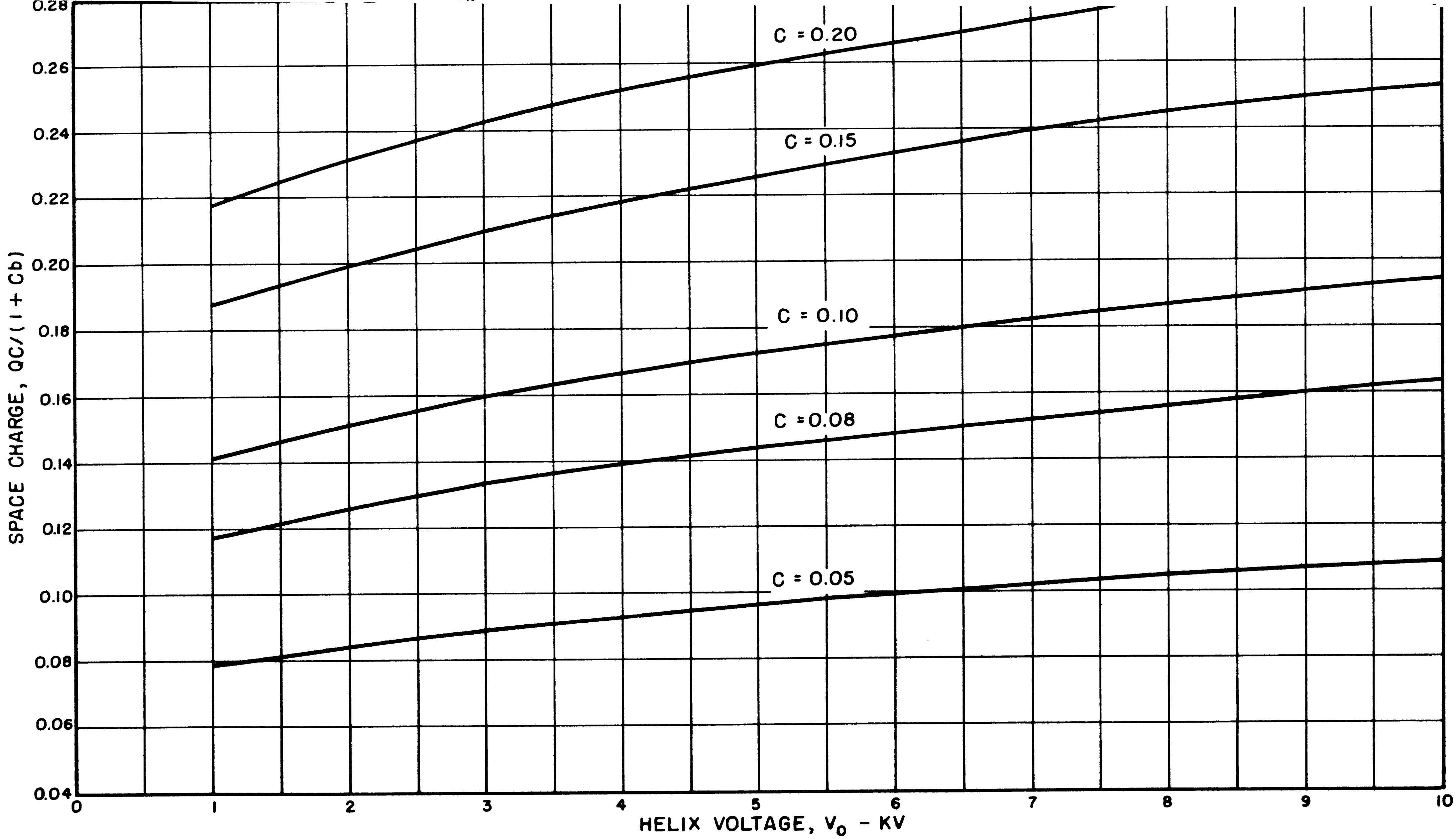


FIG. D.14 SPACE CHARGE VS. HELIX VOLTAGE FOR VARIOUS VALUES OF THE GAIN PARAMETER. (a'/b' = 1.4, B = 1.0, DLF = 95 %)

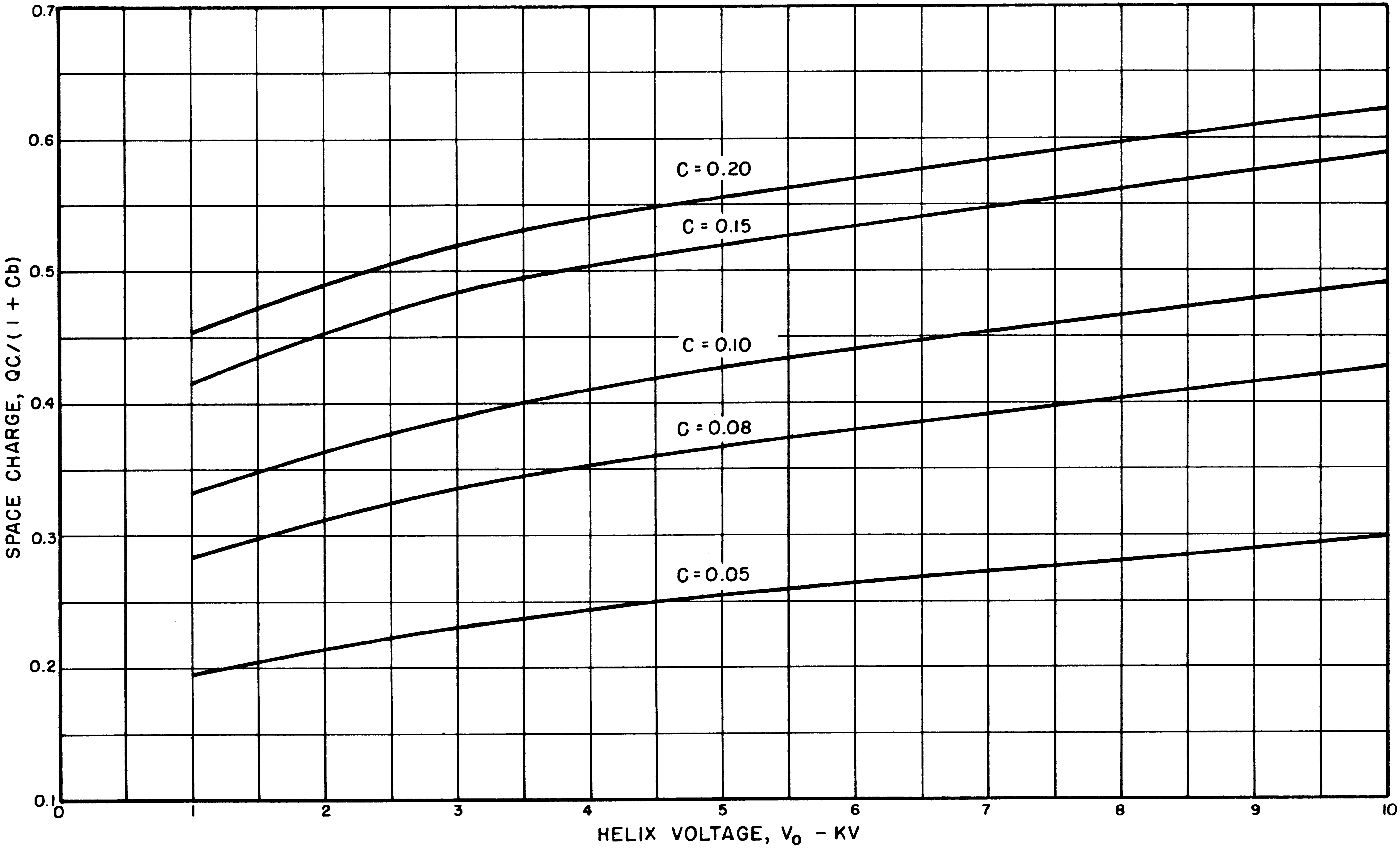


FIG. D.15 SPACE CHARGE VS. HELIX VOLTAGE FOR VARIOUS VALUES OF THE GAIN PARAMETER. (a'/b' = 1.4, B = 1.50, DLF = 95 %)

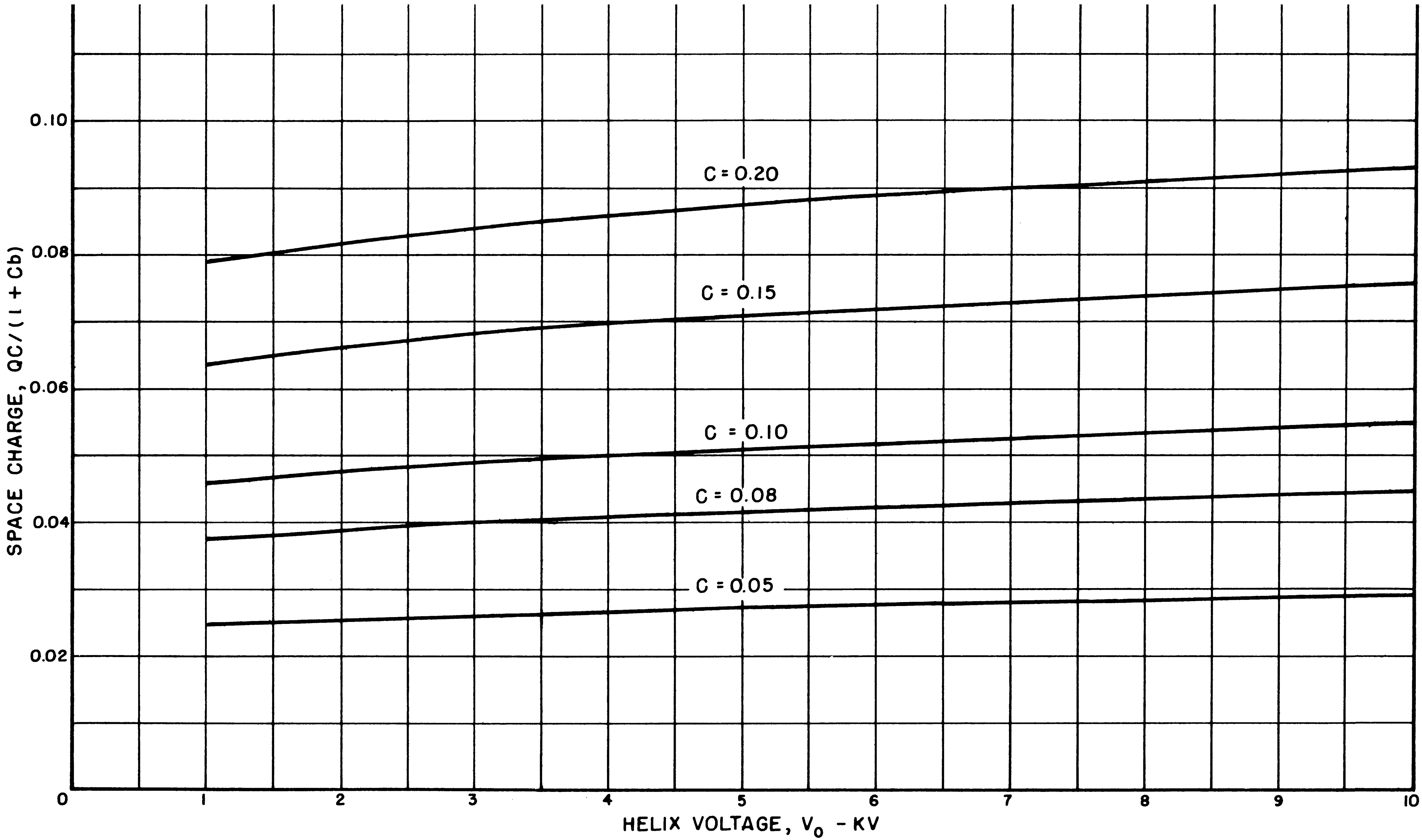


FIG. D.16 SPACE CHARGE VS. HELIX VOLTAGE FOR VARIOUS VALUES OF THE GAIN PARAMETER.
($a'/b' = 1.4$, $B = 0.50$, DLF = 100 %)

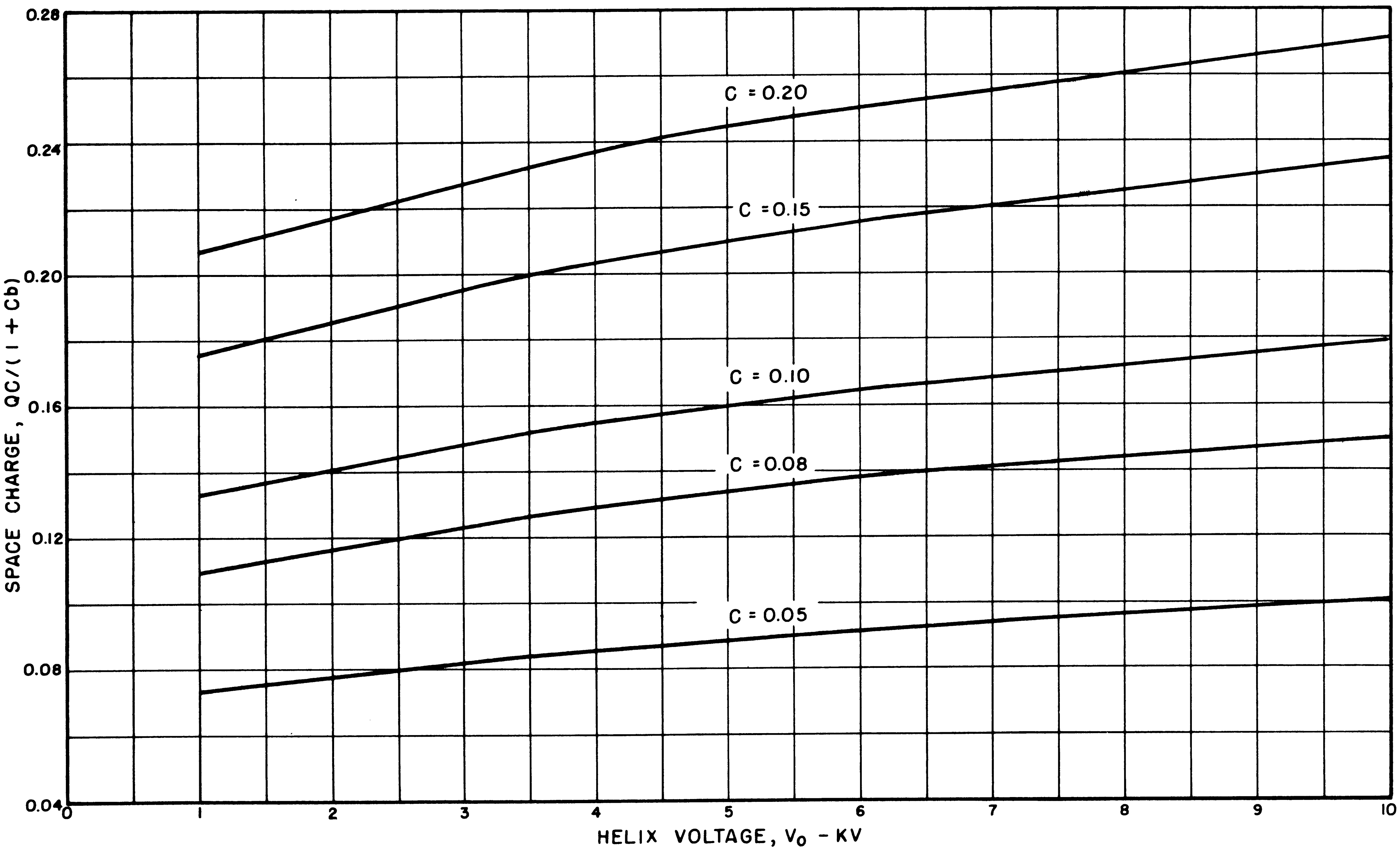


FIG. D.17 SPACE CHARGE VS. HELIX VOLTAGE FOR VARIOUS VALUES OF THE GAIN PARAMETER. (a'/b' = 1.4, B = 1.0, DLF = 100%)

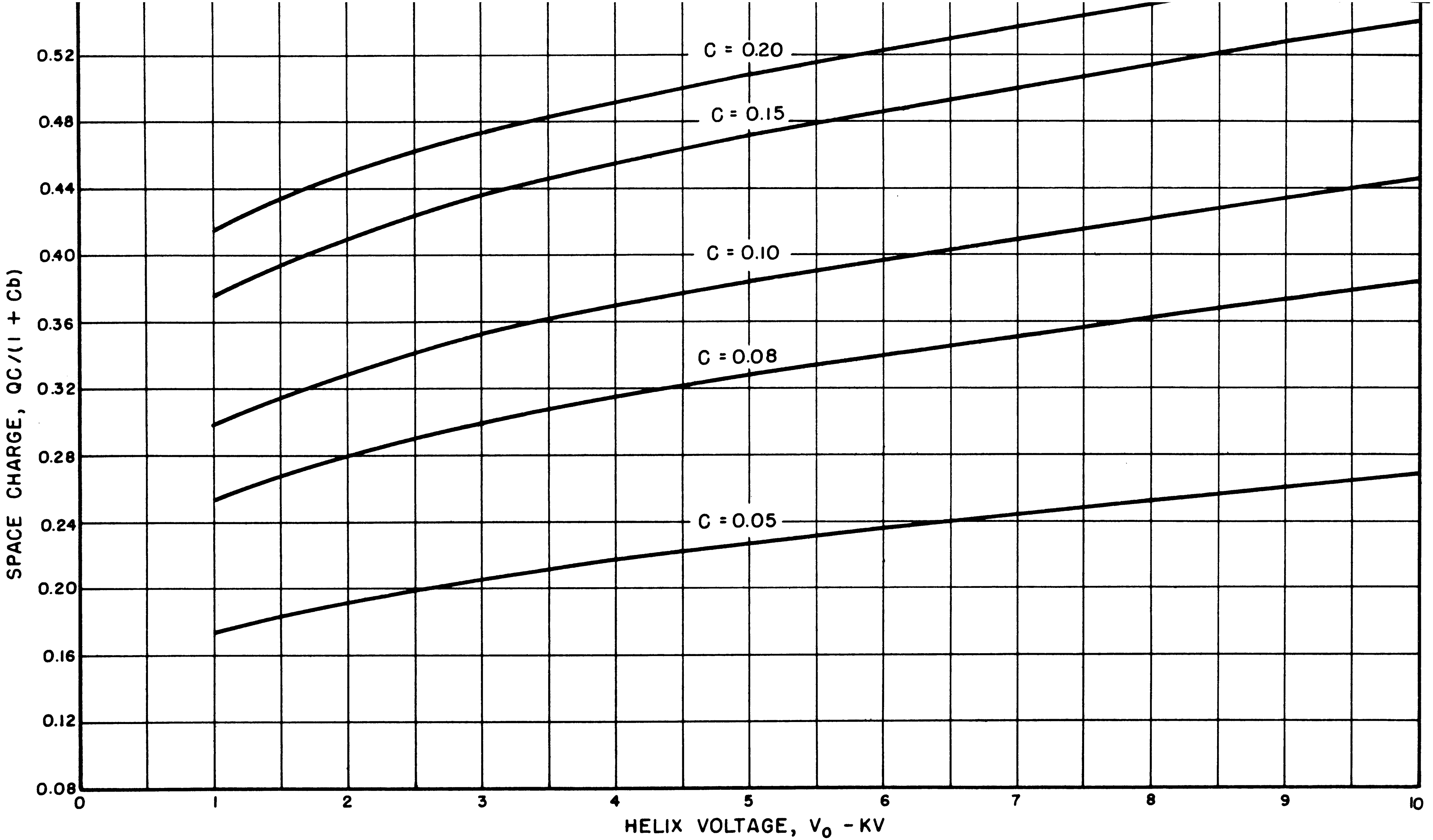


FIG. D.18 SPACE CHARGE VS. HELIX VOLTAGE FOR VARIOUS VALUES OF THE GAIN PARAMETER. ($a'/b' = 1.4$, $B = 1.5$, DLF = 100%)

SECTION E

SPACE-CHARGE CORRECTION FACTOR

The space-charge correction factor curves are arranged according to ascending values of the gain parameter.

Parameter	Range
C	0.05 to 0.20

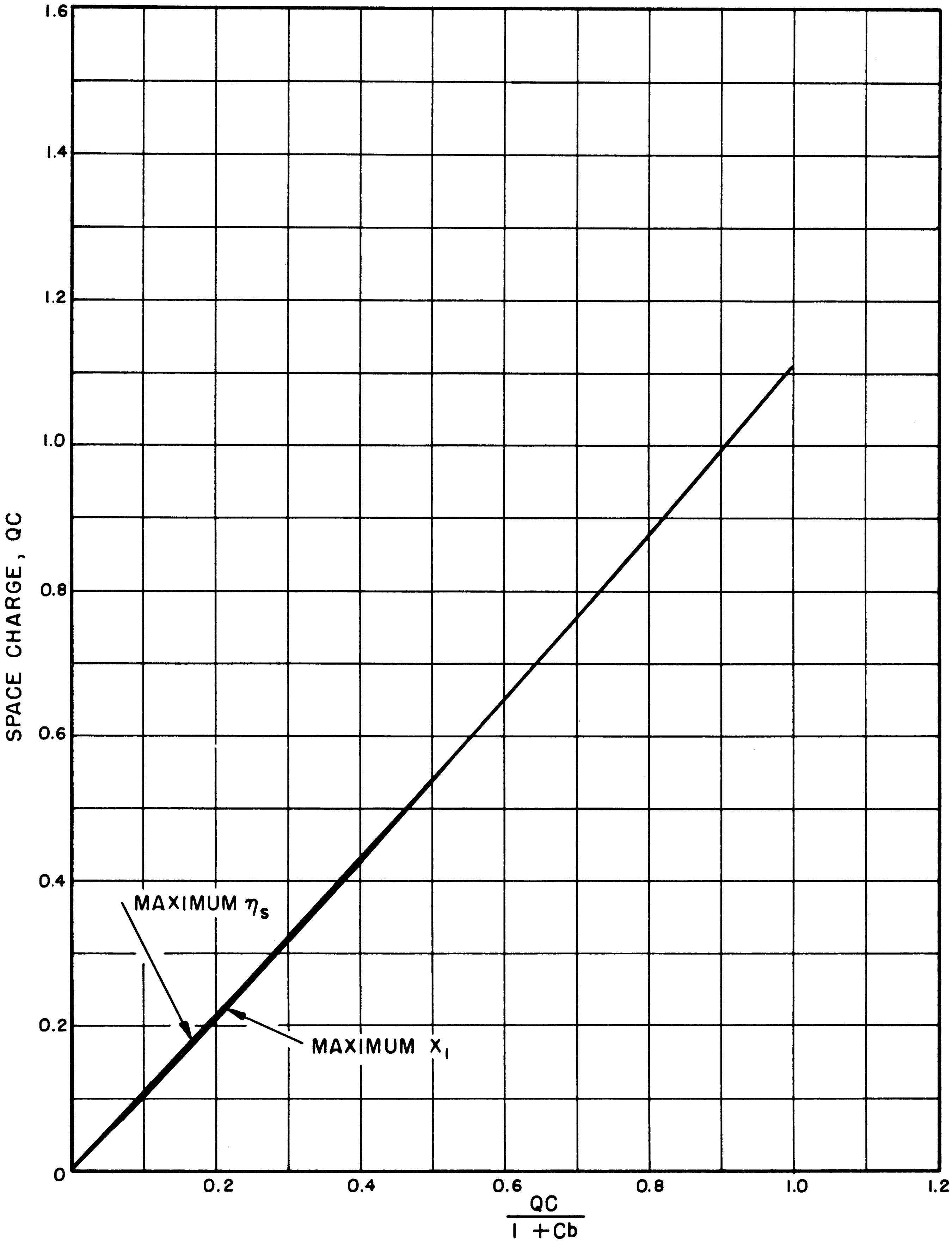


FIG. E.1 SPACE-CHARGE CORRECTION. (C = 0.05, d = 0)

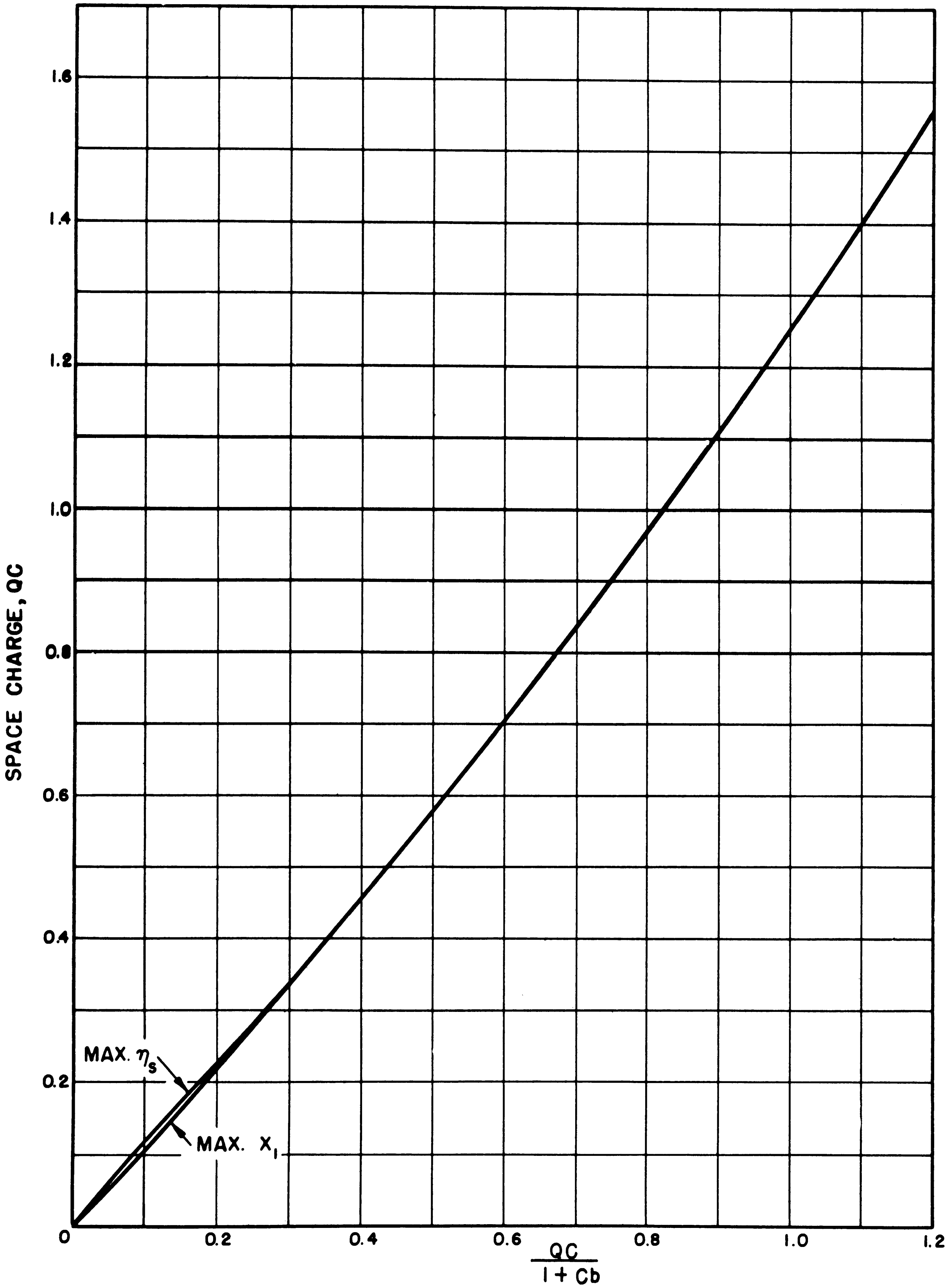


FIG. E.2 SPACE-CHARGE CORRECTION. (C = 0.10, d = 0)

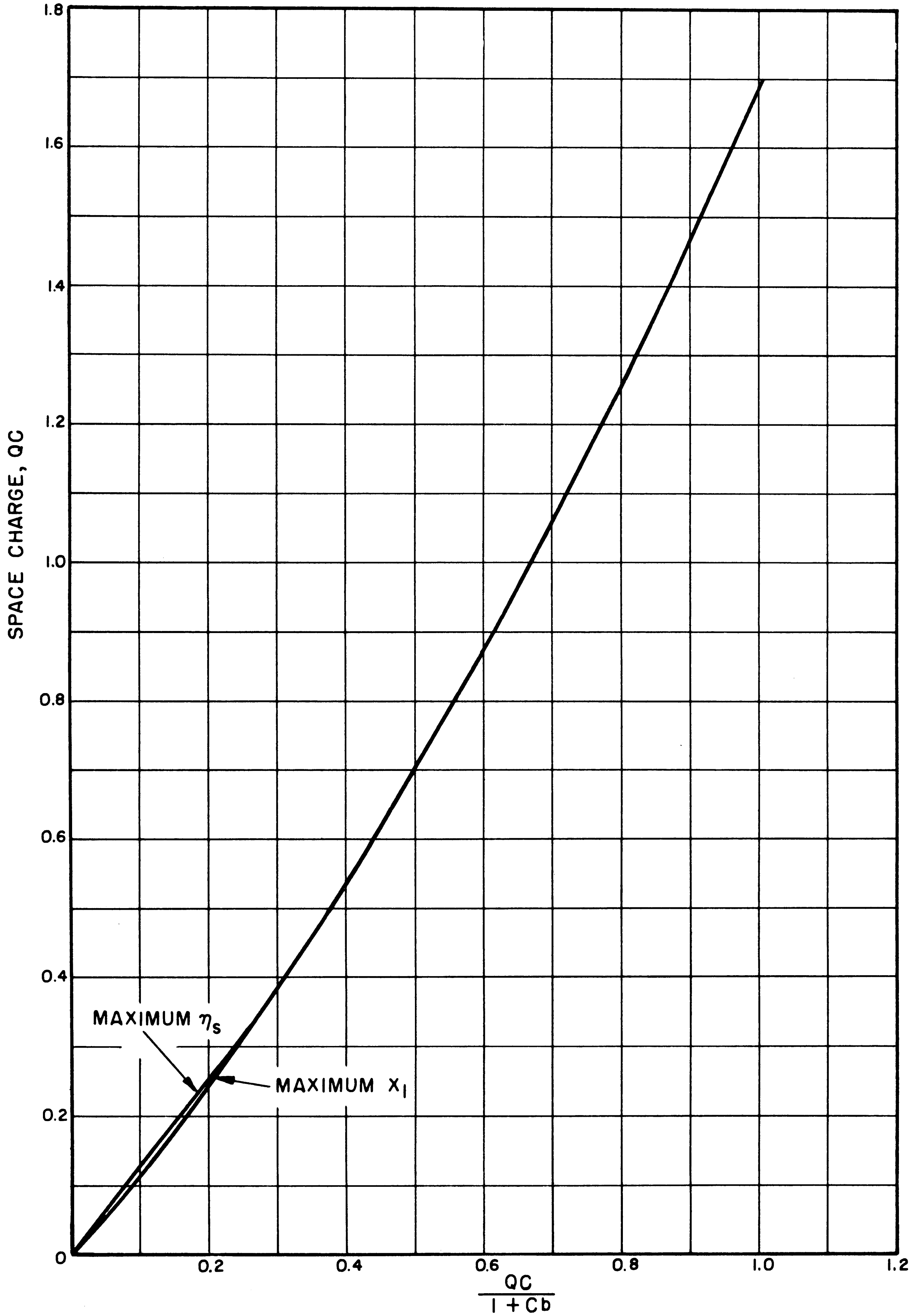


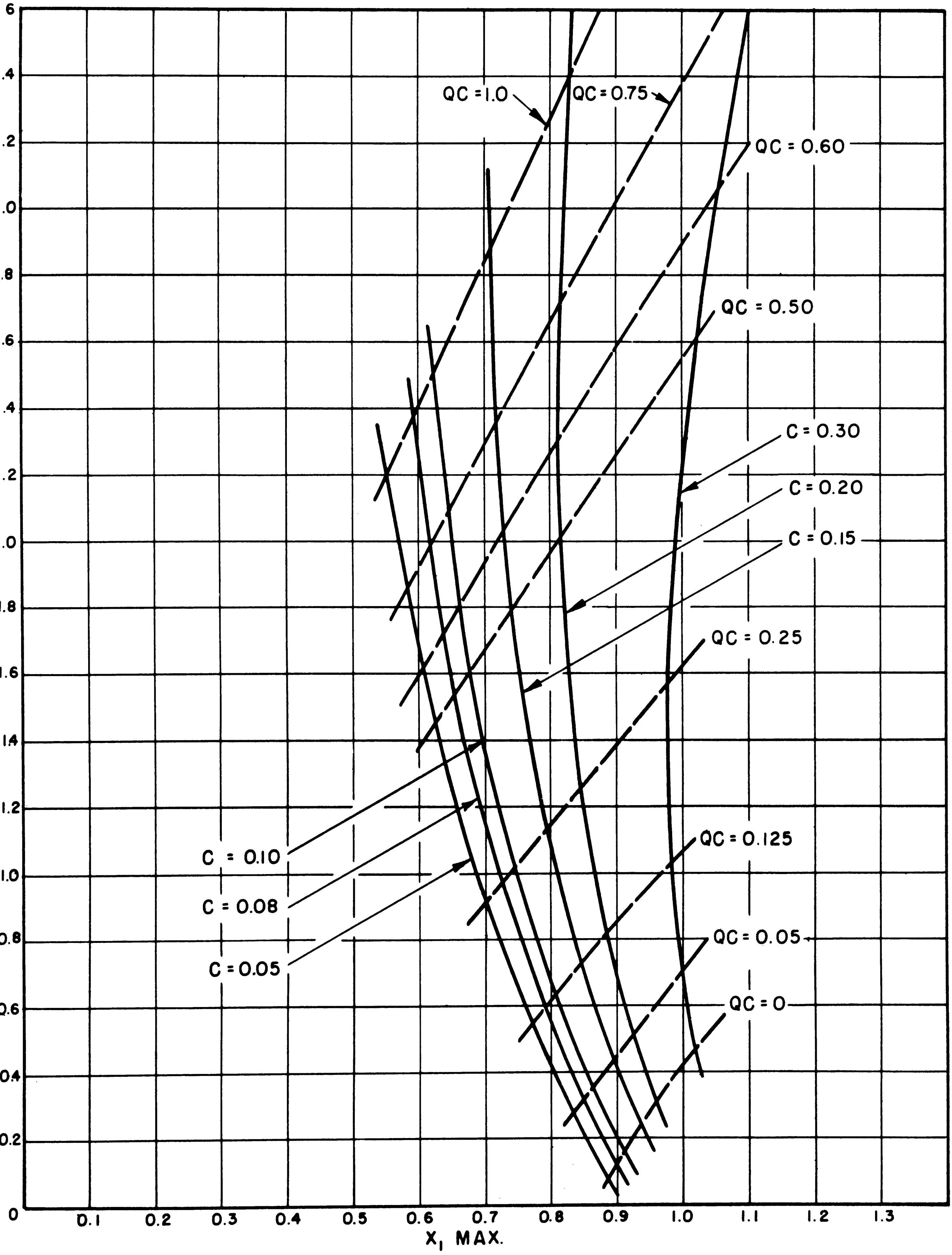
FIG. E.3 SPACE-CHARGE CORRECTION. (C = 0.2, d = 0)

SECTION F

OPTIMUM ELECTRON INJECTION VELOCITY

The curves of the optimum electron injection velocity are arranged according to ascending values of the loss parameter.

Parameter	Range
C	0 to 0.3
QC	0 to 1.0
d	0 to 1.0



G. F.1 b AT X_1 MAX. VS. X_1 MAX. WITH C AND QC AS PARAMETERS. (d = O)

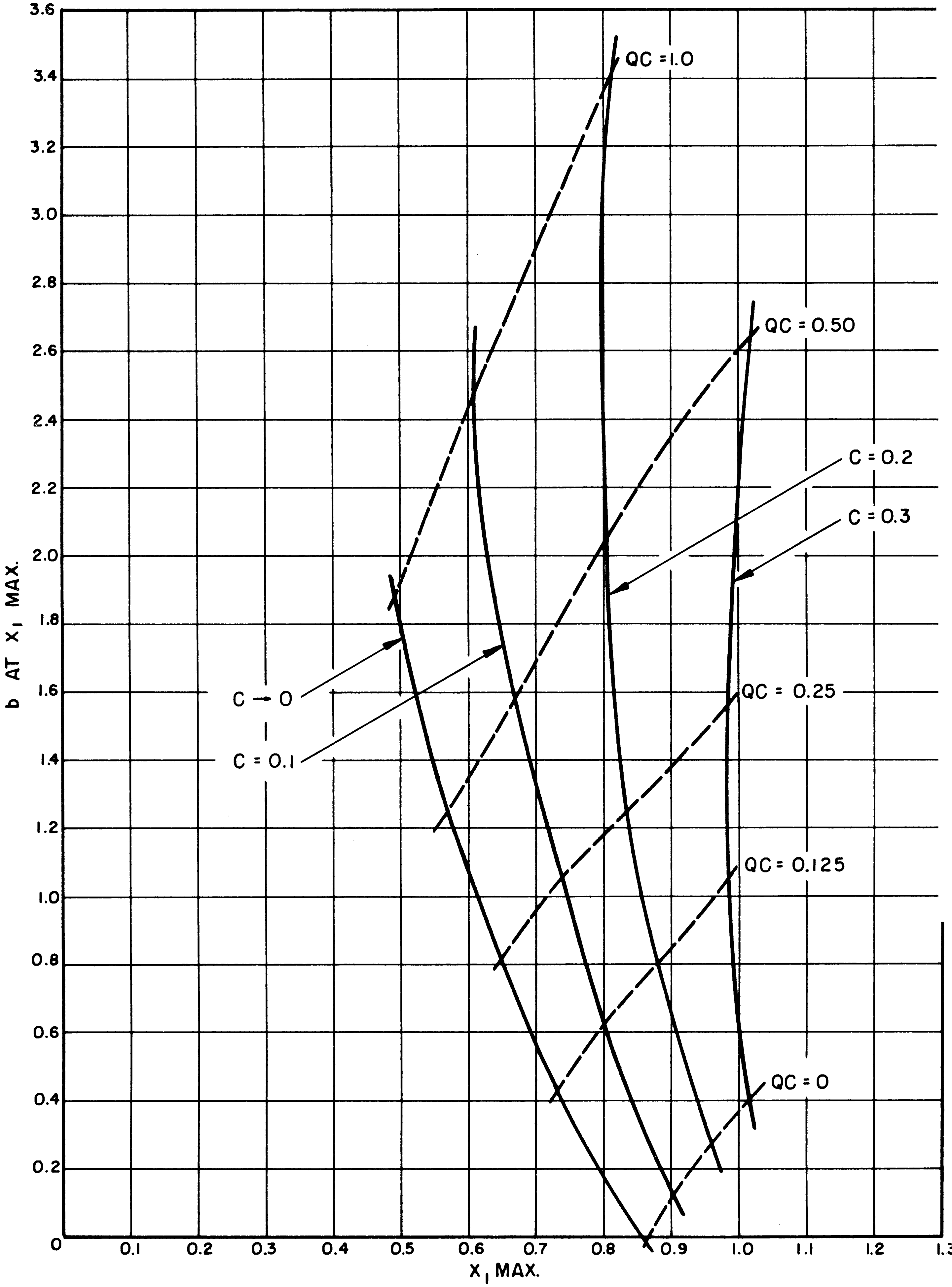


FIG. F.2 b AT X_1 MAX. VS. X_1 MAX. WITH C AND QC AS PARAMETERS. (d=0.C

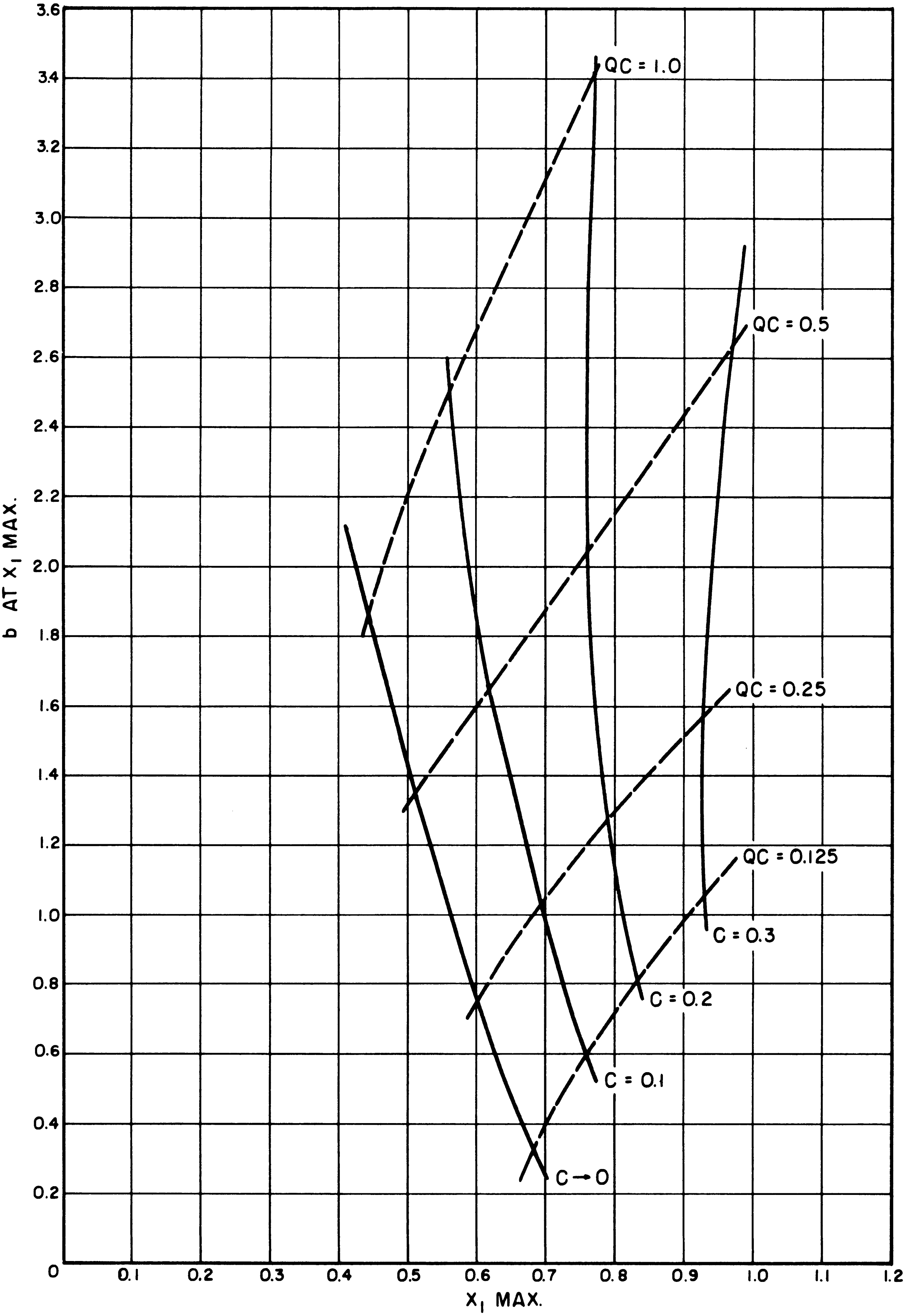


FIG. F.3 b AT X_1 MAX. VS. X_1 MAX. WITH C AND QC AS PARAMETERS.
(d = 0.125)

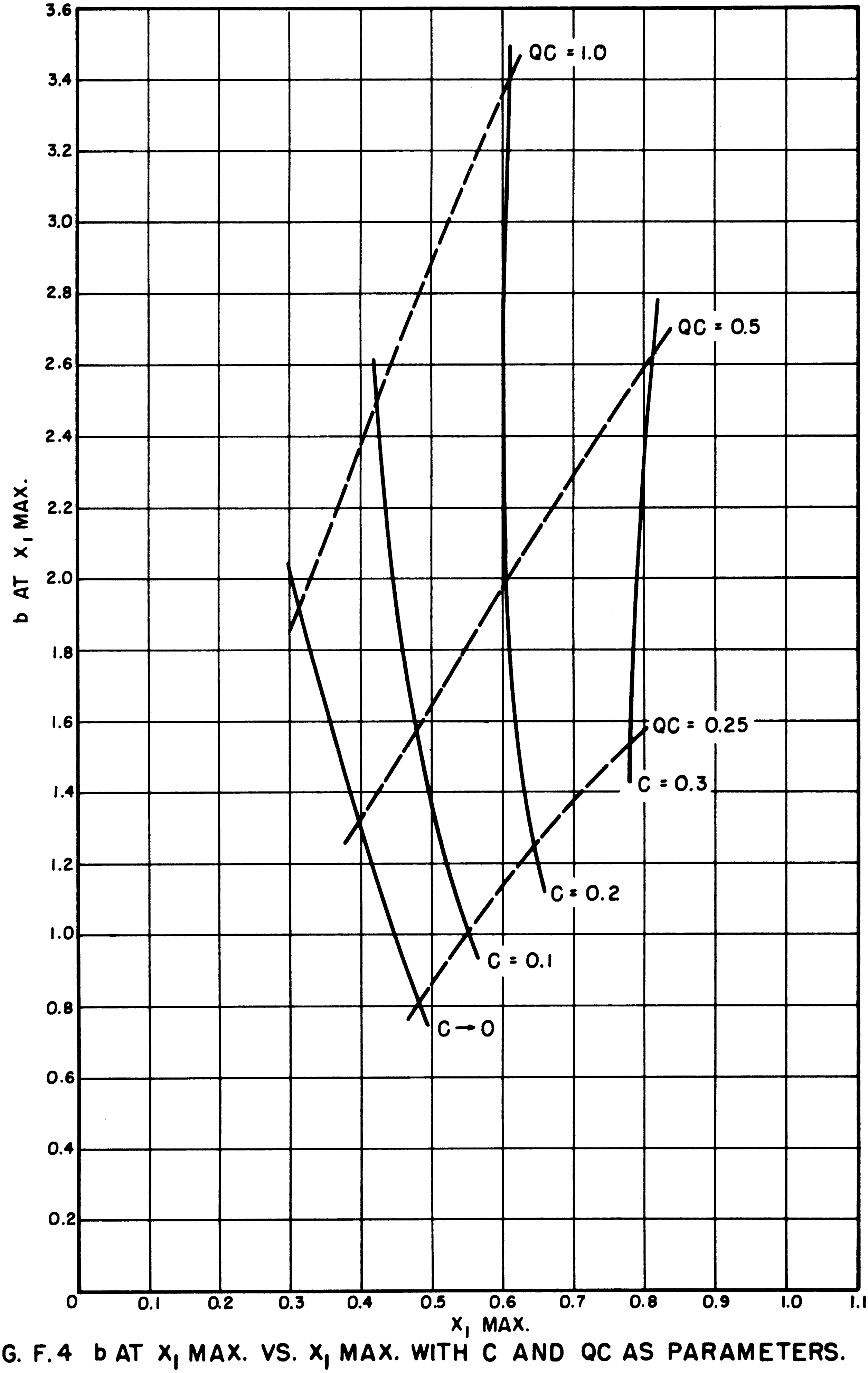


FIG. F.4 b AT X_1 MAX. VS. X_1 MAX. WITH C AND QC AS PARAMETERS.
(d = 0.5)

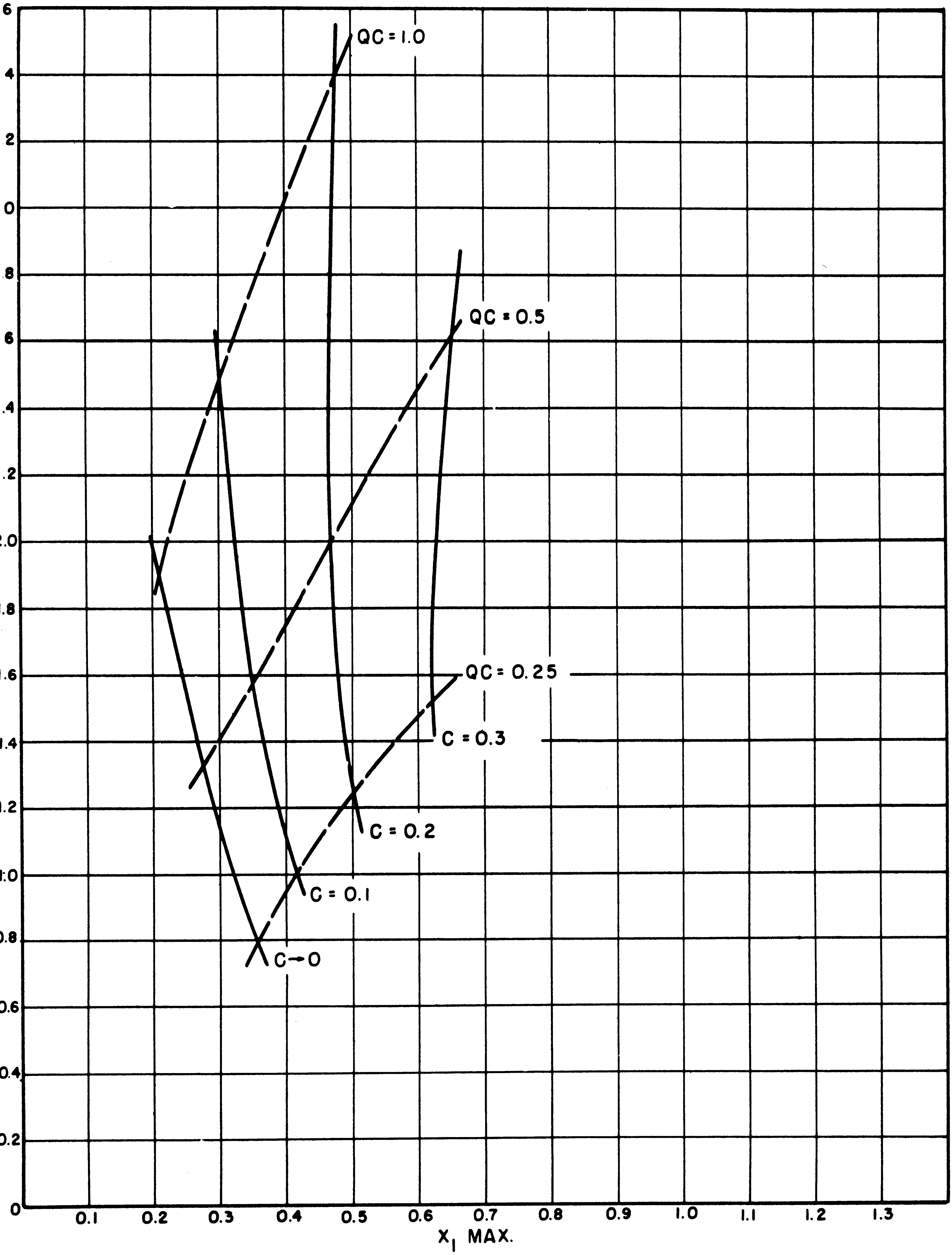


FIG. F.5 b AT X_1 MAX. VS. X_1 MAX. WITH C AND QC AS THE PARAMETERS. (d = 1.0)

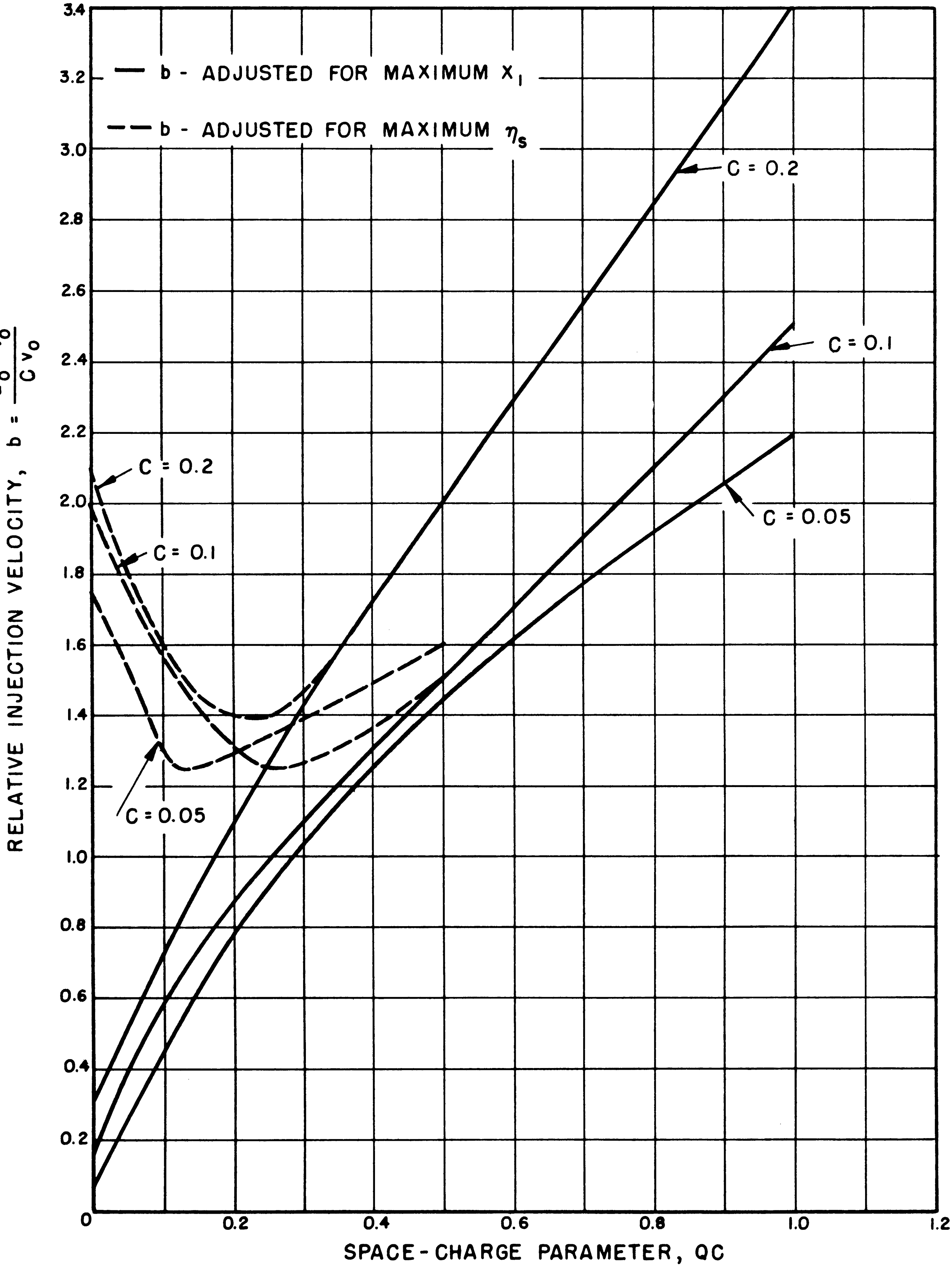


FIG. F.6 RELATIVE INJECTION VELOCITY VS. SPACE-CHARGE PARAMETER. (B = 1, d = 0)

SECTION G

PERVEANCE

The curves of the electron stream perveance vs. the stream diameter are arranged according to ascending values of the parameters a'/b' and C in succession.

Parameter	Range
a'/b'	1.2 to 2.0
C	0.05 to 0.20

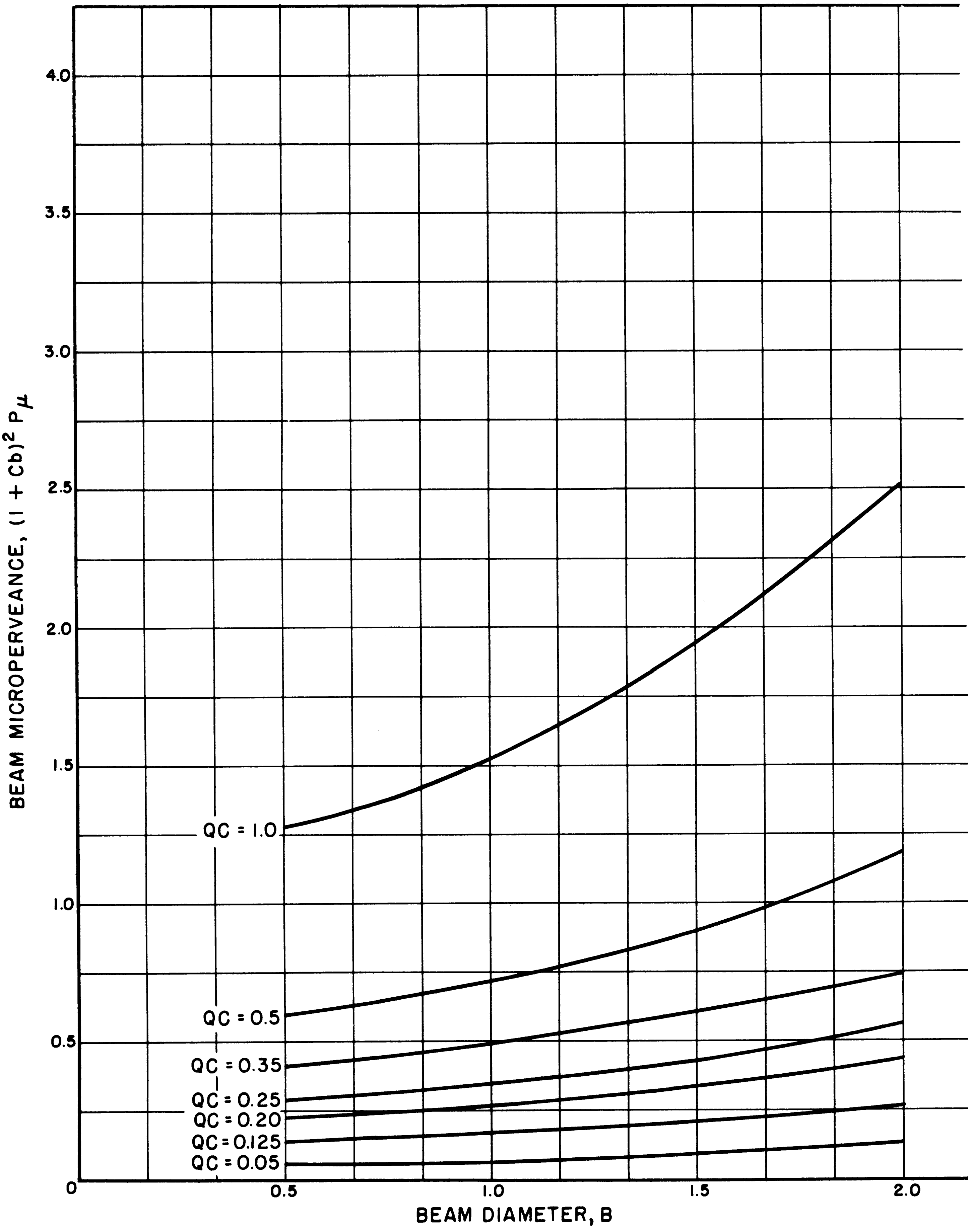


FIG. G.1 MICROPERVEANCE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE SPACE-CHARGE PARAMETER. ($C = 0.05$, $a'/b' = 1.2$)

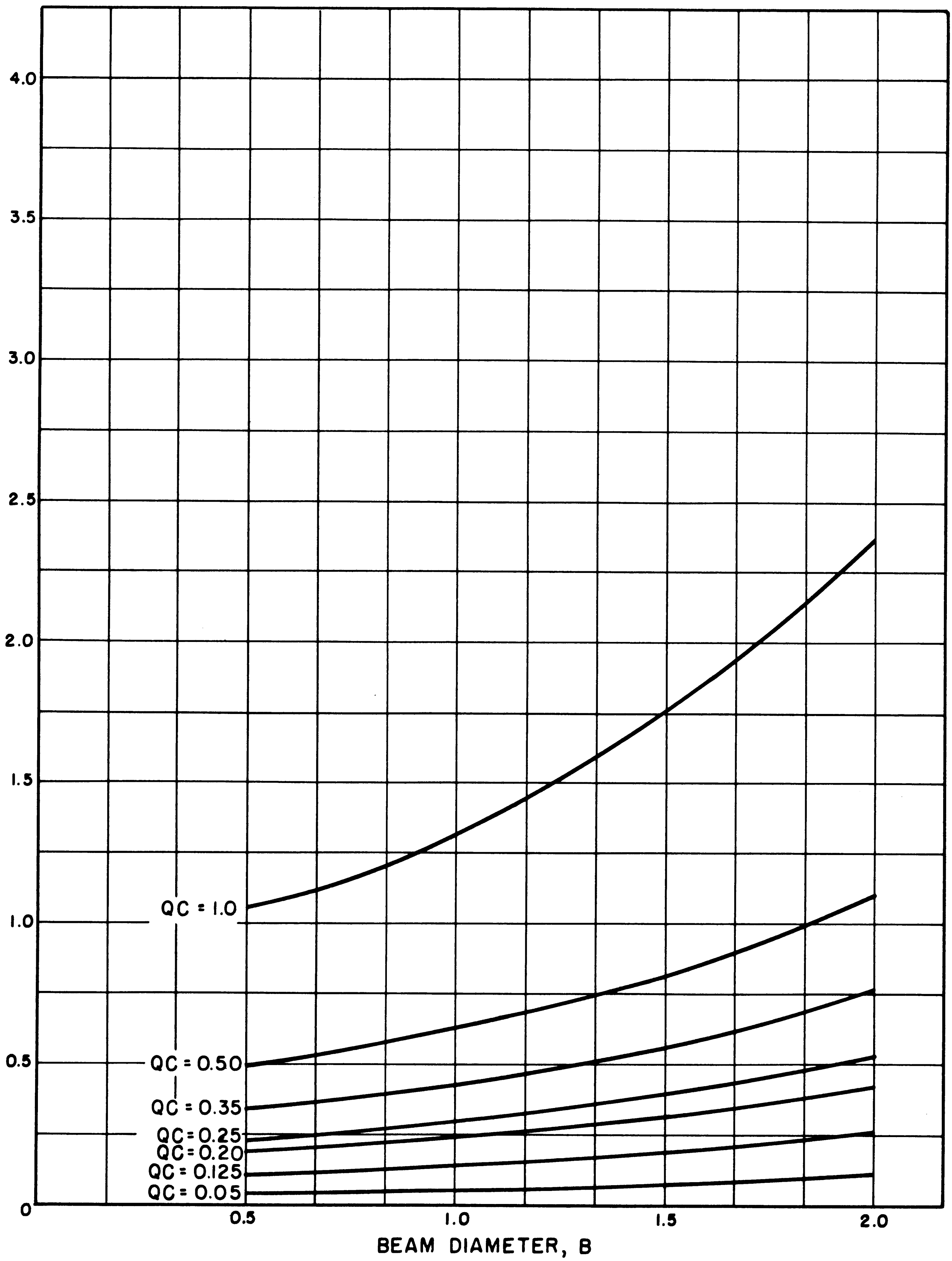


FIG. G.2 MICROPERVEANCE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE SPACE-CHARGE PARAMETER. (C = 0.05, a'/b' = 1.4)

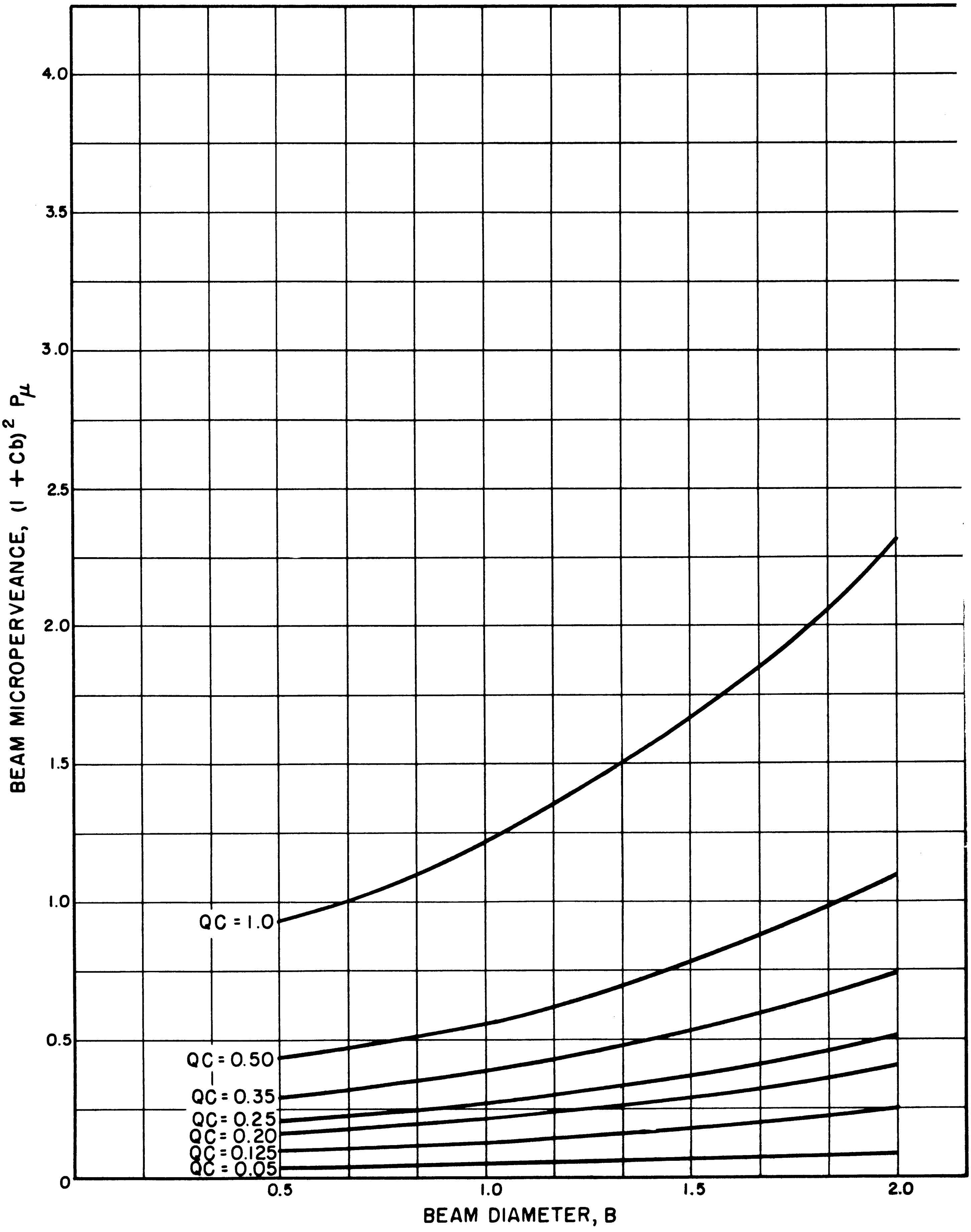


FIG. G.3 MICROPERVEANCE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE SPACE-CHARGE PARAMETER. ($C = 0.05$, $a'/b' = 1.6$)

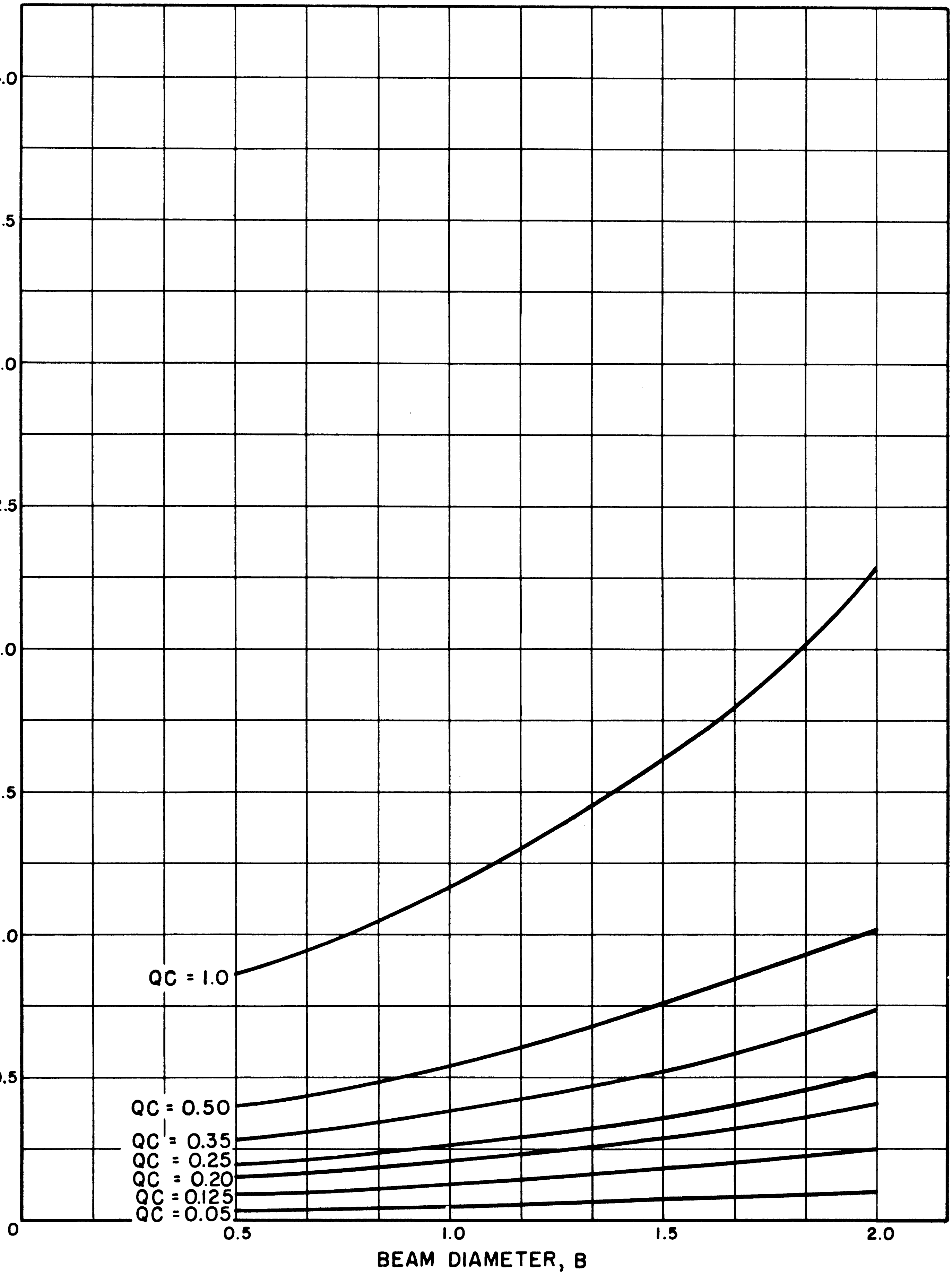


FIG. G.4 MICROPERVEANCE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE SPACE-CHARGE PARAMETER. (C = 0.05, a'/b' = 1.8)

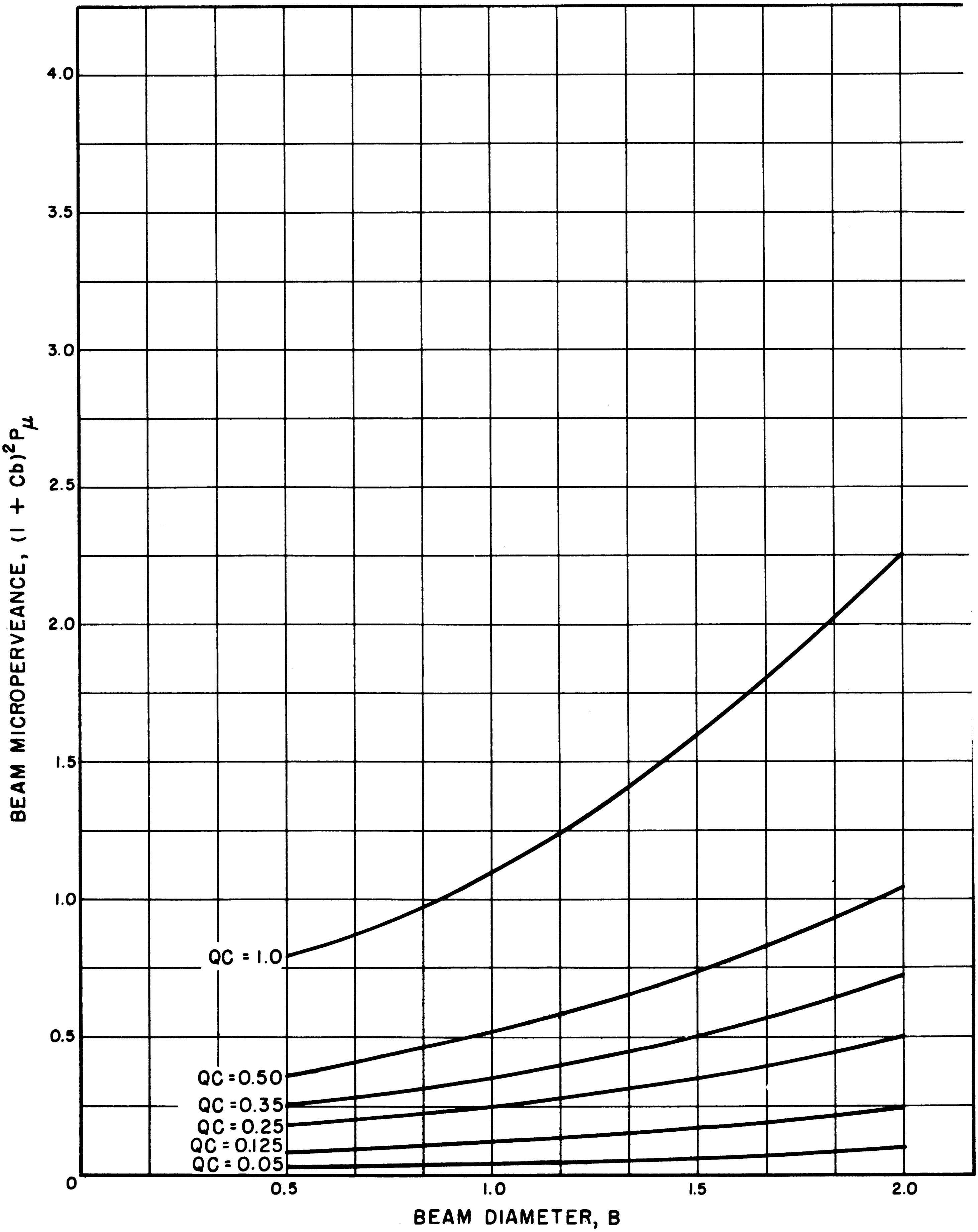


FIG. G.5 MICROPERVEANCE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE SPACE-CHARGE PARAMETER. ($C = 0.05$, $a'/b' = 2.0$)

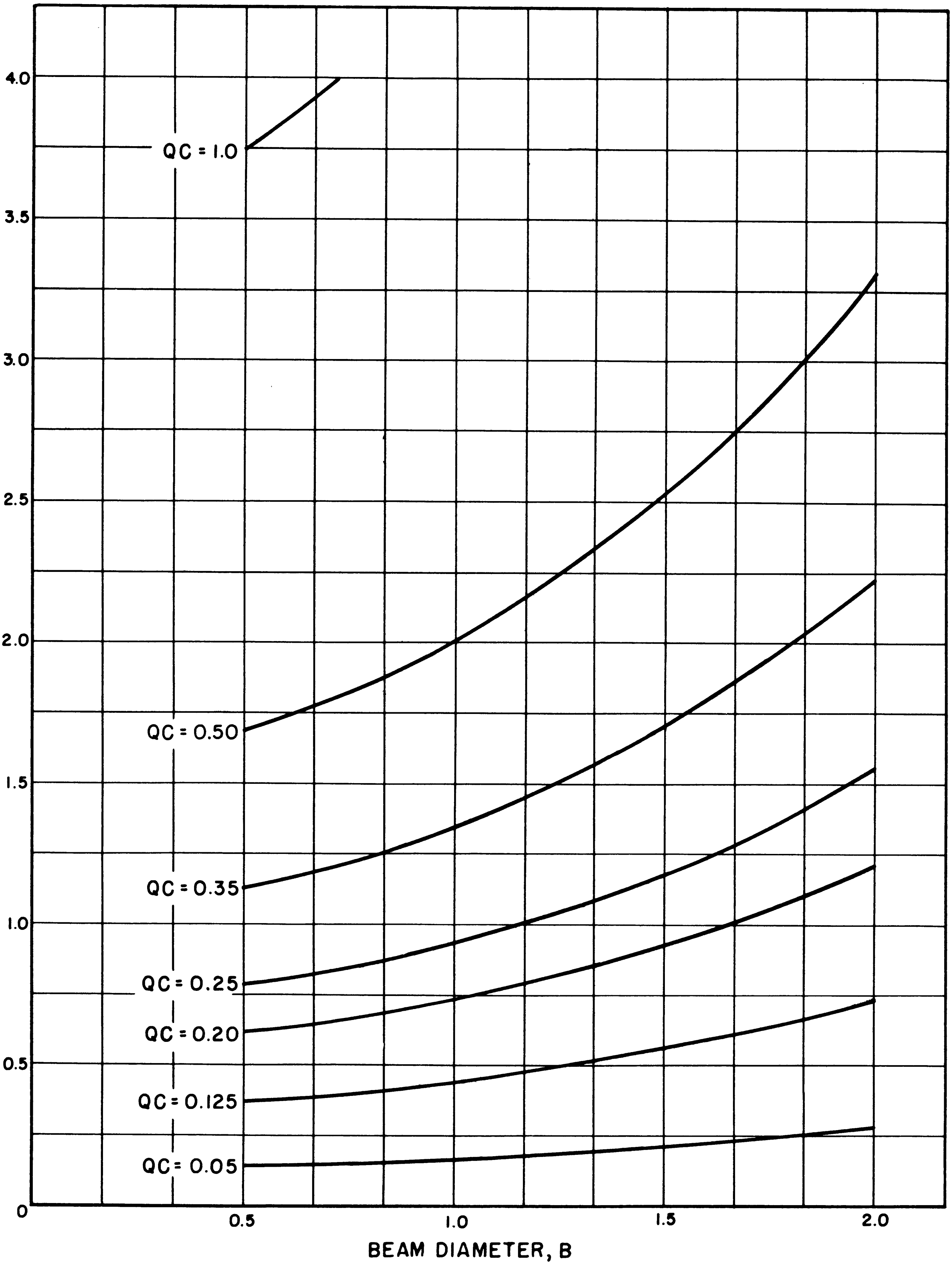


FIG. G.6 MICROPERVEANCE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE SPACE-CHARGE PARAMETER ($C = 0.08$, $a'/b' = 1.2$)

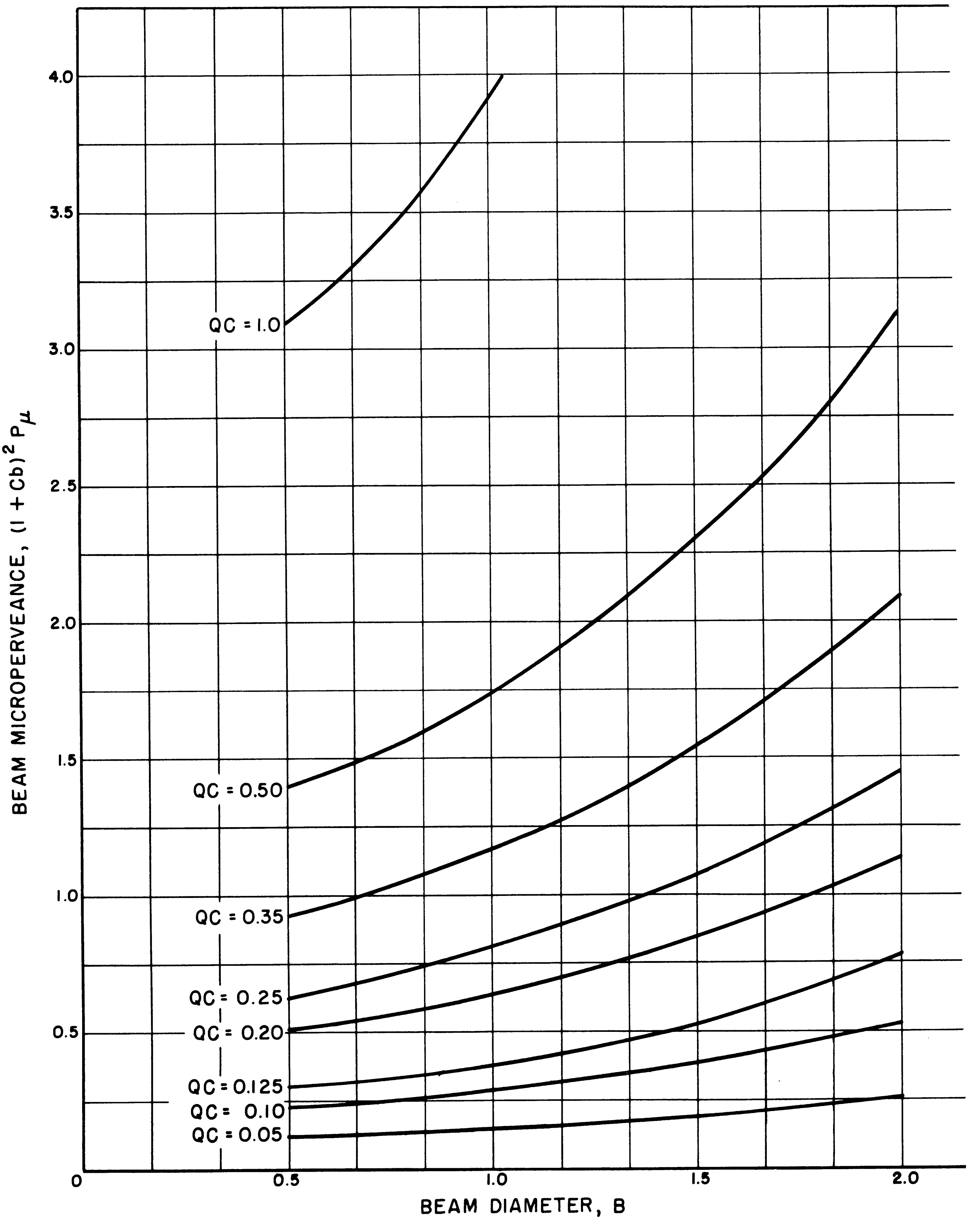


FIG. G.7 MICROPERVEANCE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE SPACE-CHARGE PARAMETER. ($C = 0.08$, $a'/b' = 1.4$)

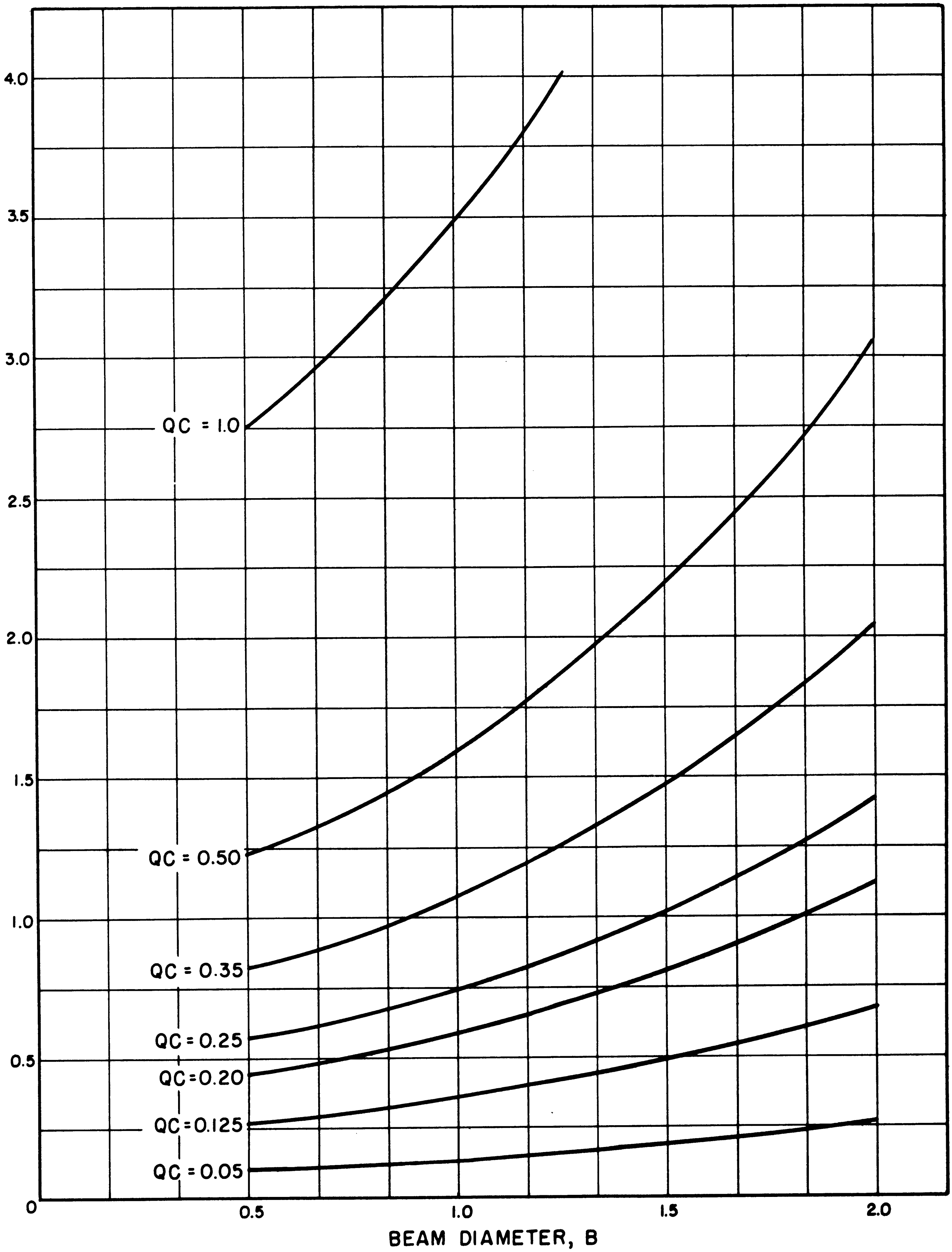


FIG. G.8 MICROPERVEANCE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE SPACE-CHARGE PARAMETER. ($C = 0.08$, $a'/b' = 1.6$)

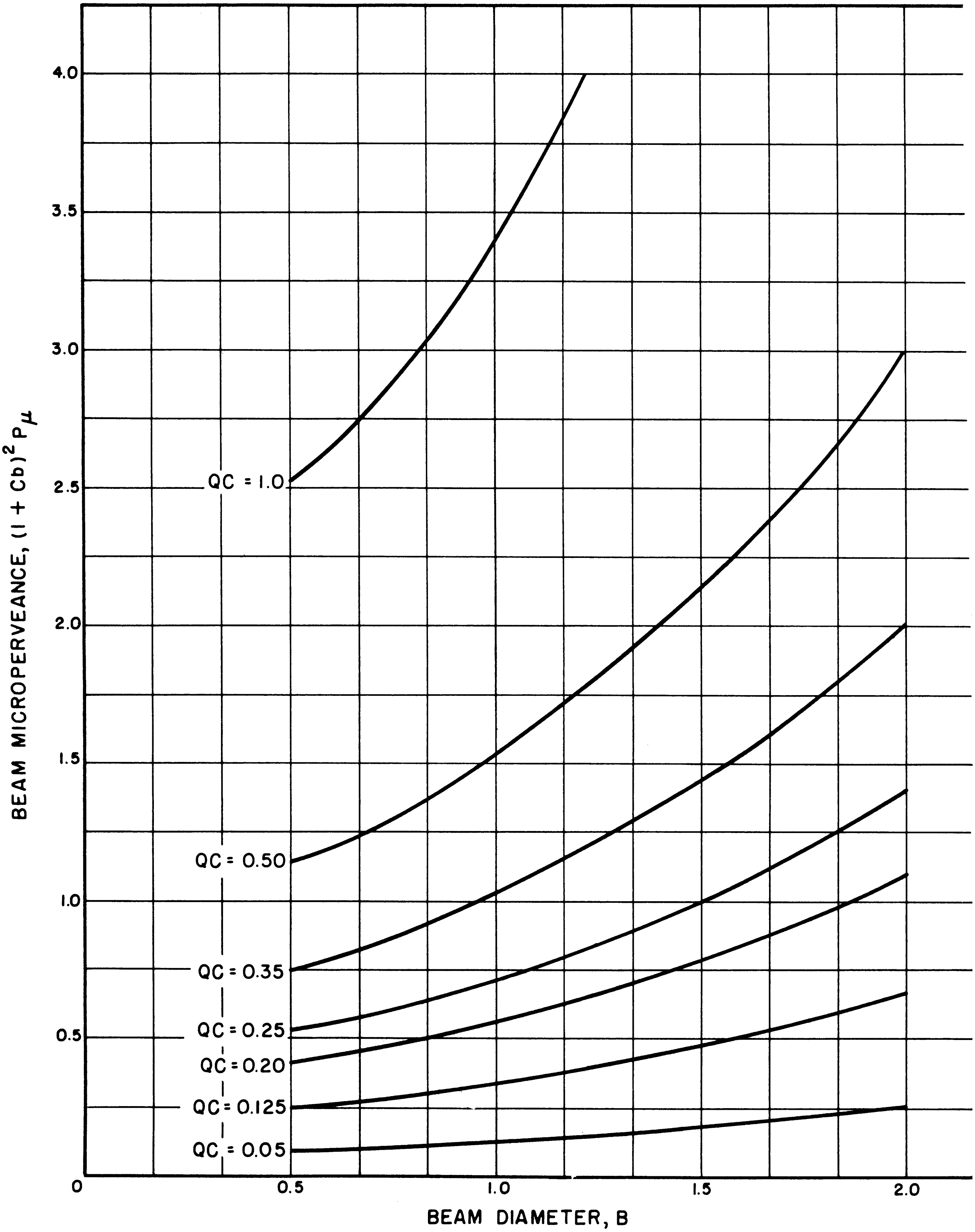


FIG. G.9 MICROPERVEANCE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE SPACE-CHARGE PARAMETER. ($C = 0.08$, $a'/b' = 1.8$)

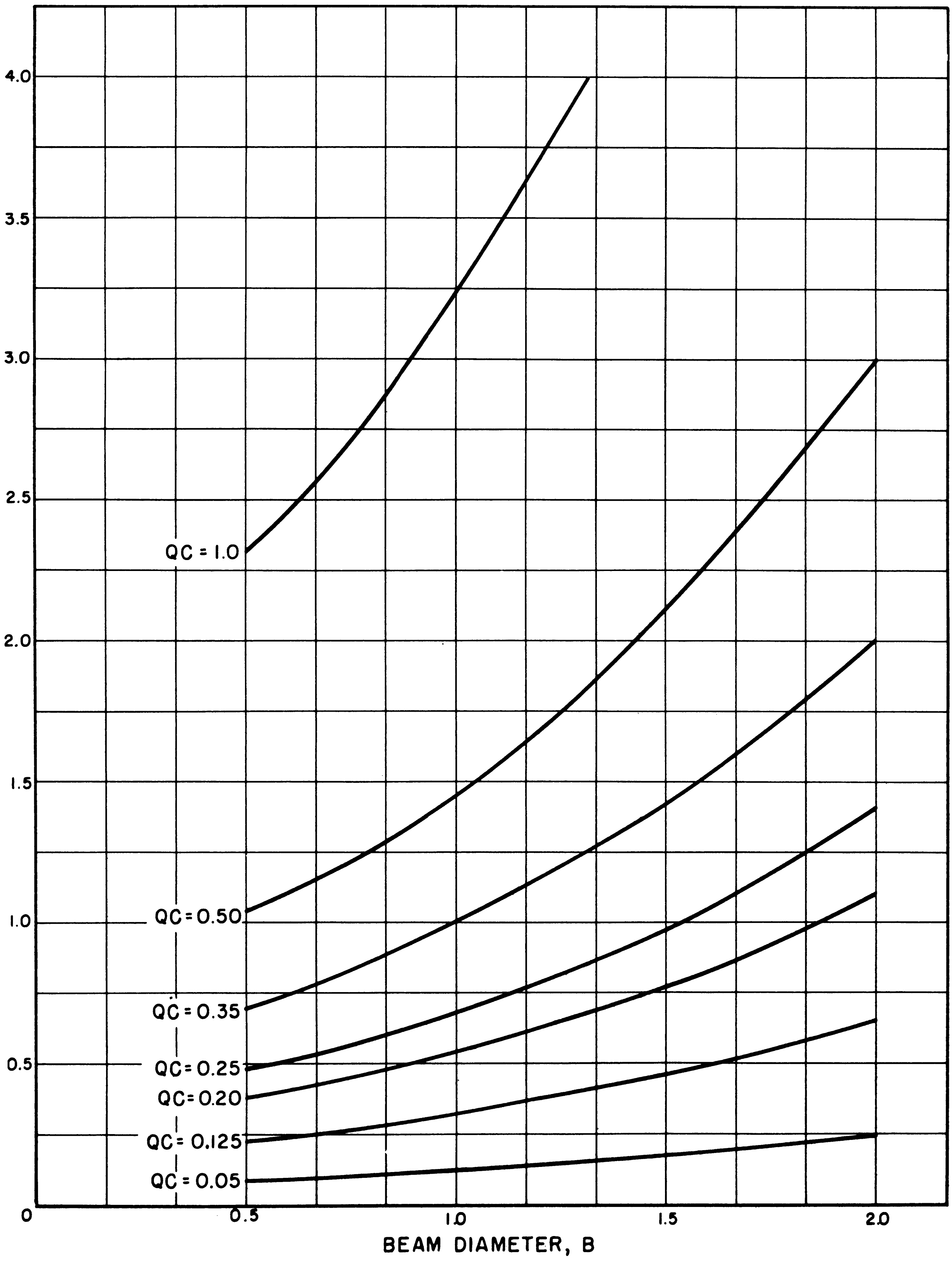


FIG. G.10 MICROPERVEANCE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE SPACE-CHARGE PARAMETER. (C = 0.08, a'/b' = 2.0)

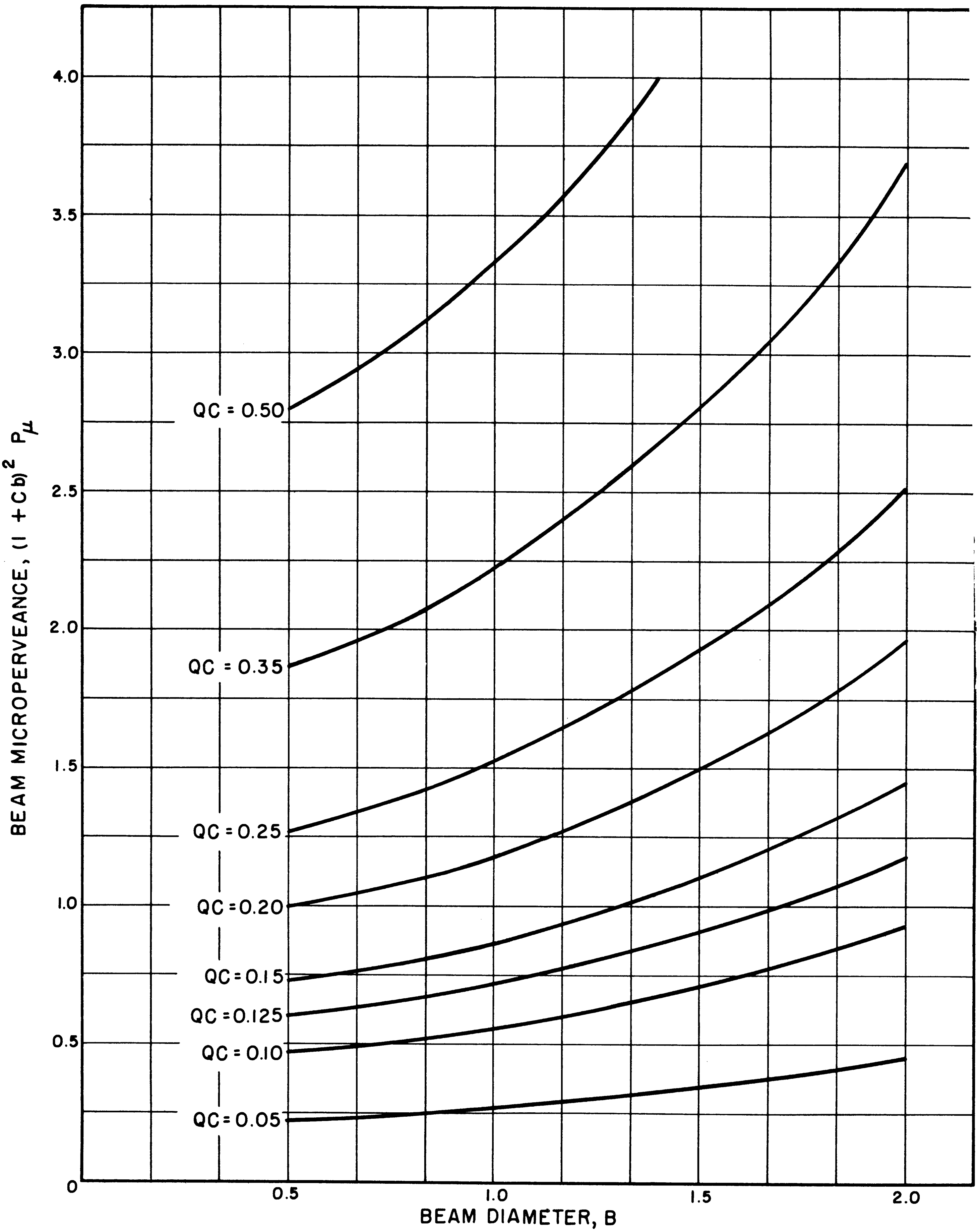


FIG. G.11 MICROPERVEANCE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE SPACE-CHARGE PARAMETER. (C = 0.10, a'/b' = 1.2)

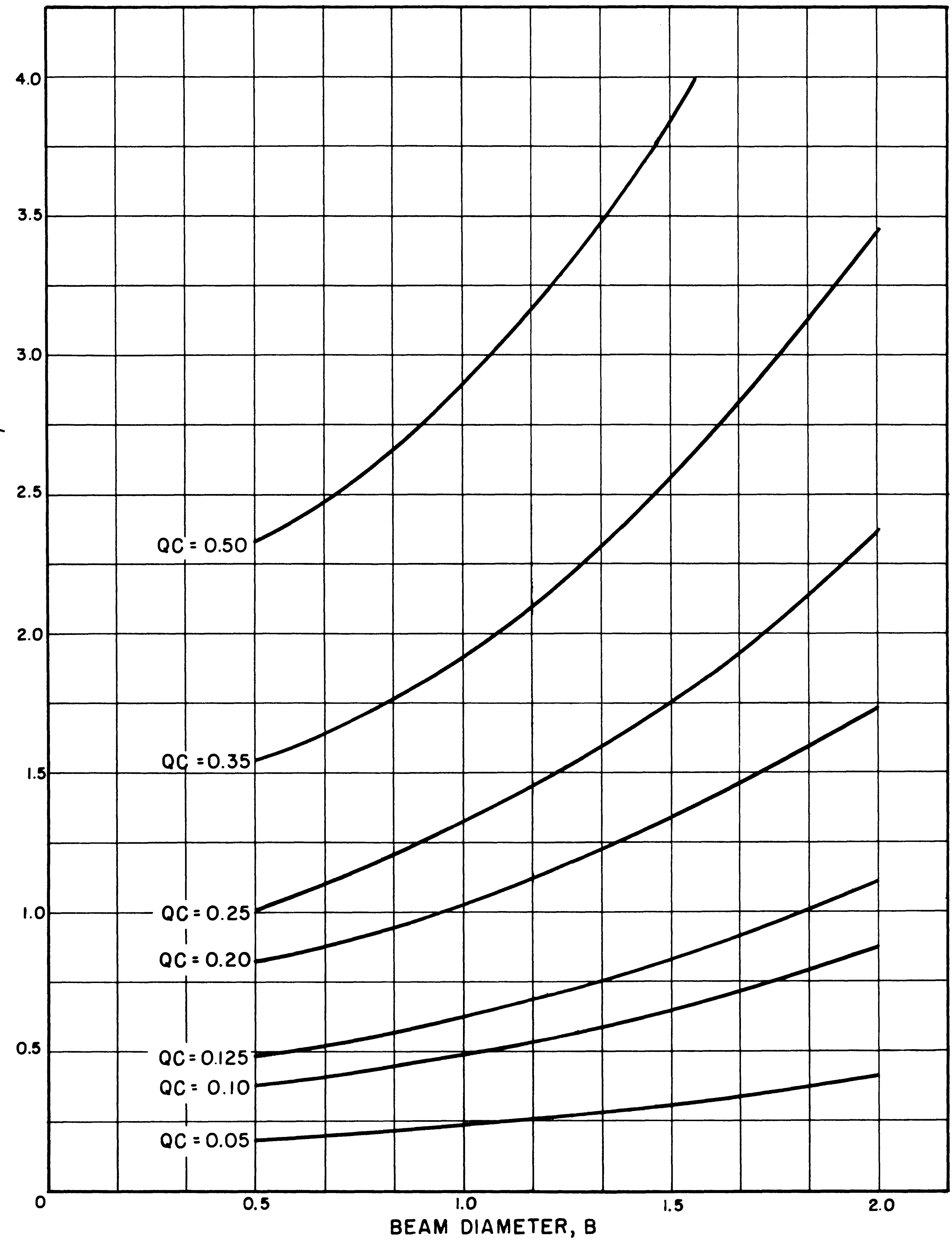


FIG. G.12 MICROPERVEANCE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE SPACE-CHARGE PARAMETER. (C = 0.10, a'/b' = 1.4)

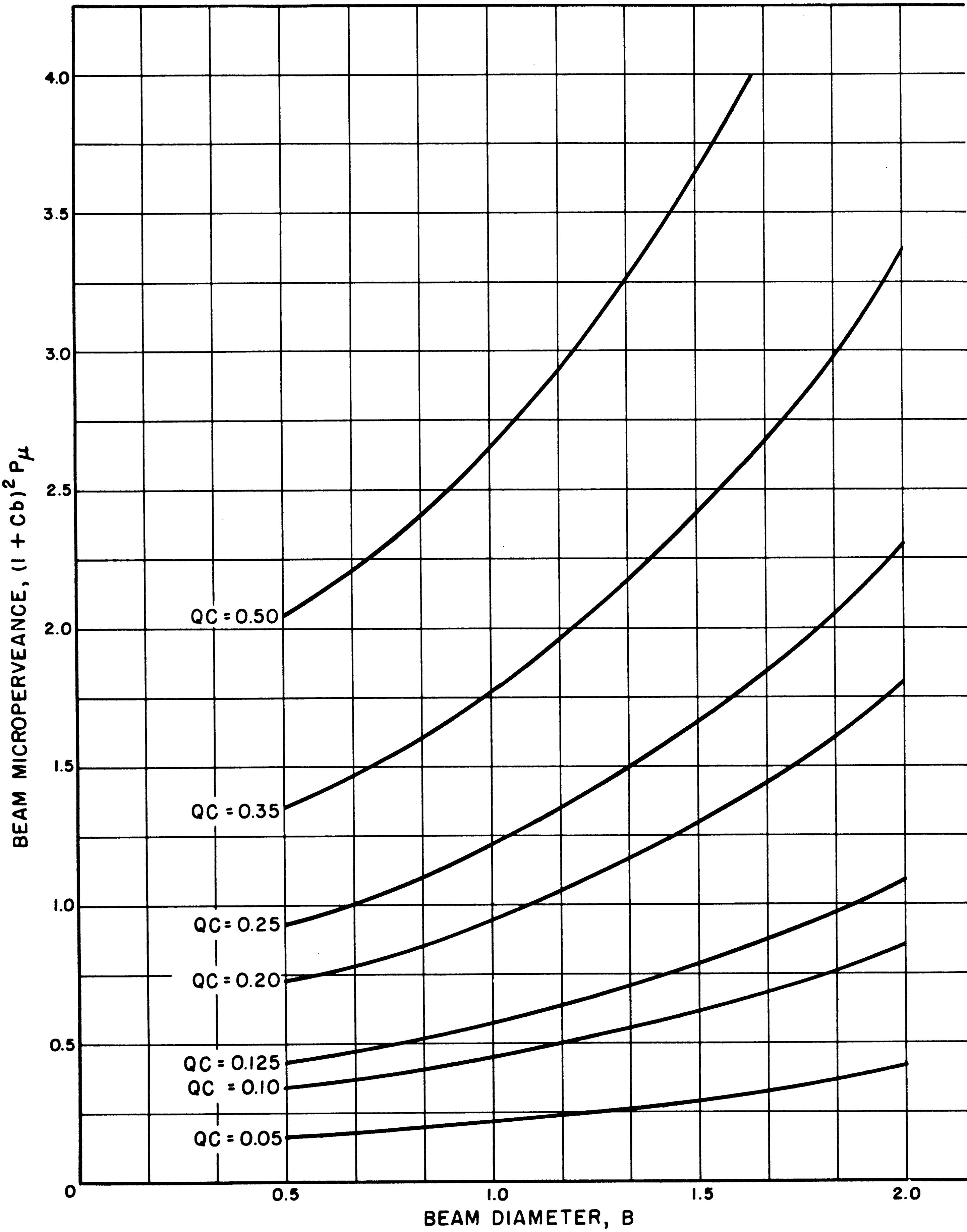


FIG. G.13 MICROPERVEANCE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE SPACE-CHARGE PARAMETER. ($C = 0.10$, $a'/b' = 1.6$)

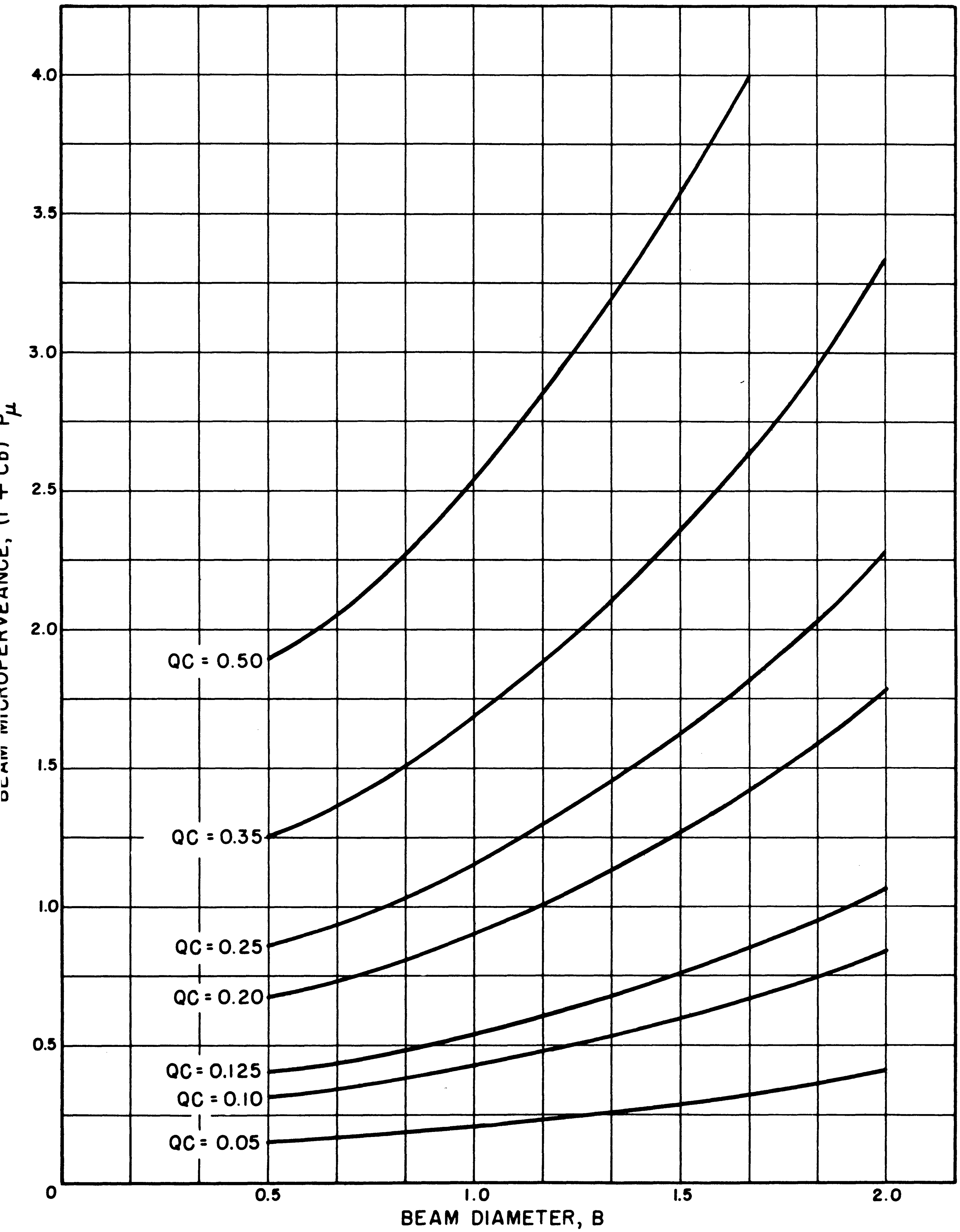


FIG. G.14 MICROPERVEANCE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE SPACE-CHARGE PARAMETER. ($C = 0.10$, $a'/b' = 1.8$)

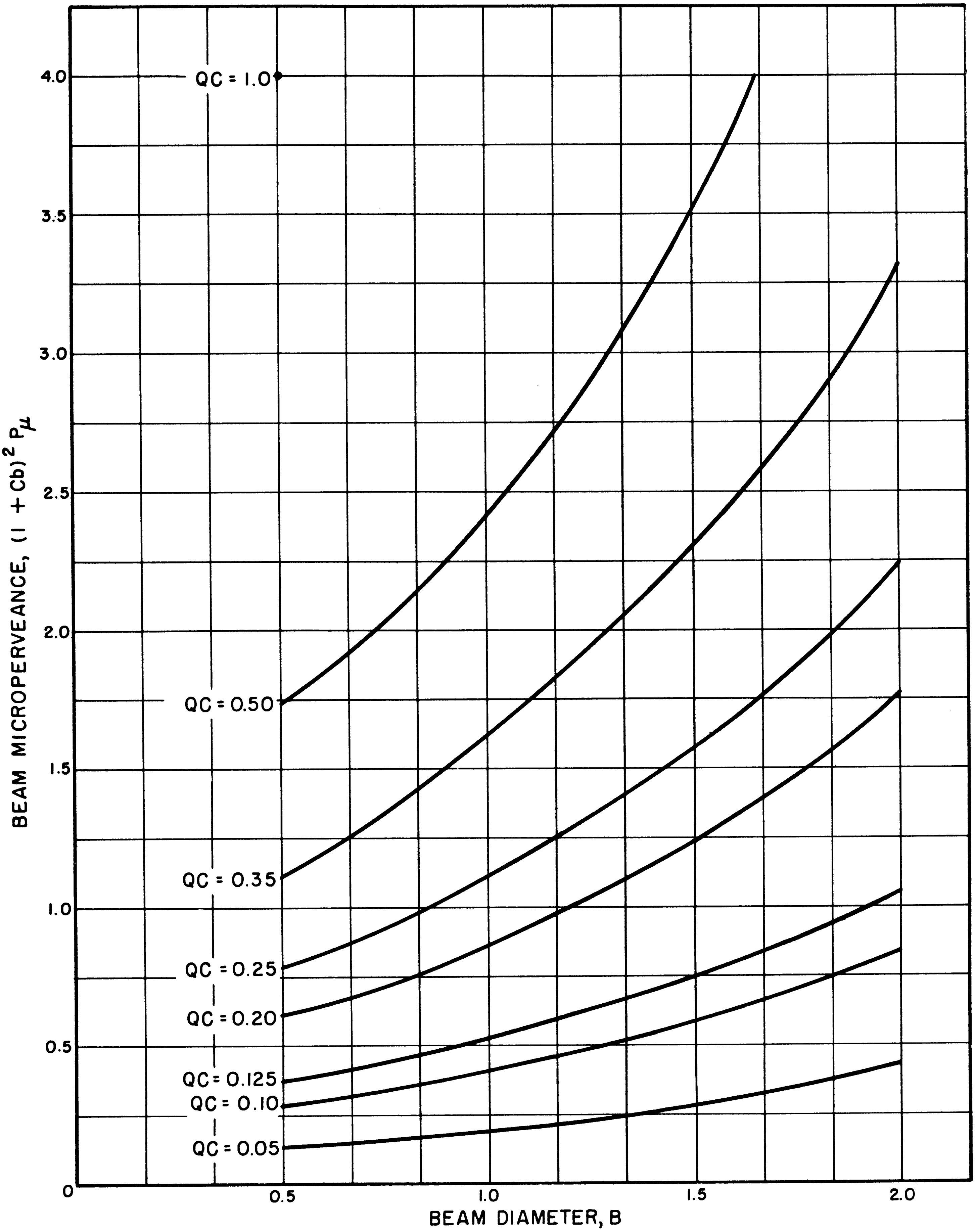


FIG. G.15 MICROPERVEANCE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE SPACE-CHARGE PARAMETER. ($C = 0.1$, $a'/b' = 2.0$)

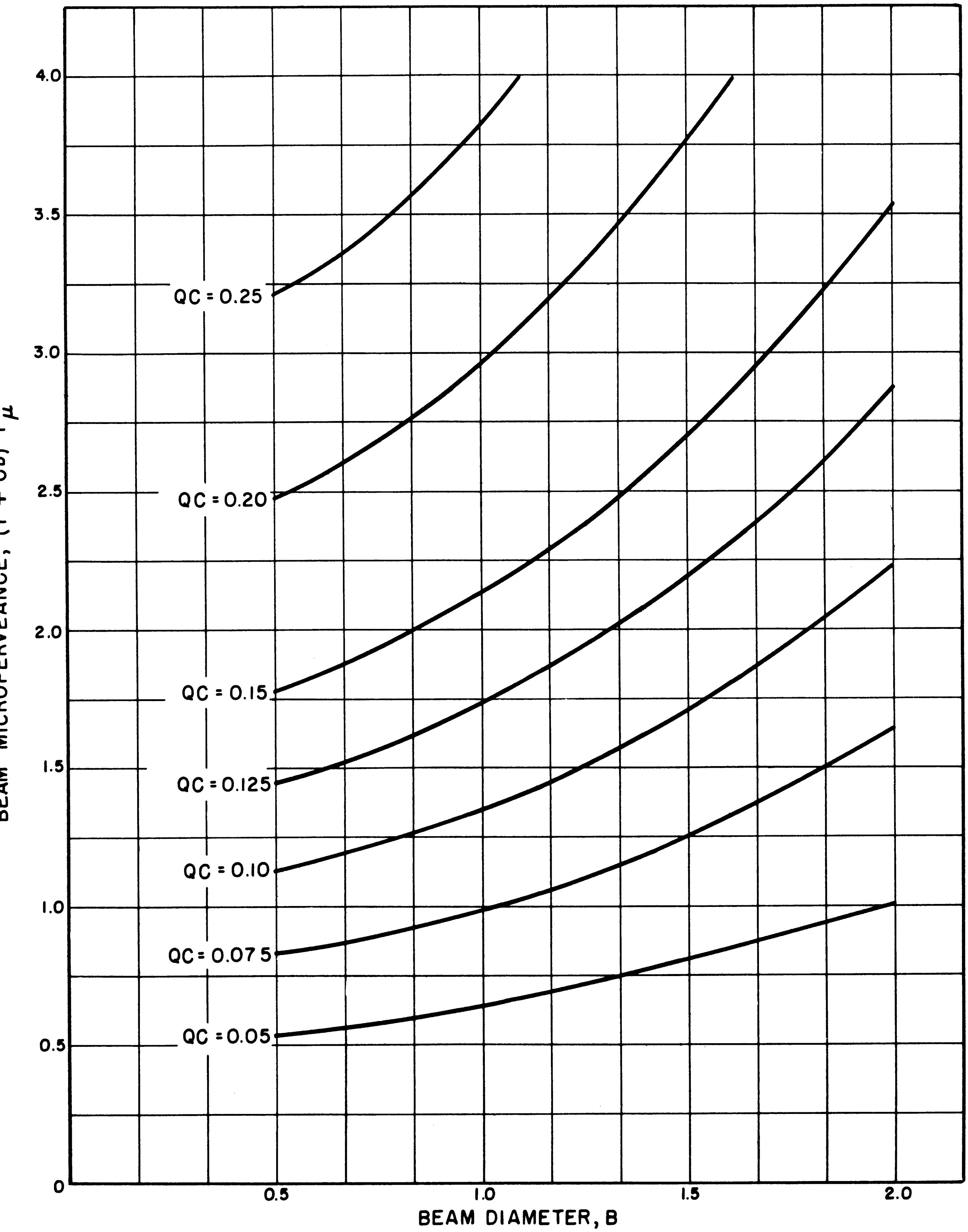


FIG. G.16 MICROPERVEANCE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE SPACE-CHARGE PARAMETER. (C = 0.15, a'/b' = 1.2)

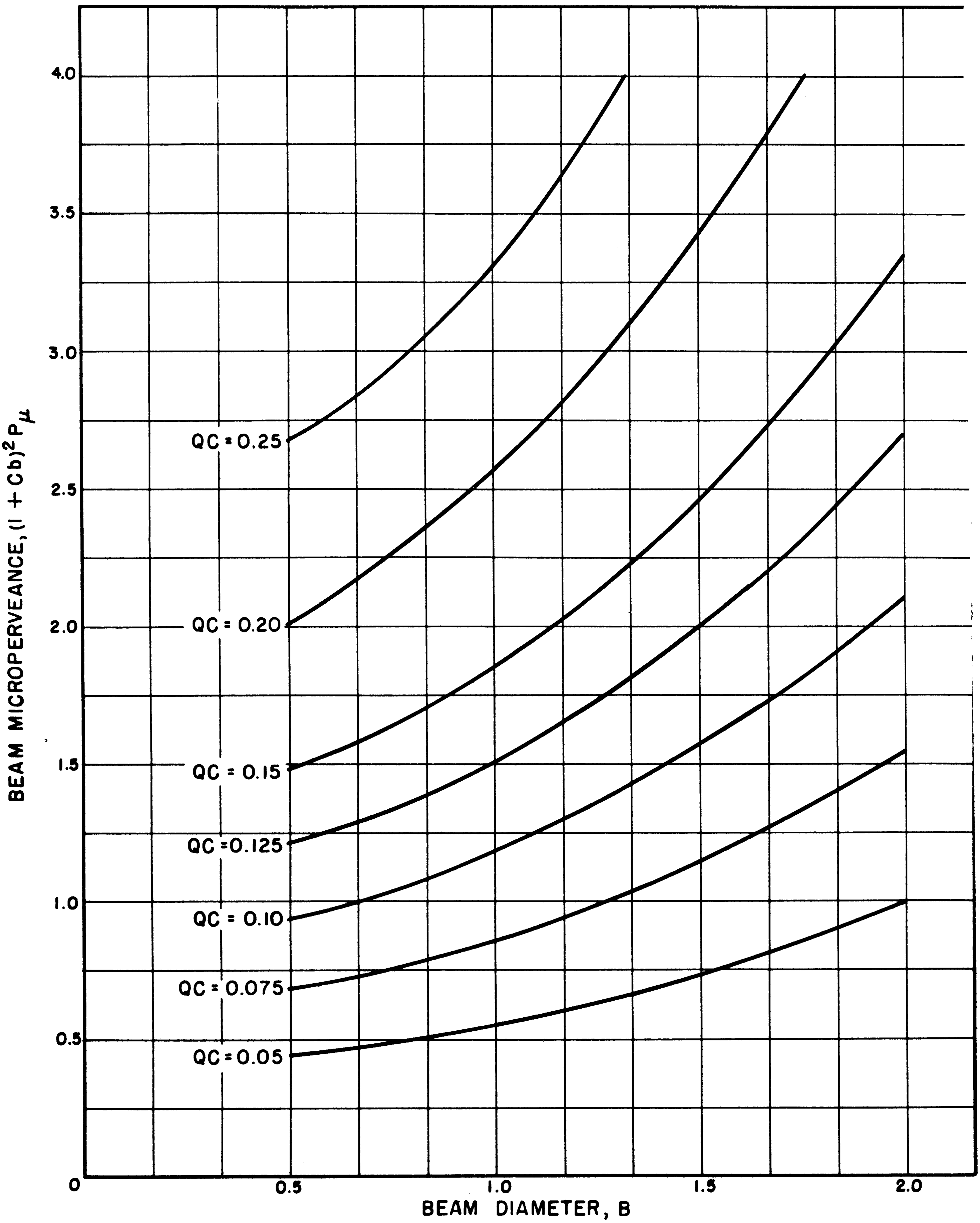


FIG. G.17 MICROPERVEANCE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE SPACE-CHARGE PARAMETER. ($C = 0.15$, $a'/b' = 1.4$).

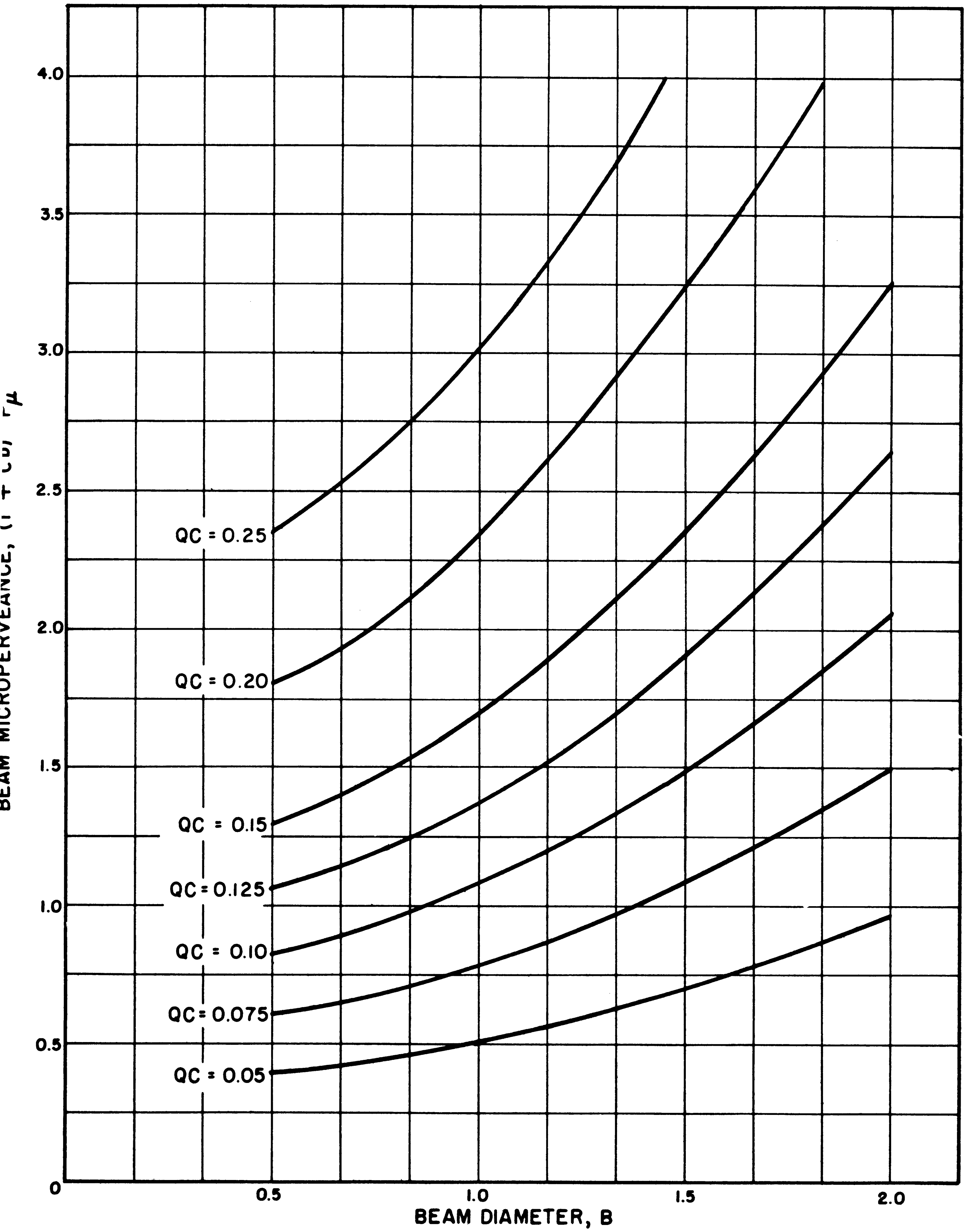


FIG. G.18 MICROPERVEANCE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE SPACE-CHARGE PARAMETER. (C = 0.15, a'/b' = 1.6)

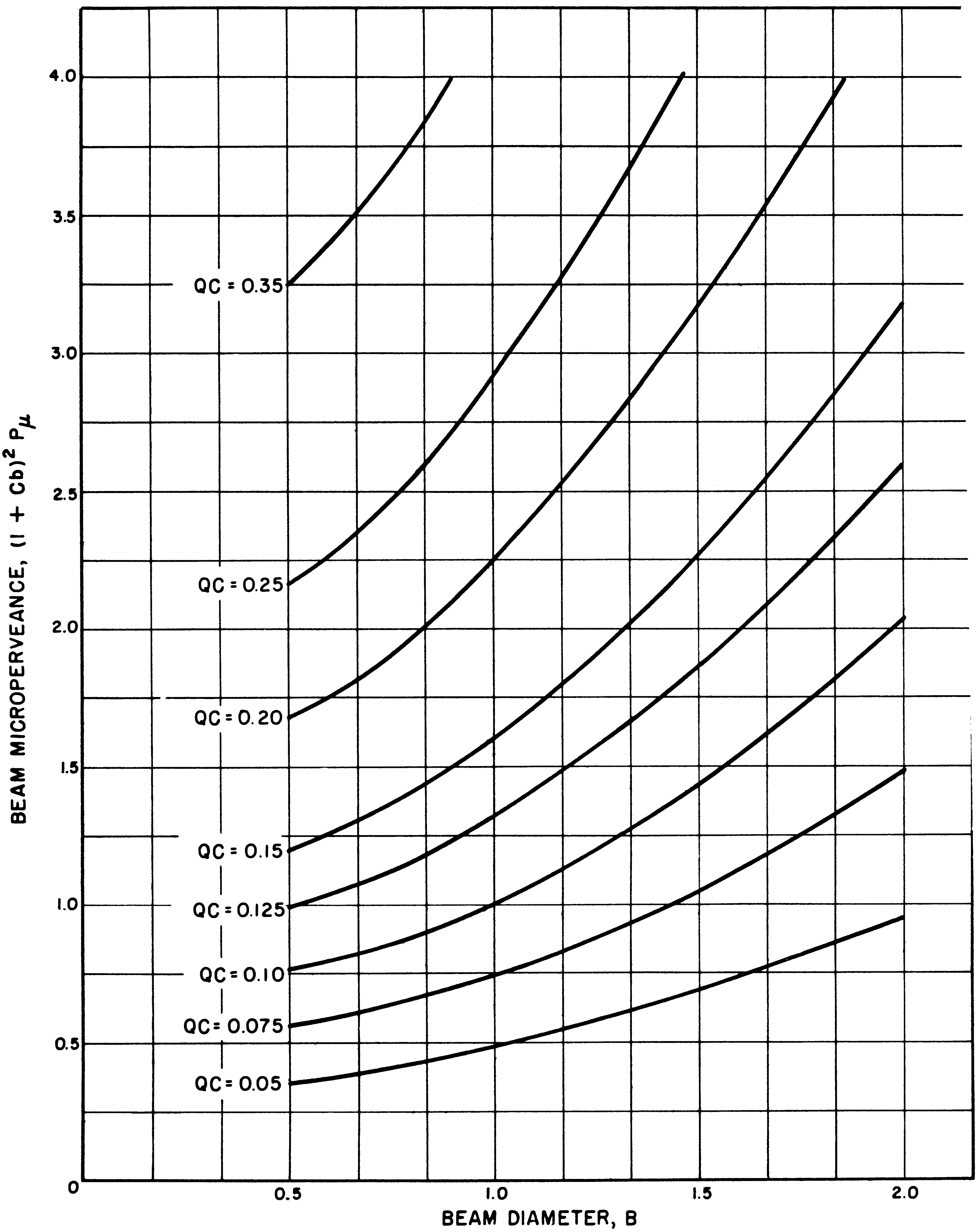


FIG. G.19 MICROPERVEANCE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE SPACE-CHARGE PARAMETER. (C = 0.15, a'/b' = 1.8)

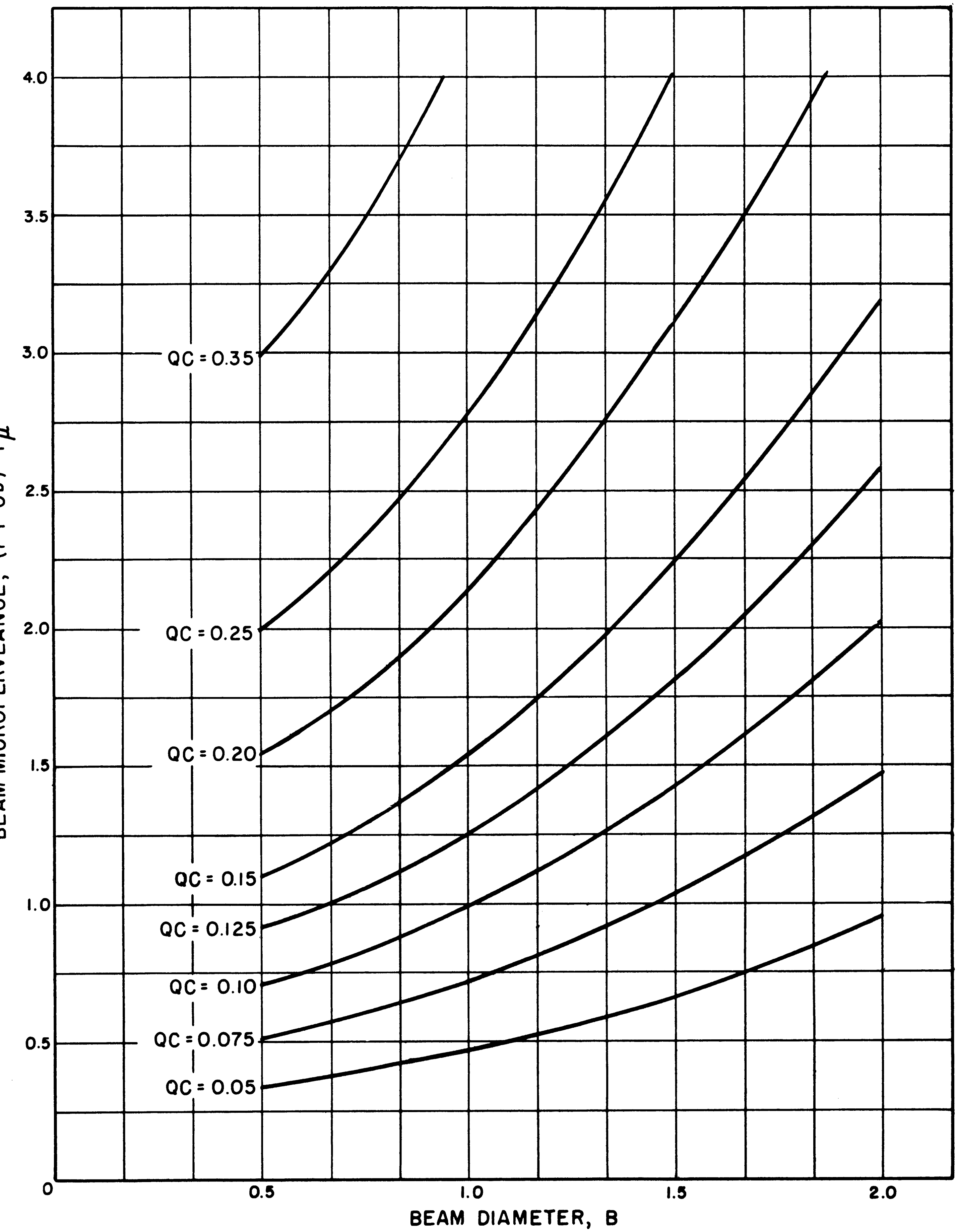


FIG. G.20 MICROPERVEANCE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE SPACE-CHARGE PARAMETER. (C = 0.15, a'/b' = 2.0)

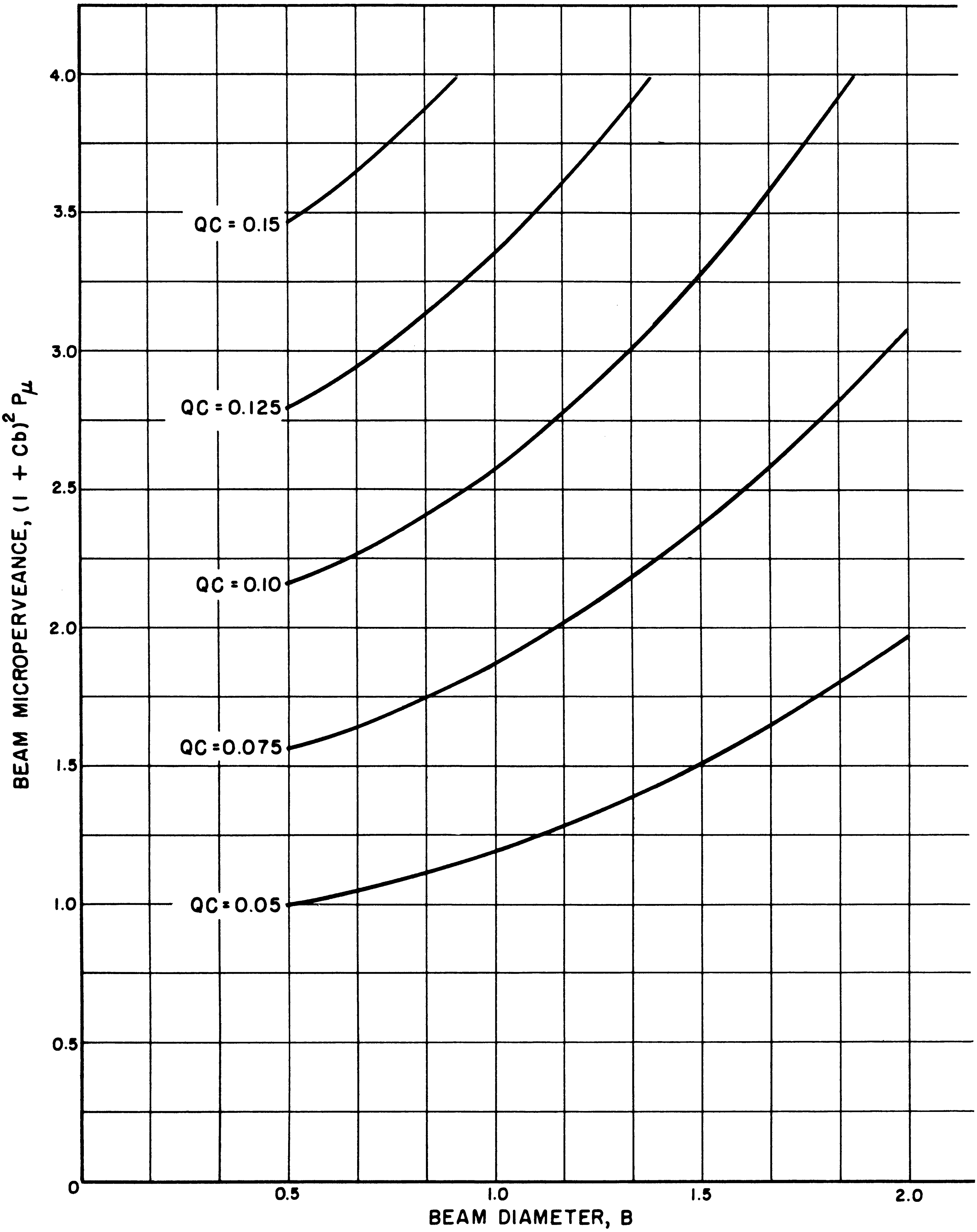


FIG. G.21 MICROPERVEANCE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE SPACE-CHARGE PARAMETER. ($C = 0.20$, $a'/b' = 1.2$)

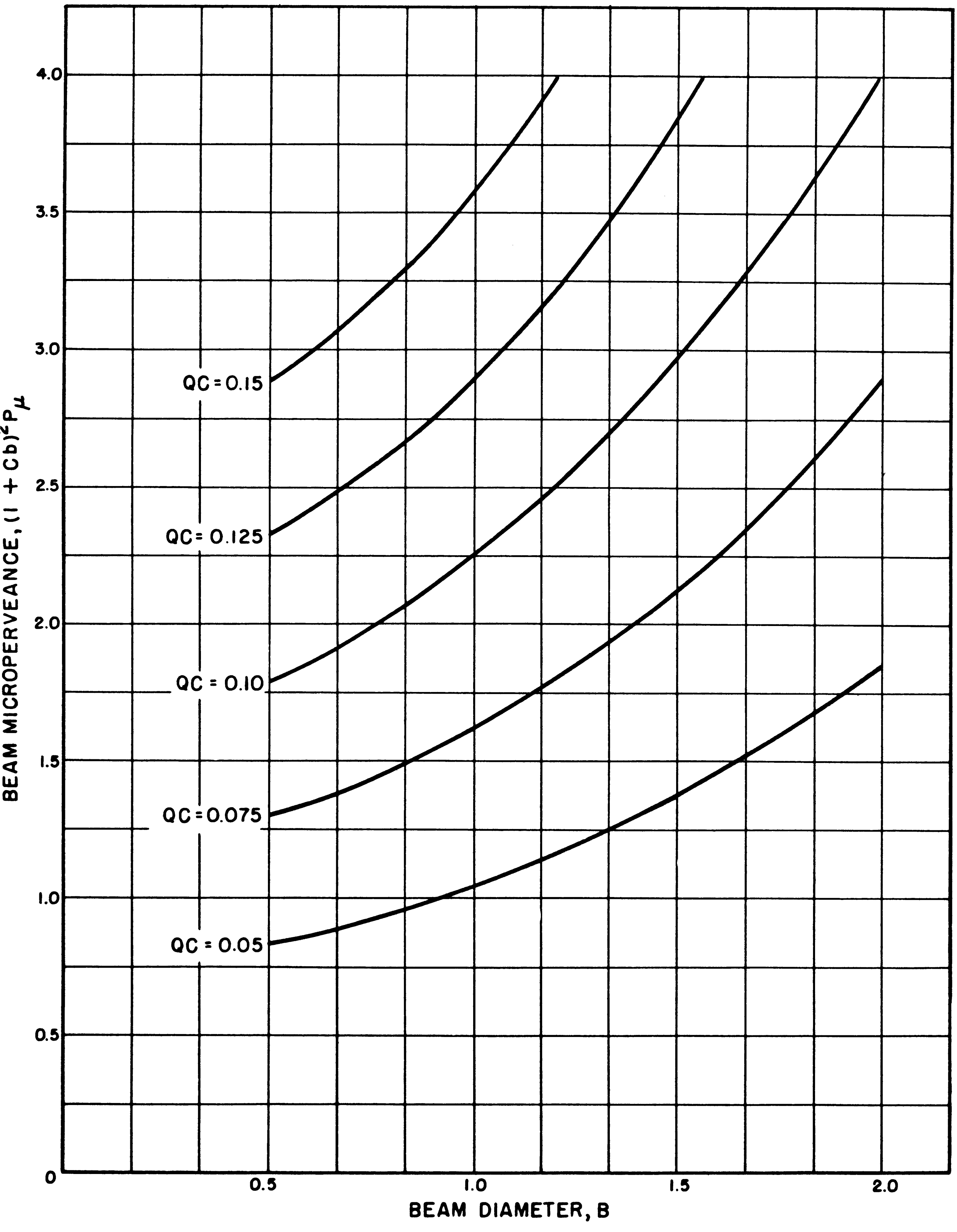


FIG. G.22 MICROPERVEANCE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE SPACE-CHARGE PARAMETER. ($C = 0.20$, $a'/b' = 1.4$)

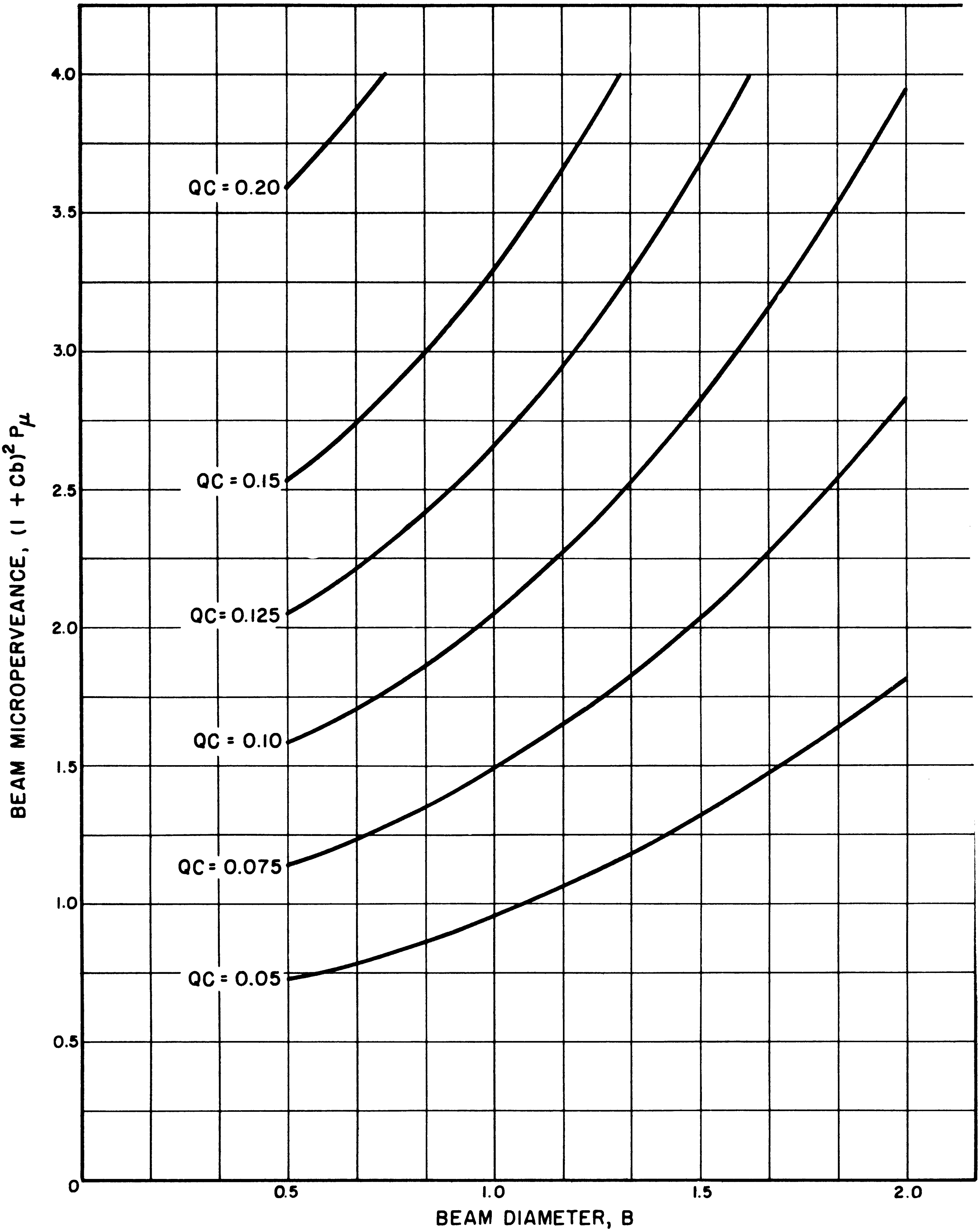


FIG. G.23 MICROPERVEANCE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE SPACE-CHARGE PARAMETER. (C=0.20, a'/b = 1.6)

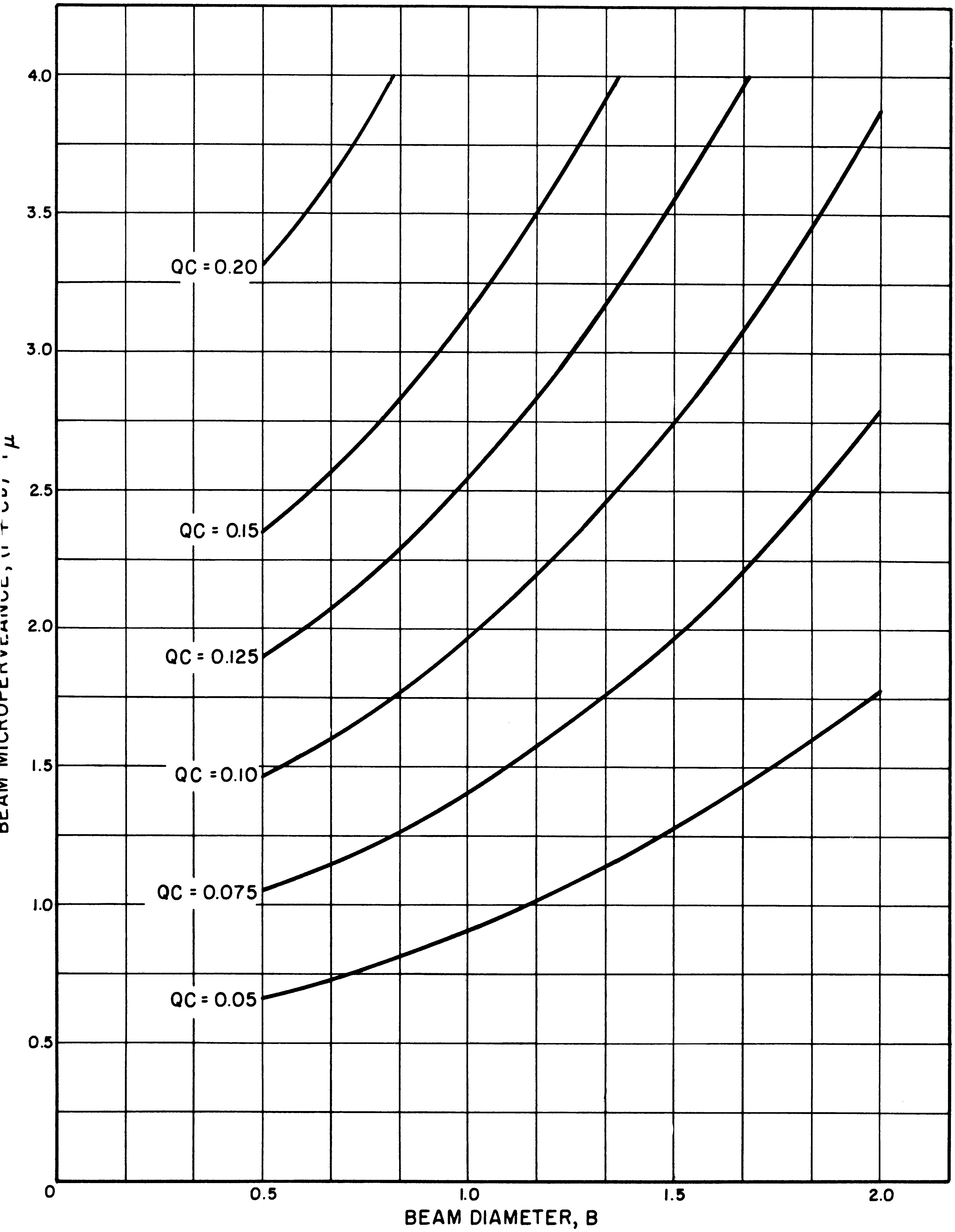


FIG. G.24 MICROPERVEANCE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE SPACE-CHARGE PARAMETER. (C = 0.20, a'/b' = 1.8)

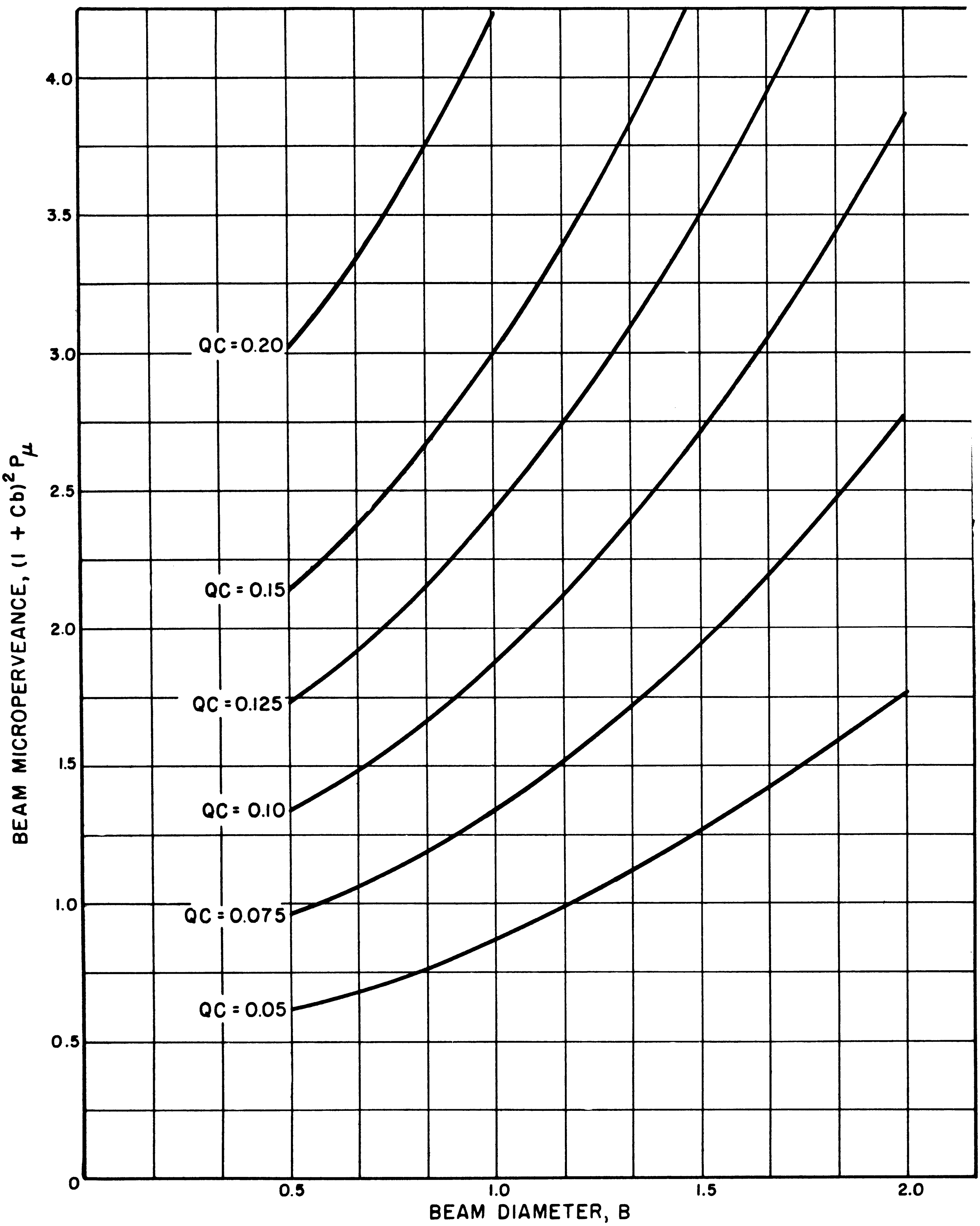


FIG. G.25 MICROPERVEANCE VS. BEAM DIAMETER FOR VARIOUS VALUES OF THE SPACE-CHARGE PARAMETER. ($C = 0.20$, $a'/b' = 2.0$)

SECTION H

PERVEANCE CORRECTION FACTOR

The curves of the perveance correction factor vs. the space-charge parameter are arranged according to ascending values of the gain parameter.

Parameter	Range
C	0.05 to 0.20

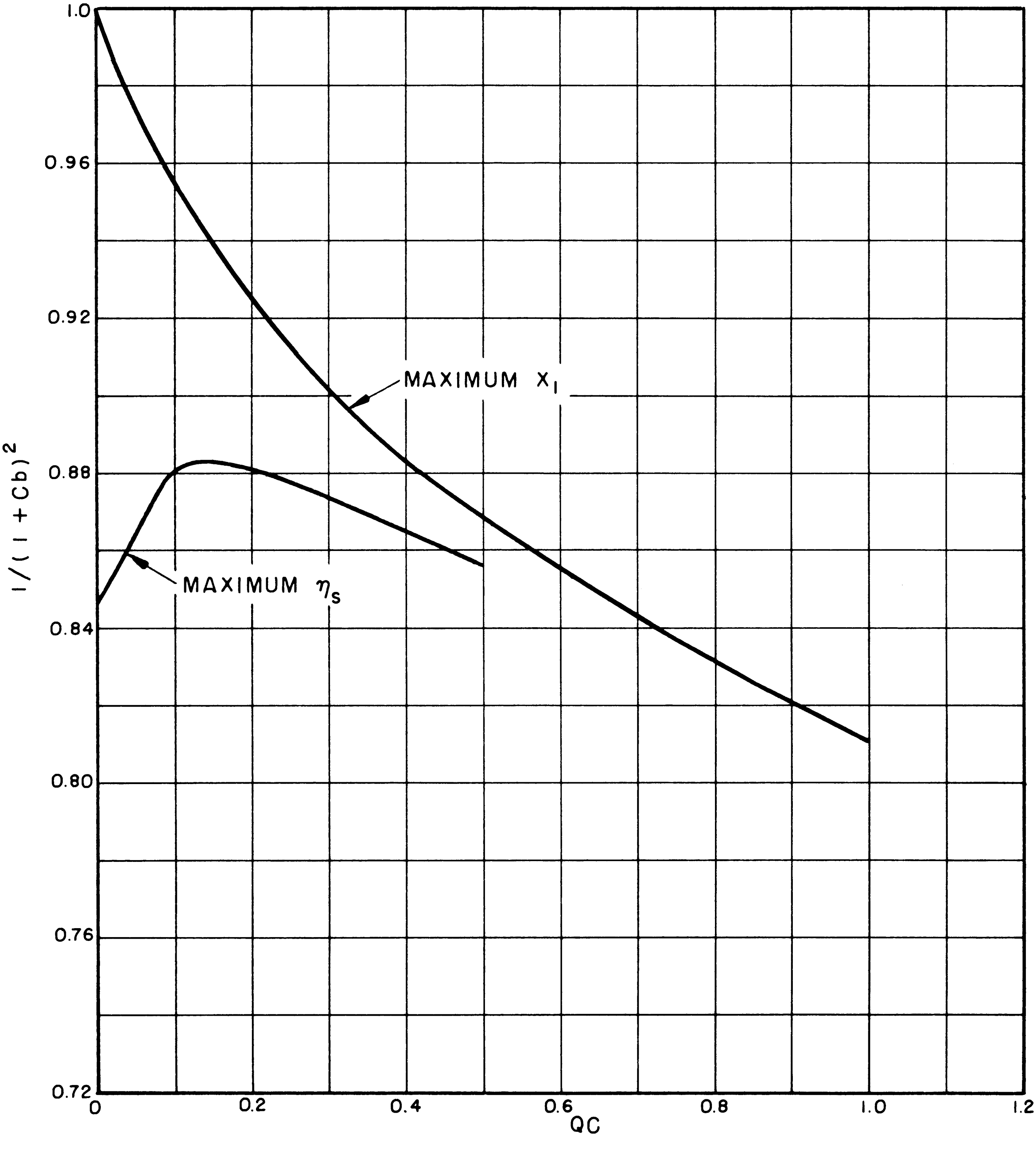


FIG. H.1 PERVEANCE CORRECTION FACTOR. (C = 0.05, d = 0)

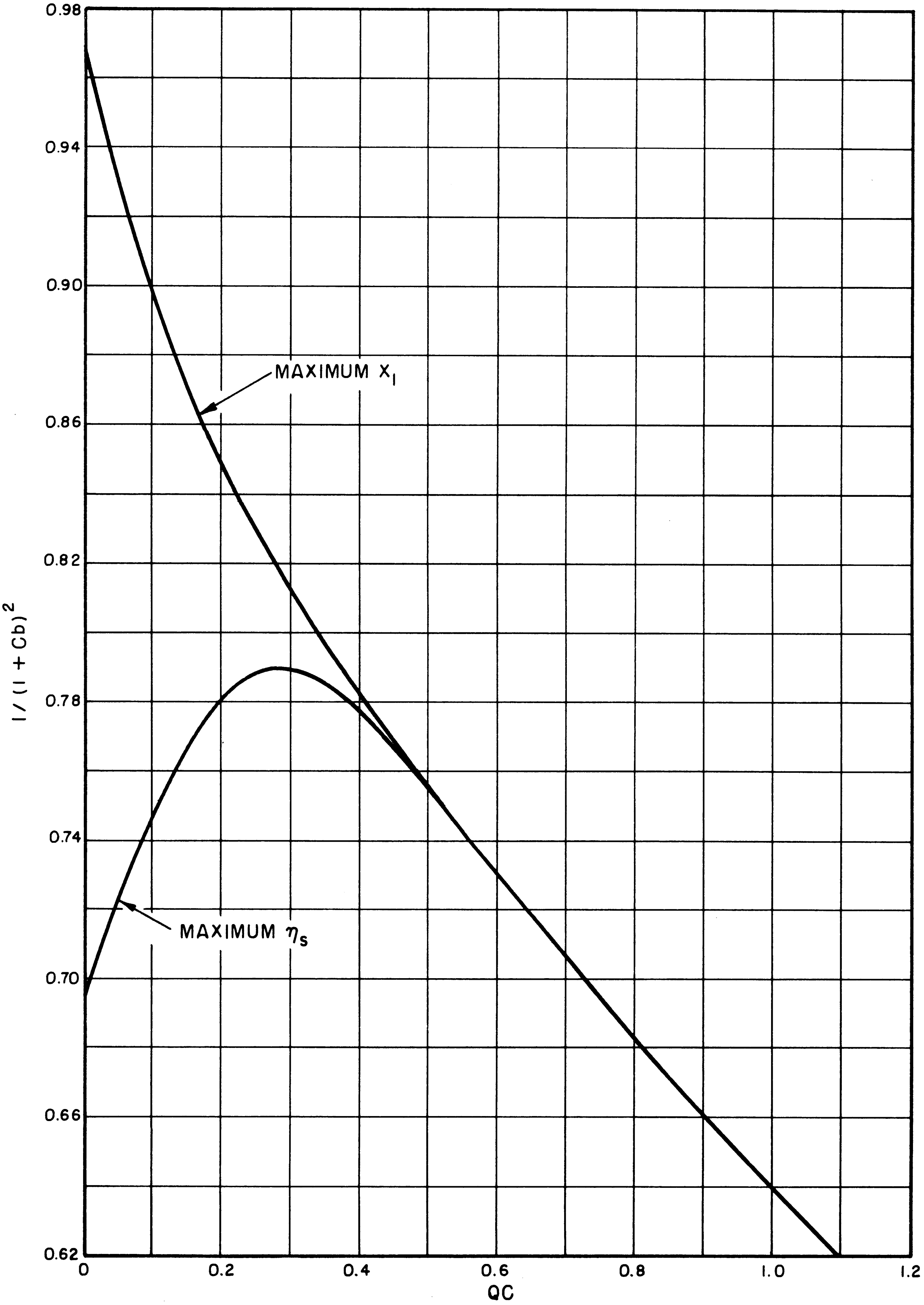


FIG. H.2 PERVEANCE CORRECTION FACTOR. (C = 0.10, d = 0)

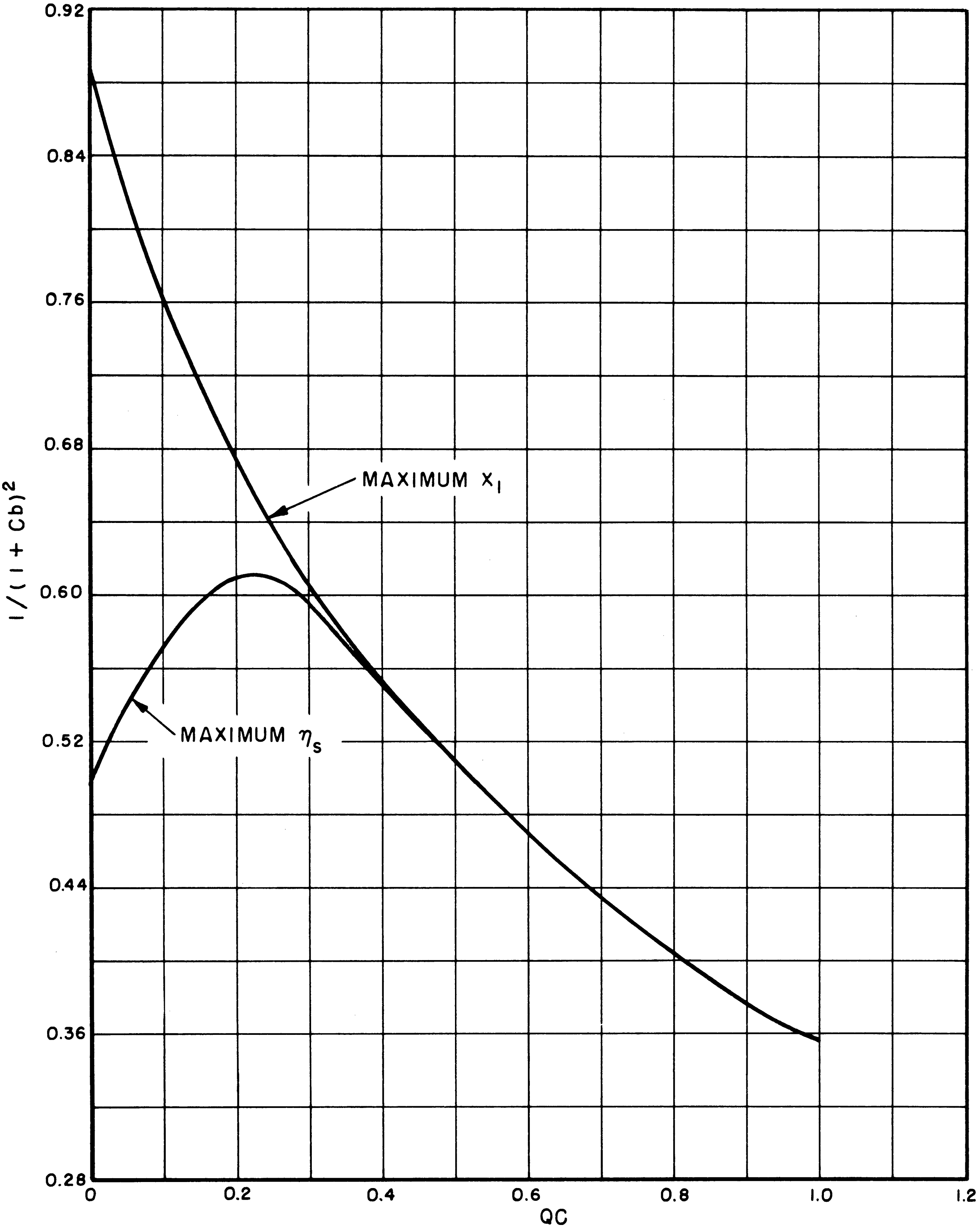


FIG. H.3 PERVEANCE CORRECTION FACTOR. (C = 0.2, d = 0)

SECTION I

ELECTRON STREAM CHARACTERISTICS

The following useful electron stream characteristic curves are included:

1. QC vs. B with ω_p/ω as the Parameter.

   $C = 0.05$; $a'/b' = 1.4, 2.0.$
   $C = 0.10$; $a'/b' = 1.4, 2.0.$
   $C = 0.20$; $a'/b' = 1.4, 2.0.$

2. R_n vs. B with a'/b' as the Parameter.

3. Electron Stream Perveance and Power.

4. Nomograph of Stream Perveance and Power.

5. Magnetic Field Required for Brillouin Flow.

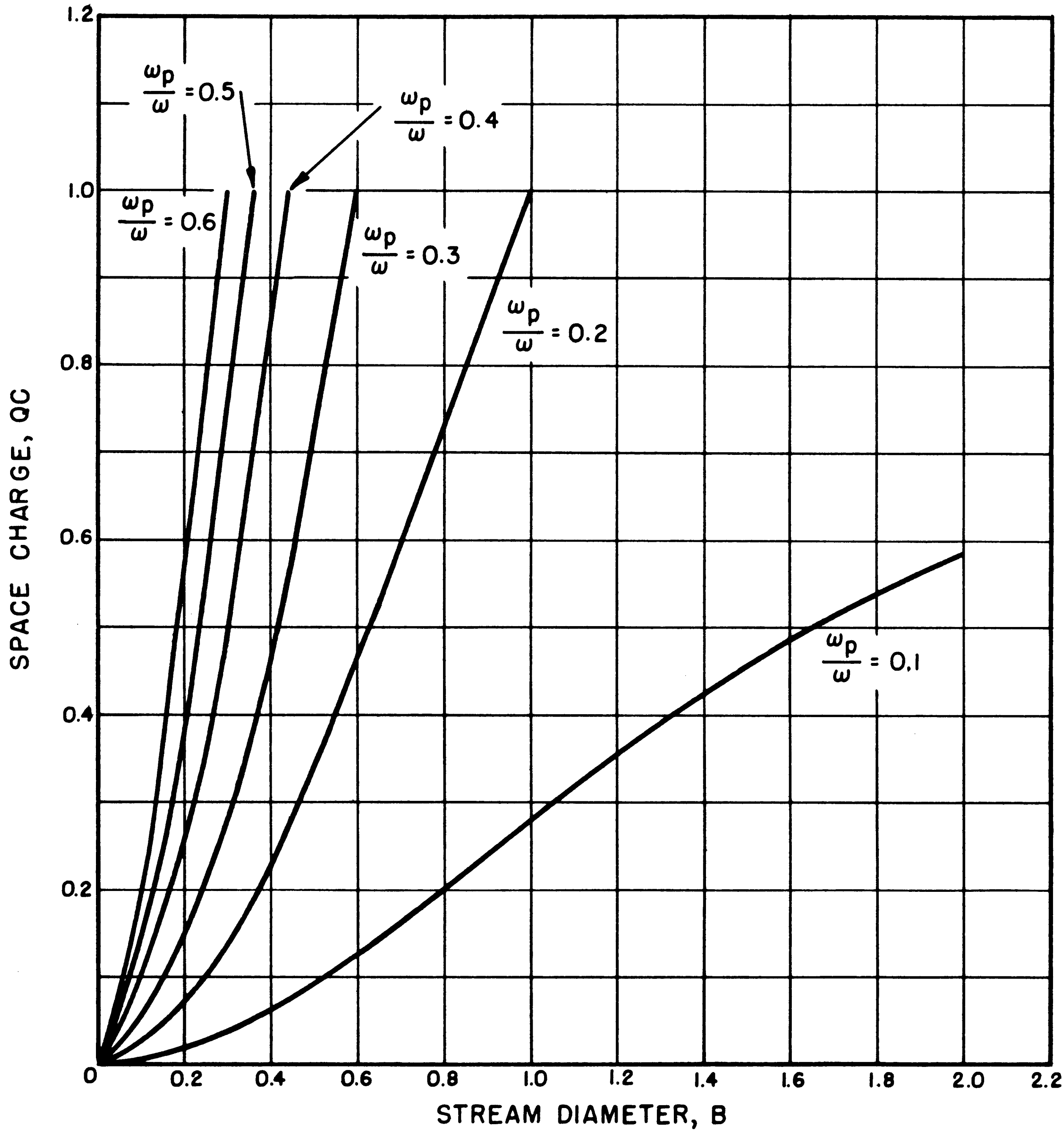


FIG. I.1 SPACE CHARGE VS. STREAM DIAMETER WITH NORMALIZED PLASMA FREQUENCY AS THE PARAMETER. ($C = 0.05$, $a'/b' = 1.4$)

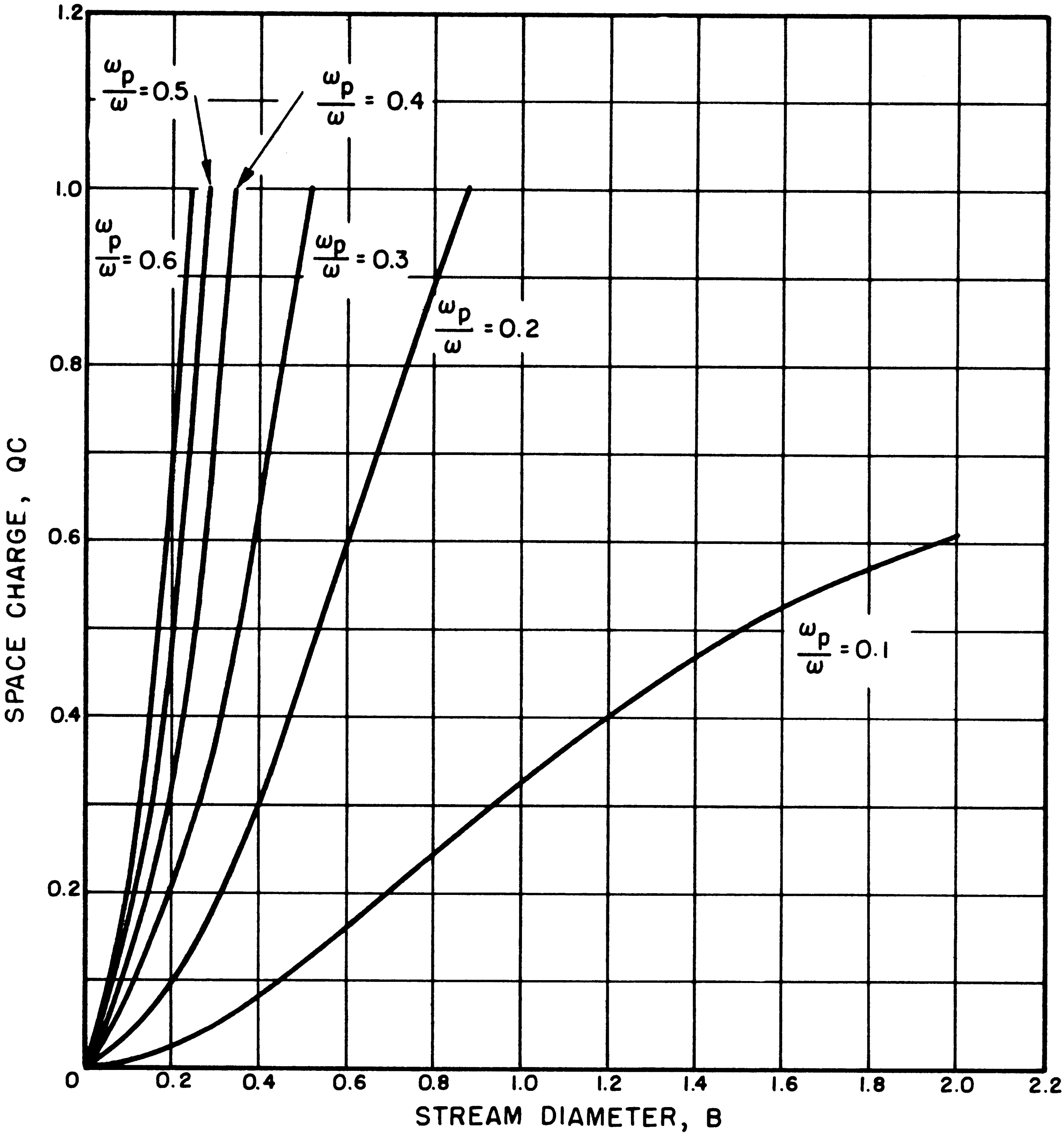


FIG. I.2 SPACE CHARGE VS. STREAM DIAMETER WITH NORMALIZED PLASMA FREQUENCY AS THE PARAMETER. (C = 0.05, a'/b' = 2.0)

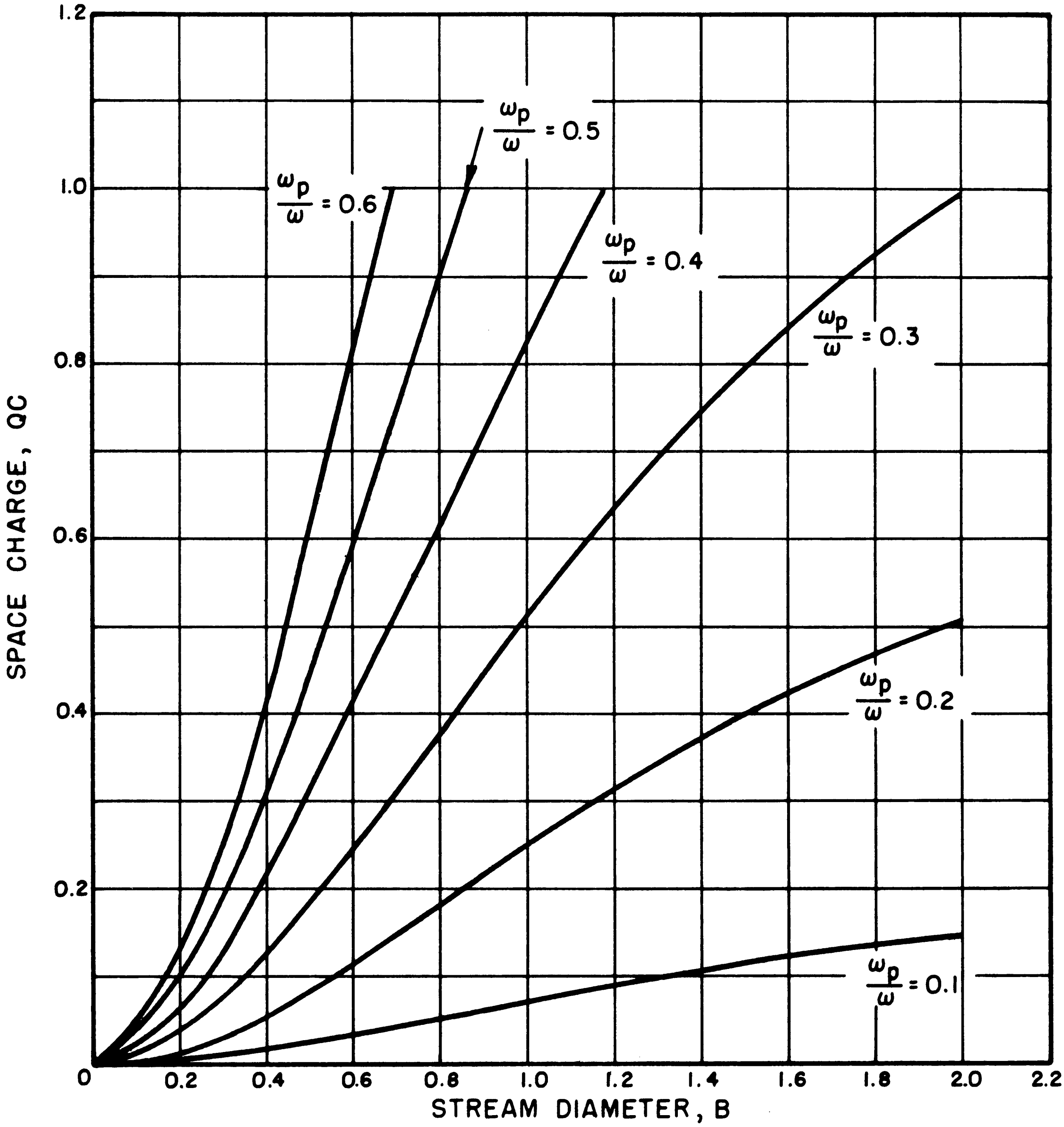


FIG. I.3 SPACE CHARGE VS. STREAM DIAMETER WITH NORMALIZED PLASMA FREQUENCY AS THE PARAMETER. ($C = 0.1$, $a'/b' = 1.4$)

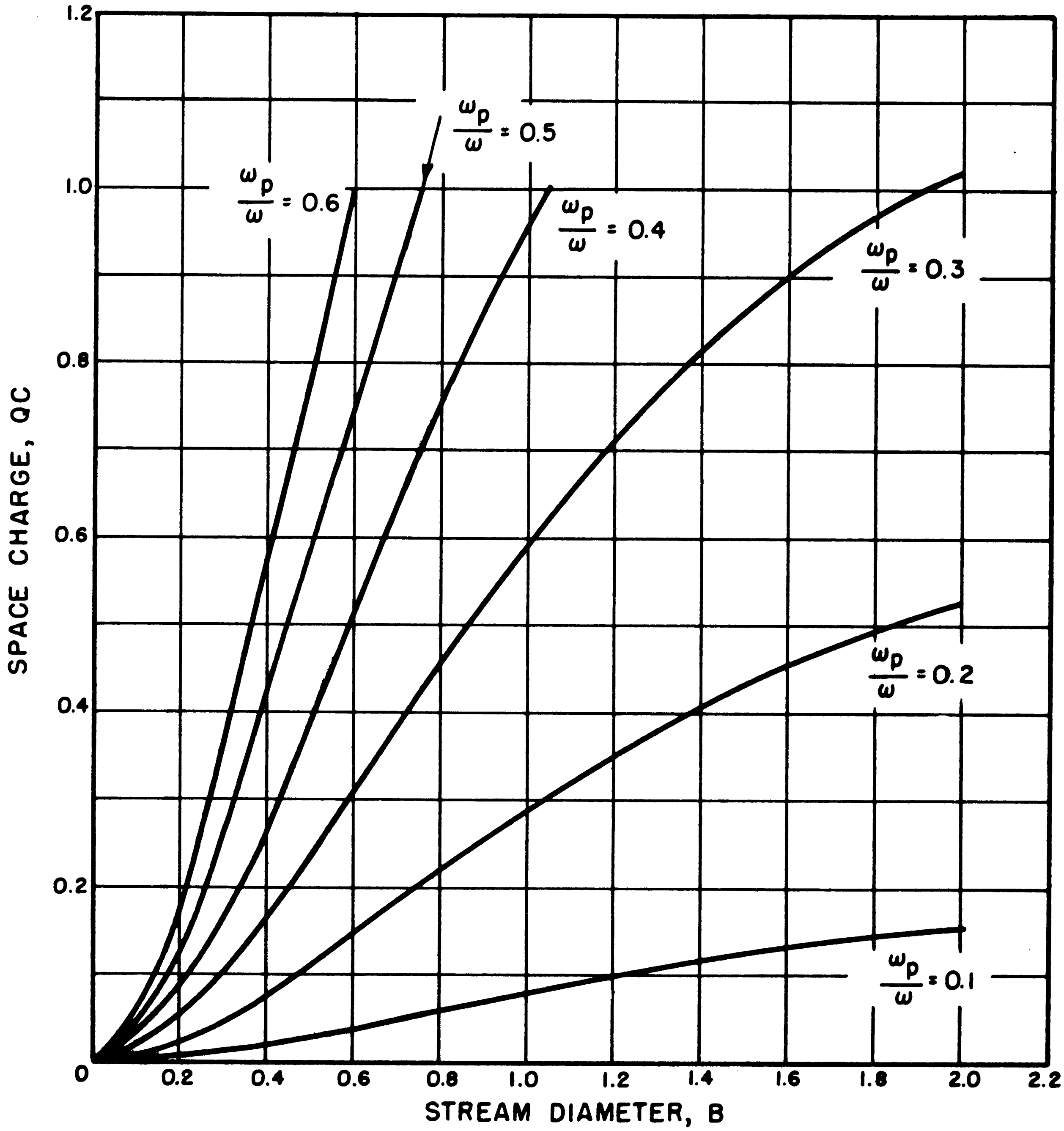


FIG. I.4 SPACE CHARGE VS. STREAM DIAMETER WITH NORMALIZED PLASMA FREQUENCY AS THE PARAMETER. ($C = 0.1$, $a'/b' = 2.0$)

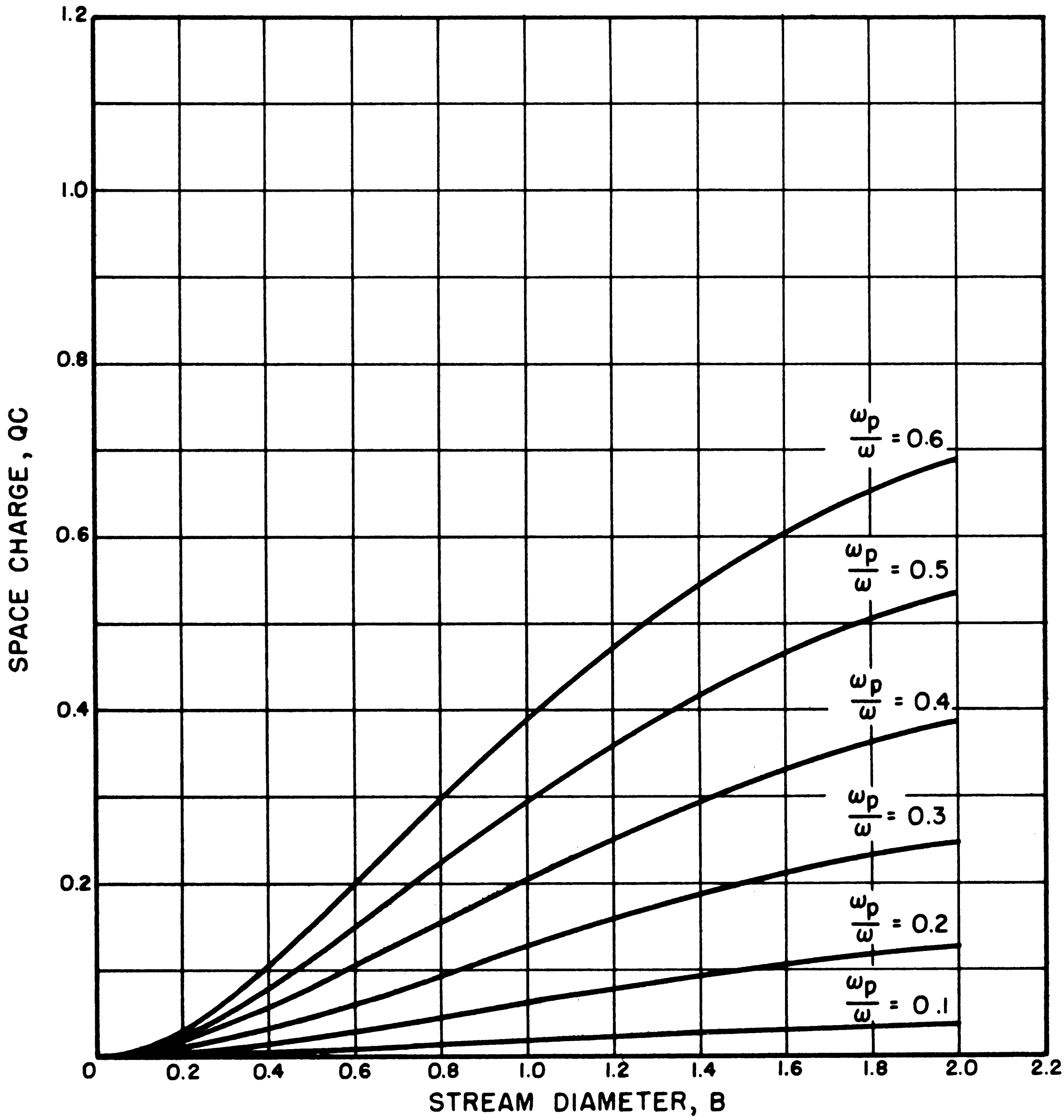


FIG. I.5 SPACE CHARGE VS. STREAM DIAMETER WITH NORMALIZED PLASMA FREQUENCY AS THE PARAMETER. ($C = 0.2$, $a'/b' = 1.4$)

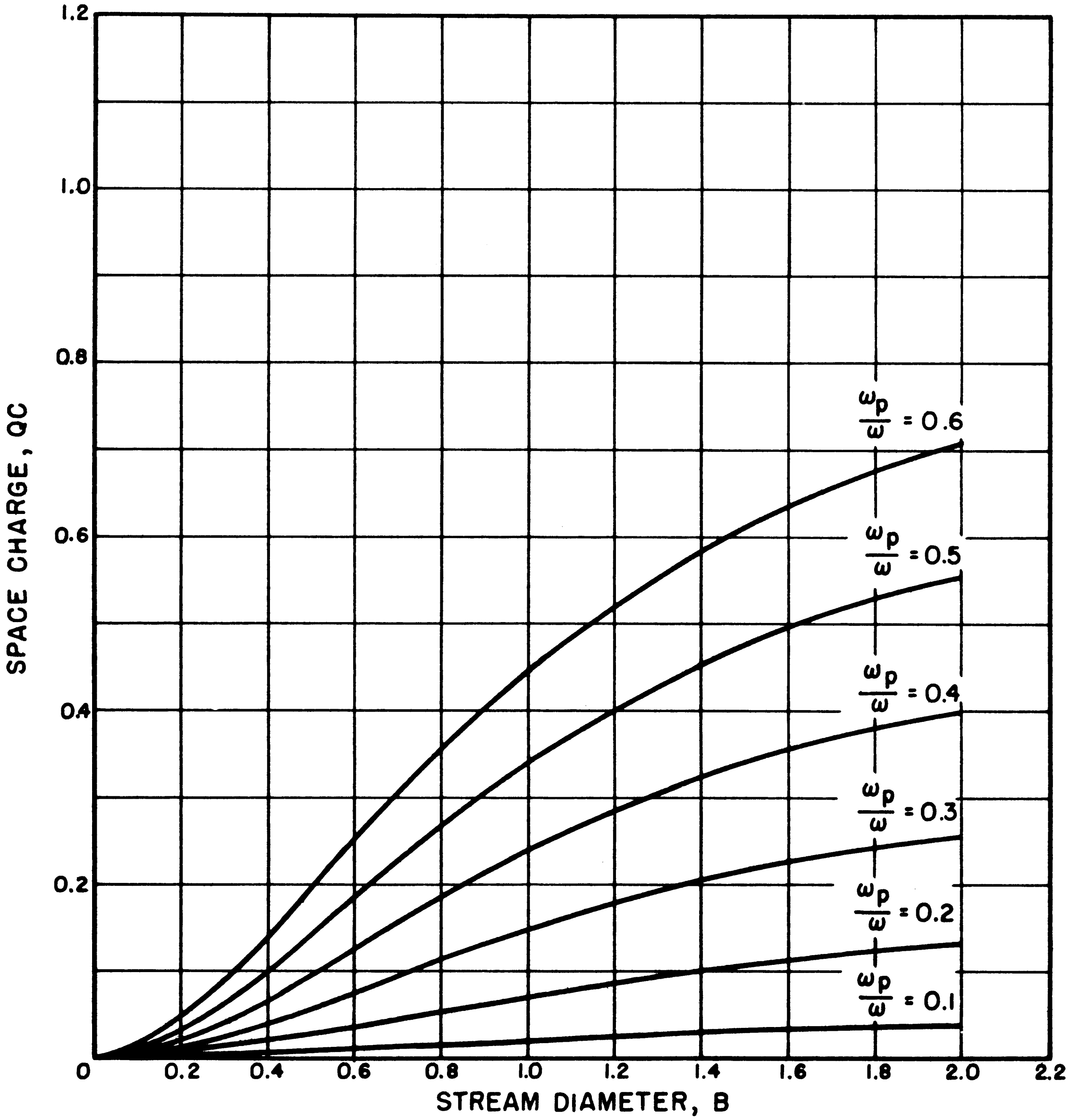


FIG. I.6 SPACE CHARGE VS. STREAM DIAMETER WITH NORMALIZED PLASMA FREQUENCY AS THE PARAMETER. ($C = 0.2$, $a'/b' = 2.0$)

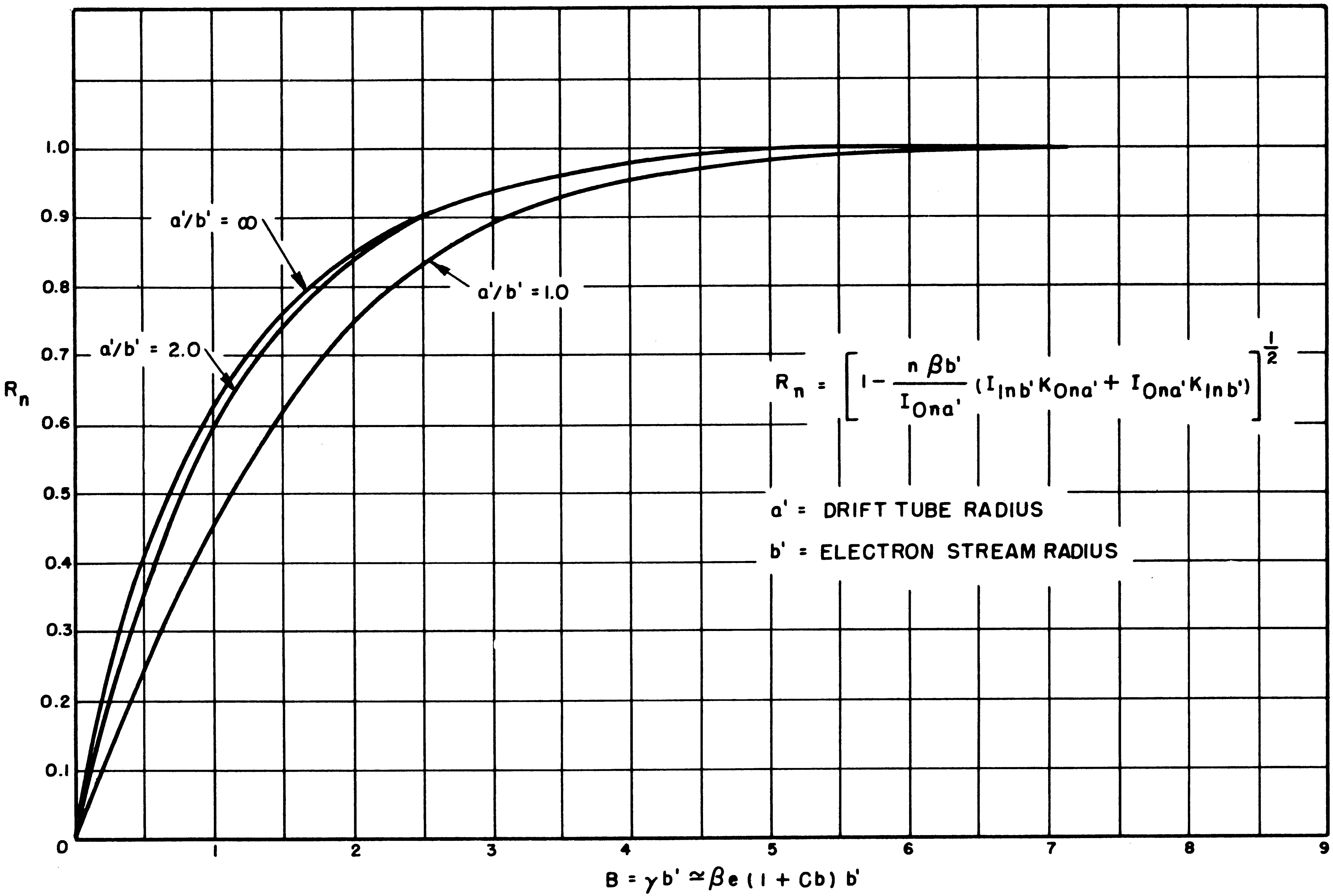


FIG. I. 7 PLASMA FREQUENCY REDUCTION FACTOR

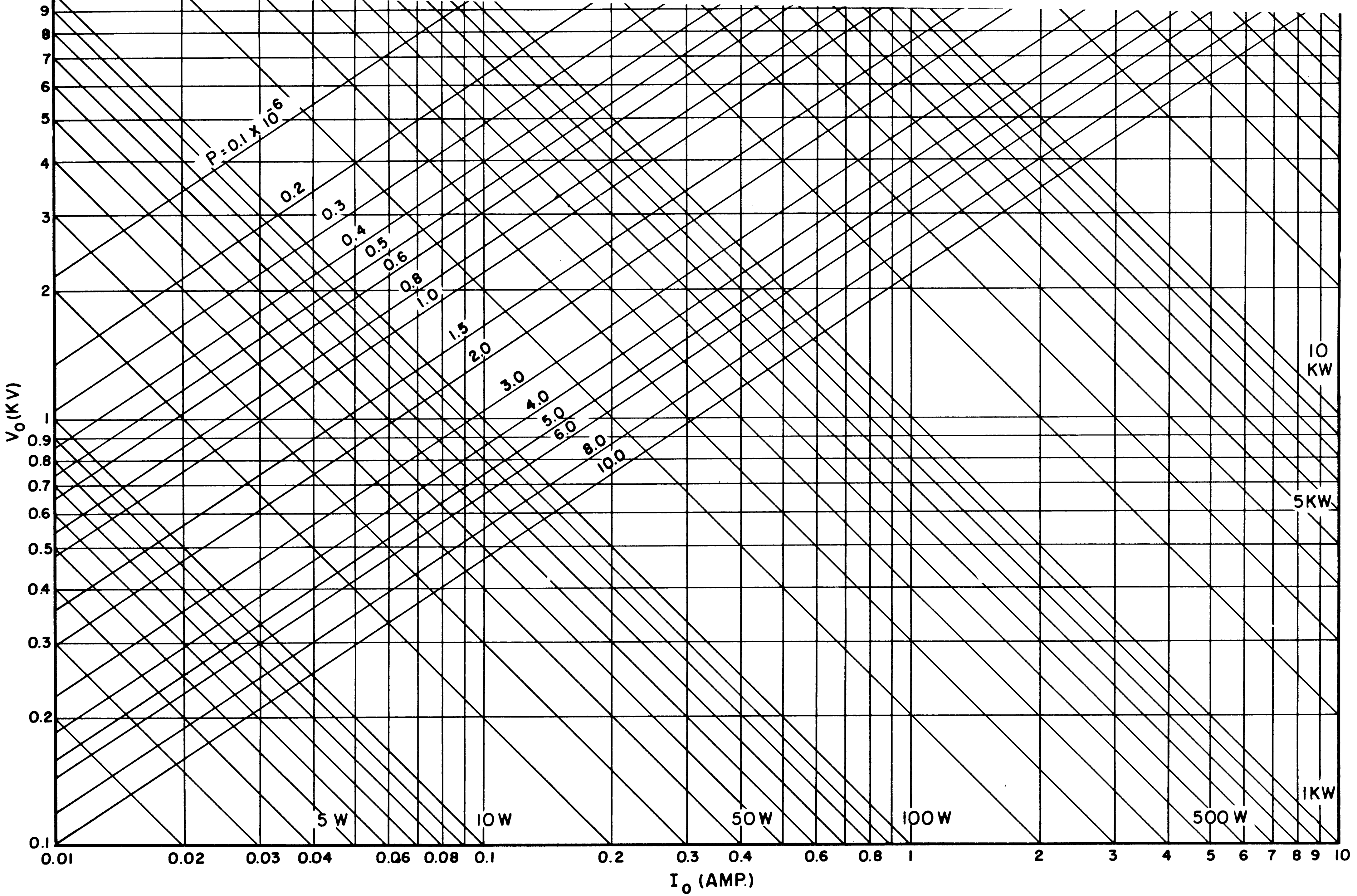


FIG. I.8 ELECTRON STREAM PERVEANCE AND POWER

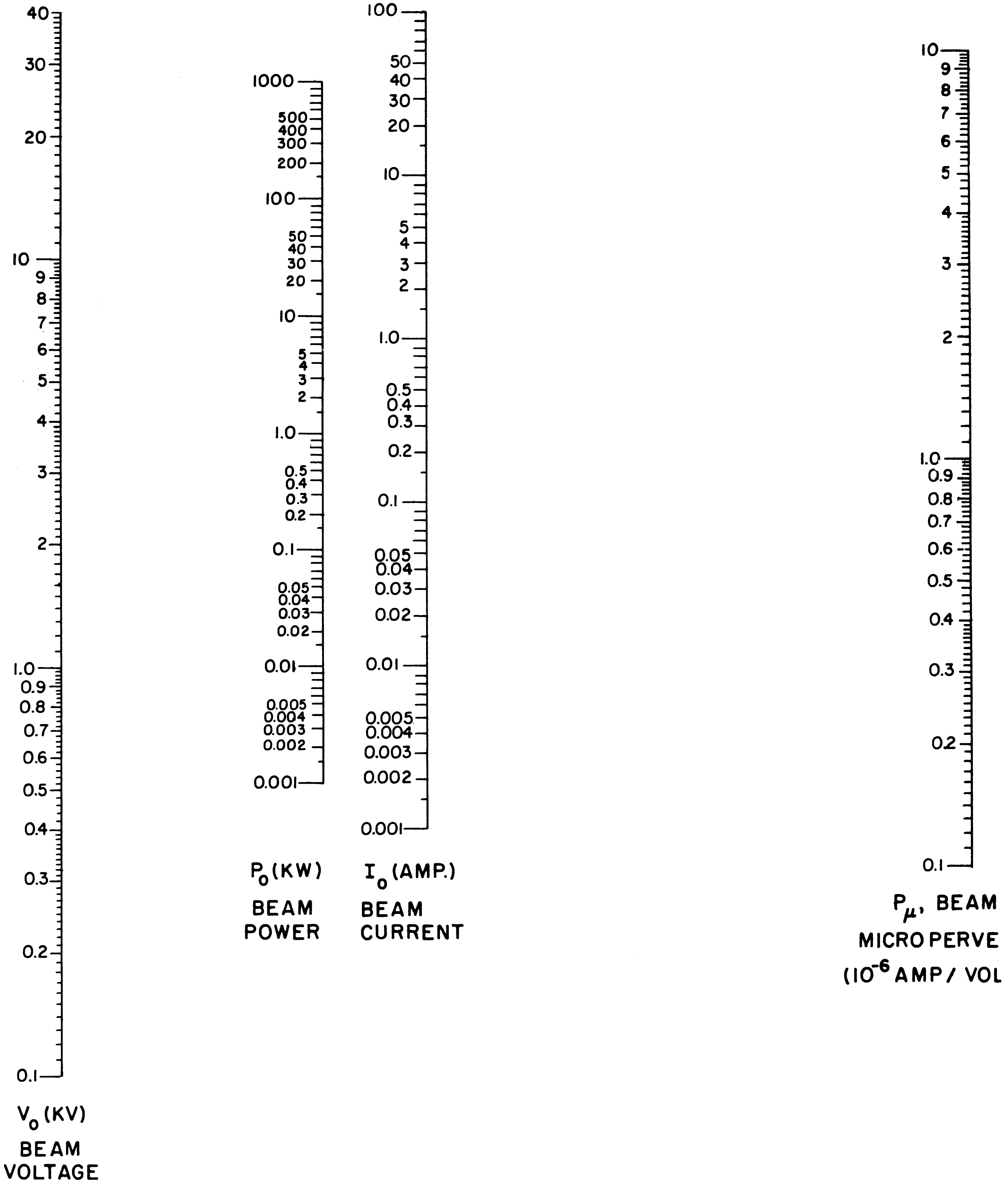


FIG. I.9 NOMOGRAPH RELATING CURRENT, VOLTAGE, POWER AND PERVEANC
IN AN ELECTRON STREAM.

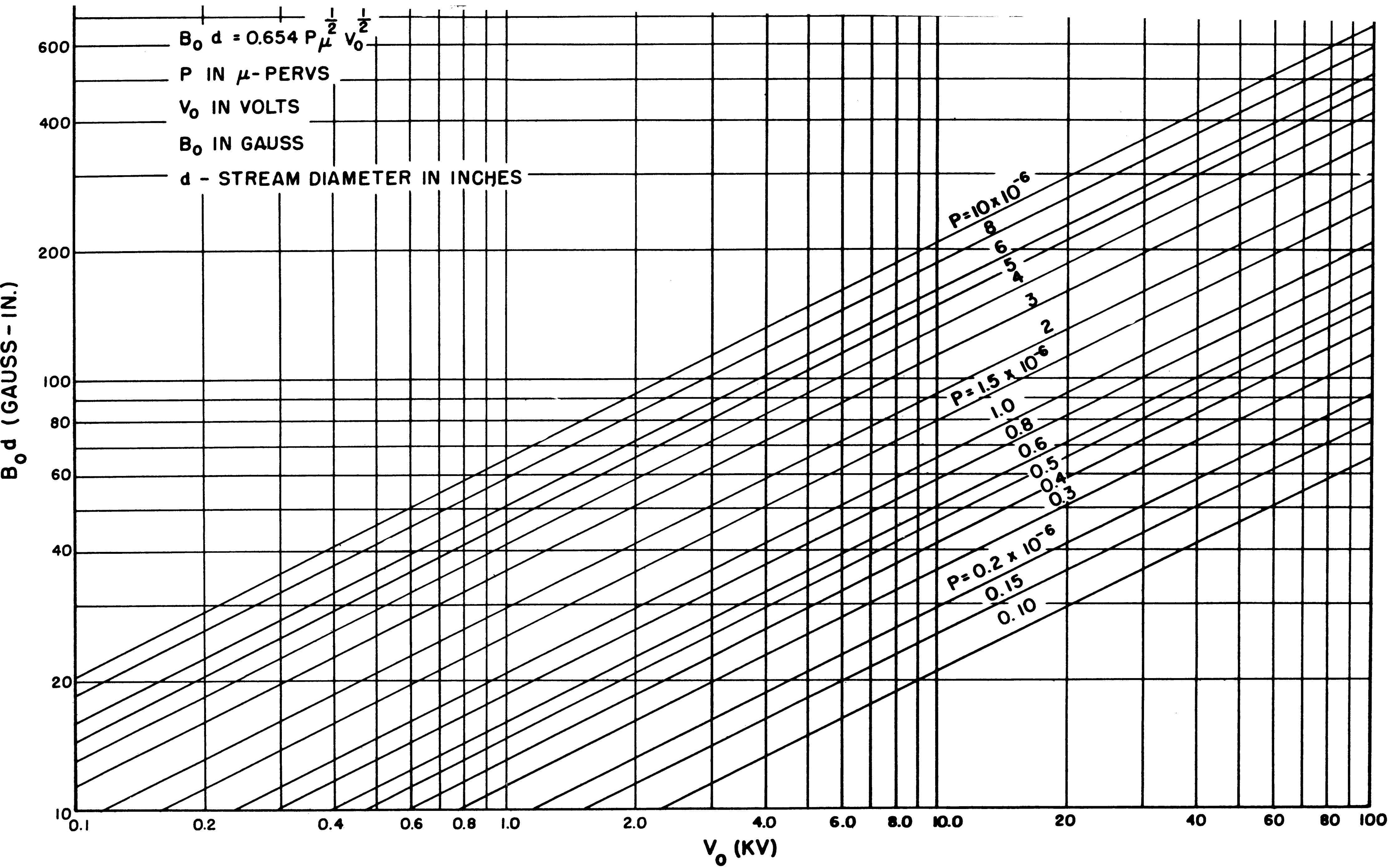


FIG. I.10 MAGNETIC FIELD REQUIRED FOR BRILLOUIN FLOW VS. STREAM VOLTAGE WITH PERVEANCE AS THE PARAMETER.

SECTION J

SPACE-CHARGE REDUCTION FACTOR FOR DISPERSIVE STRUCTURES

The space-charge reduction factor curves for dispersive structures are arranged according to ascending values of the parameters V_o, a'/b' and DLF successively.

Parameter	Range
V_o	5 kv and 10 kv
a'/b'	1.2 and 2.0
DLF	70 and 90

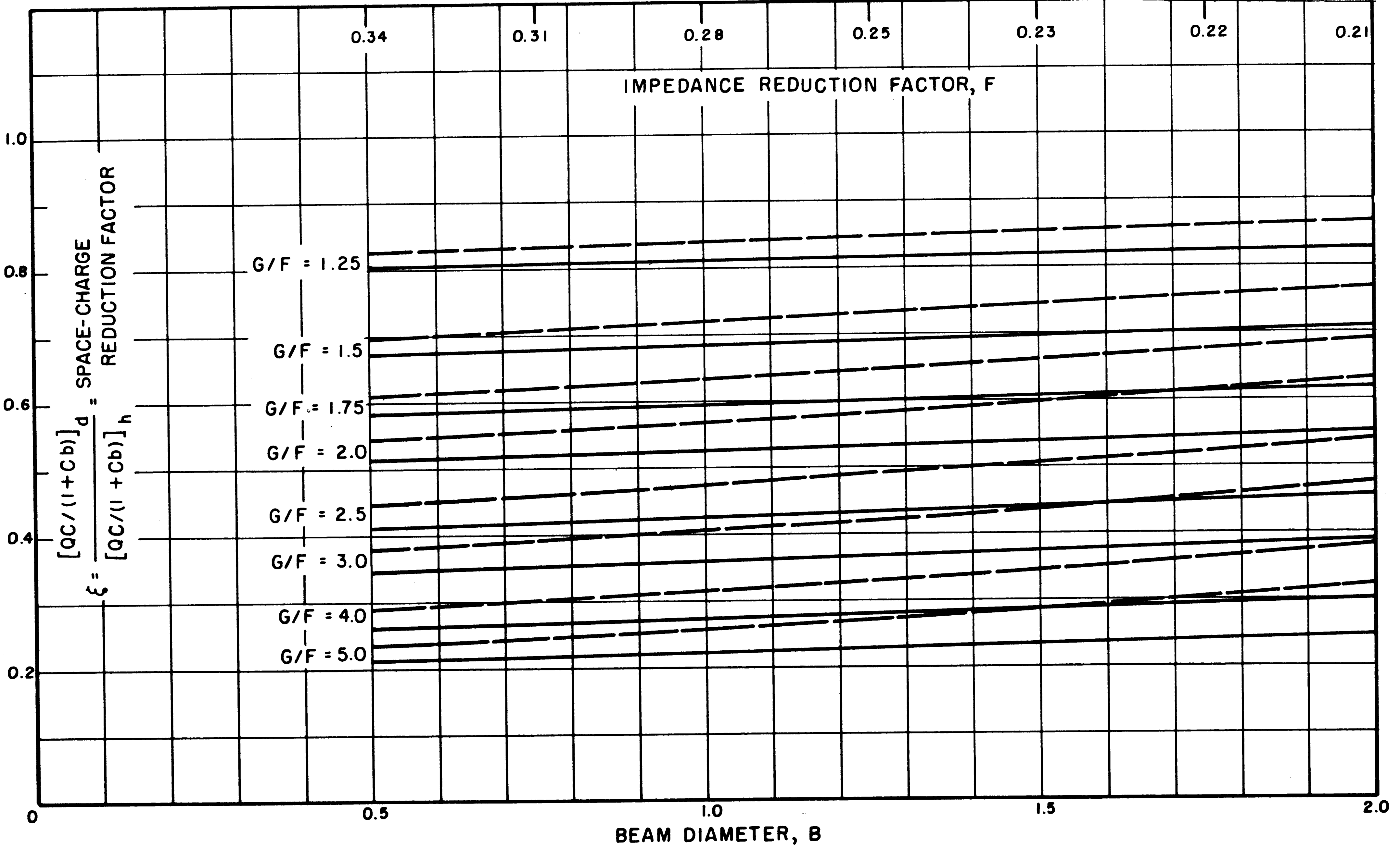


FIG. J.1 SPACE-CHARGE REDUCTION FACTOR VS. BEAM DIAMETER.
(C = 0.1 ———, C = 0.2 — —, a'/b' = 1.2, V_0 = 5 KV, DLF = 70 %)

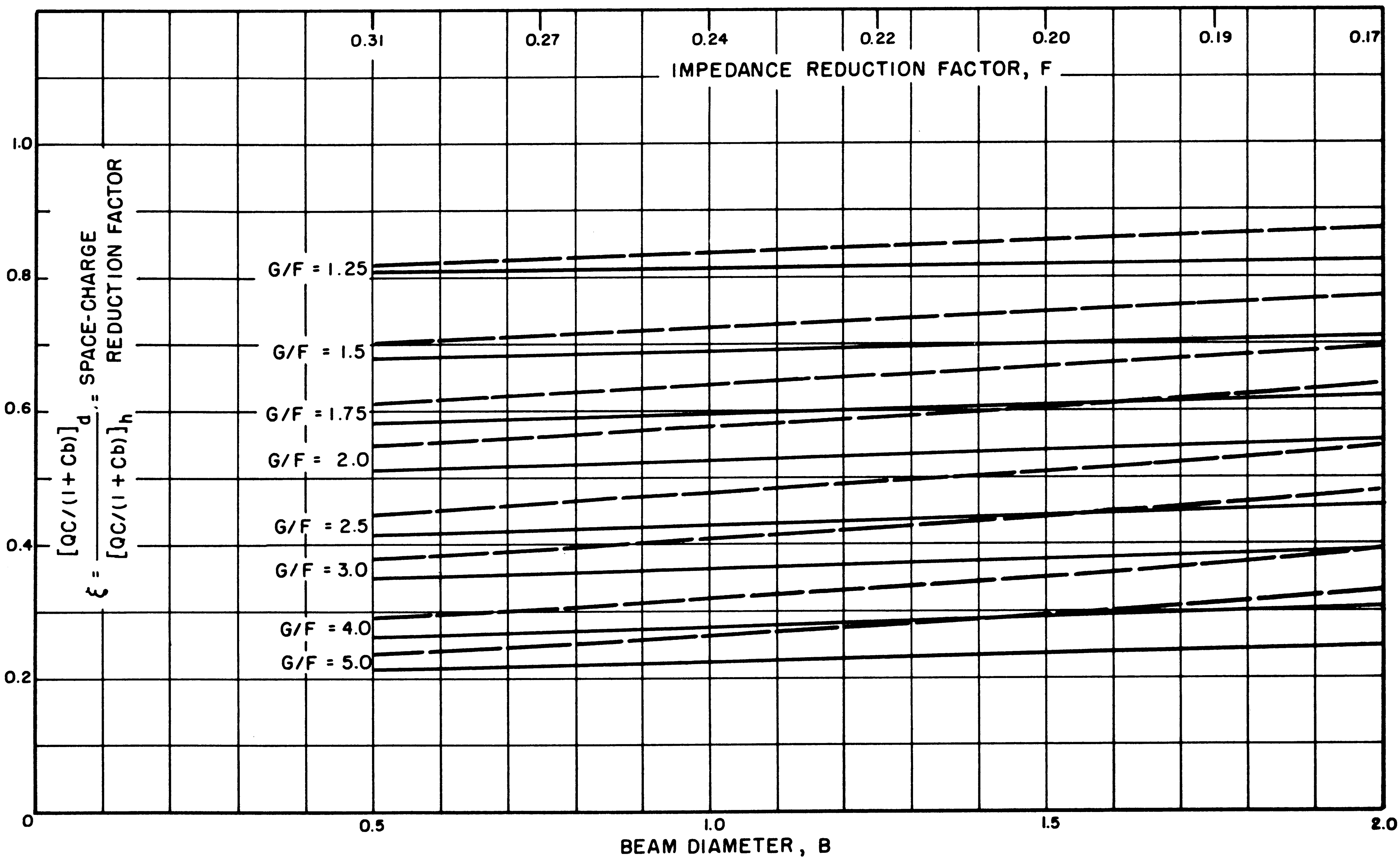


FIG. J.2 SPACE-CHARGE REDUCTION FACTOR VS. BEAM DIAMETER.
(C = 0.1 ———, C = 0.2 — —, a'/b' = 1.2, V_0 = 10 KV, DLF = 70 %)

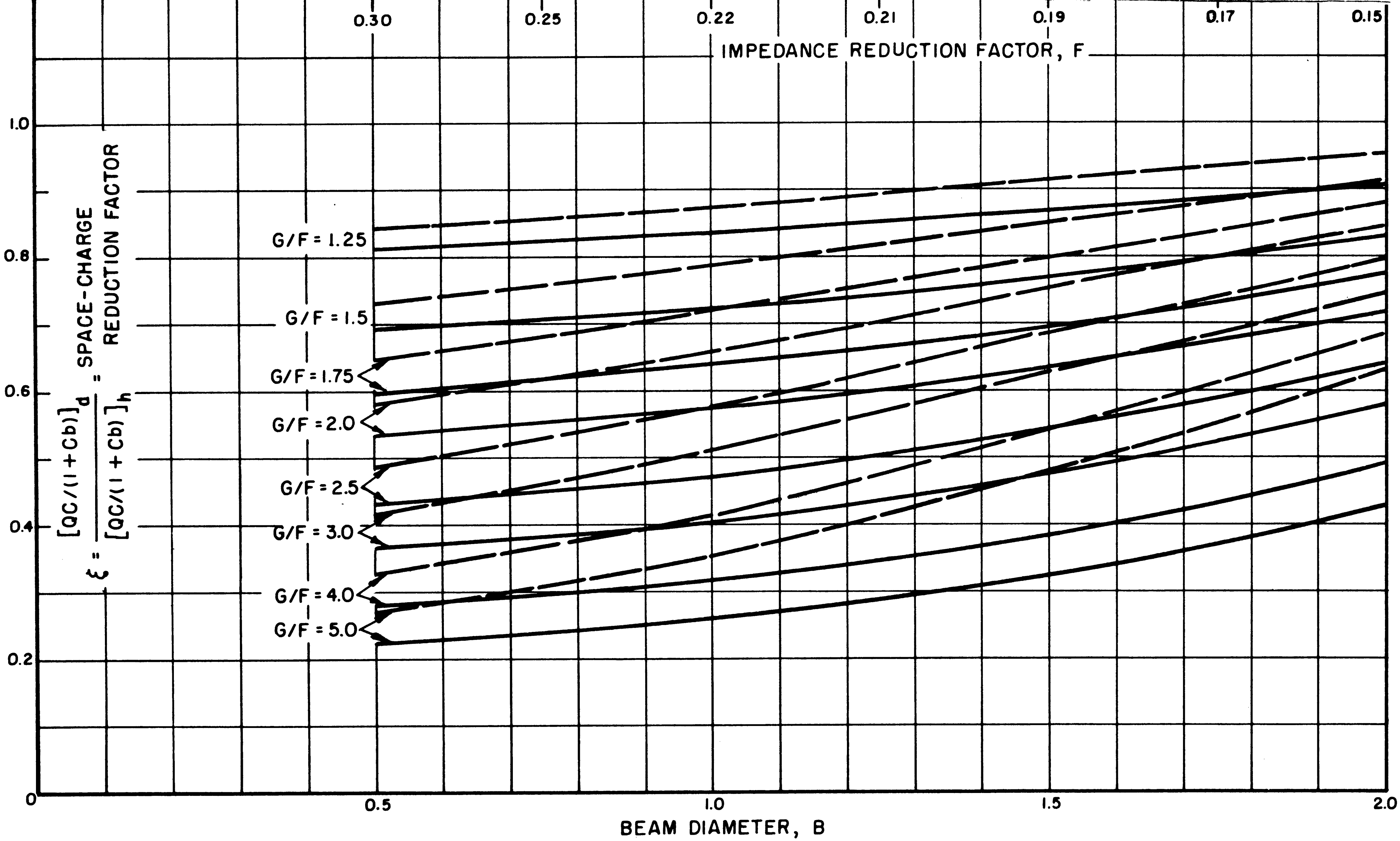


FIG. J.3 SPACE-CHARGE REDUCTION FACTOR VS. BEAM DIAMETER.
(C = 0.1 ———, C = 0.2 — — —, a'/b' = 2.0, V_0 = 5 KV, DLF = 70 %)

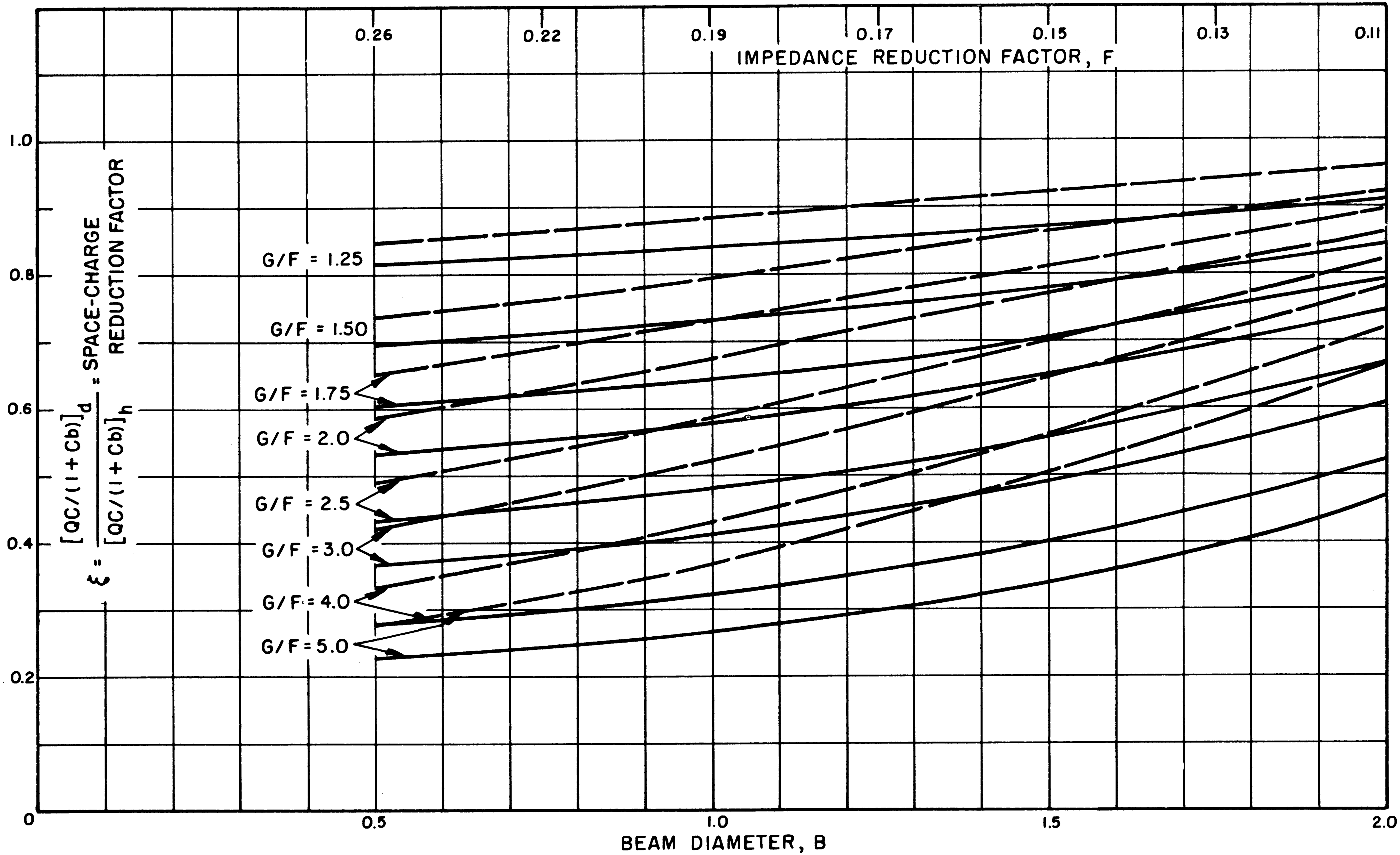


FIG. J.4 SPACE-CHARGE REDUCTION FACTOR VS. BEAM DIAMETER.
(C = 0.1 ———, C = 0.2 — — —, a'/b' = 2.0, V_0 = 10 KV, DLF = 70 %)

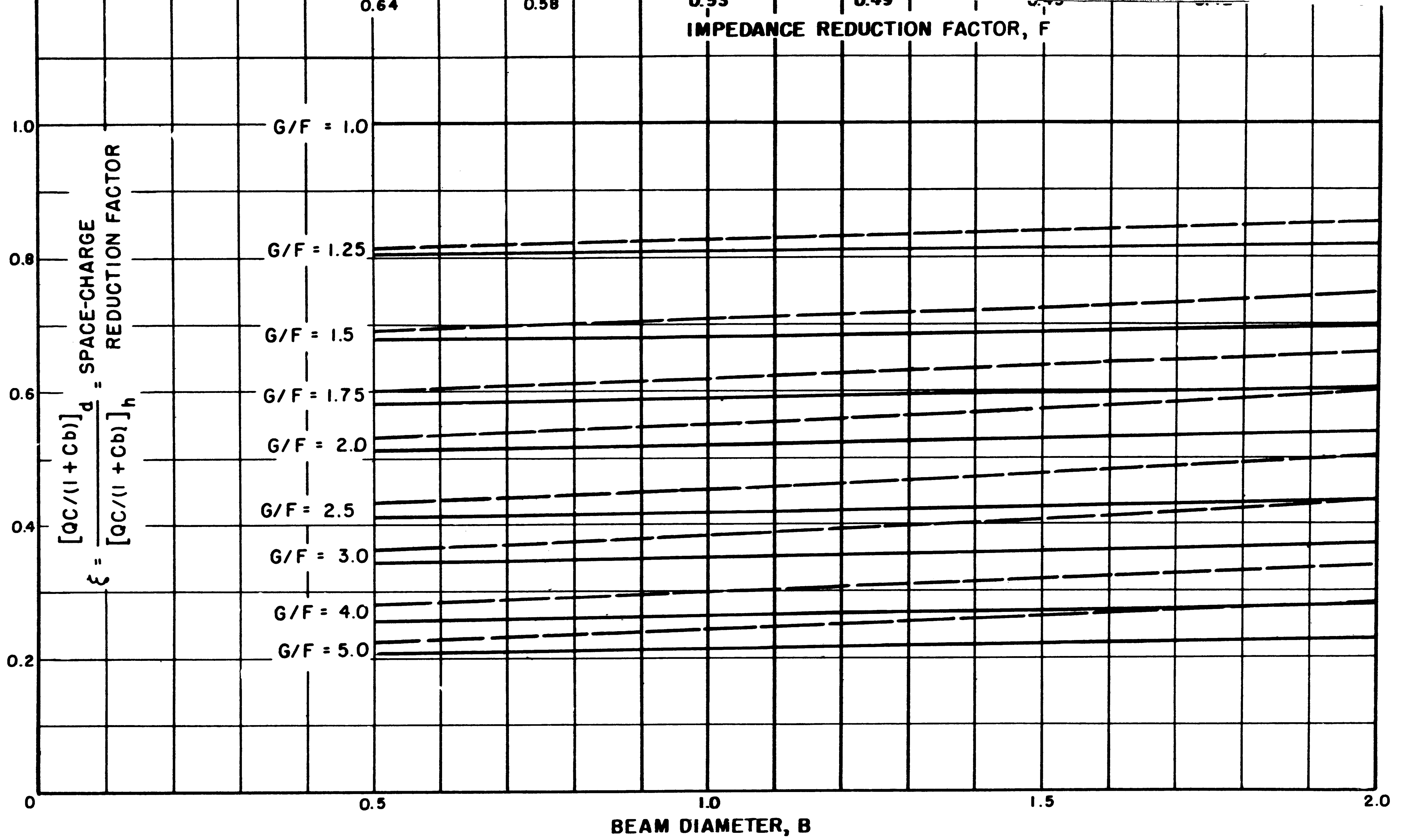


FIG. J.5 SPACE-CHARGE REDUCTION FACTOR VS. BEAM DIAMETER.
(C = 0.1 ——, C = 0.2 — —, $a'/b' = 1.2$, $V_0 = 5$ KV, DLF = 90 %)

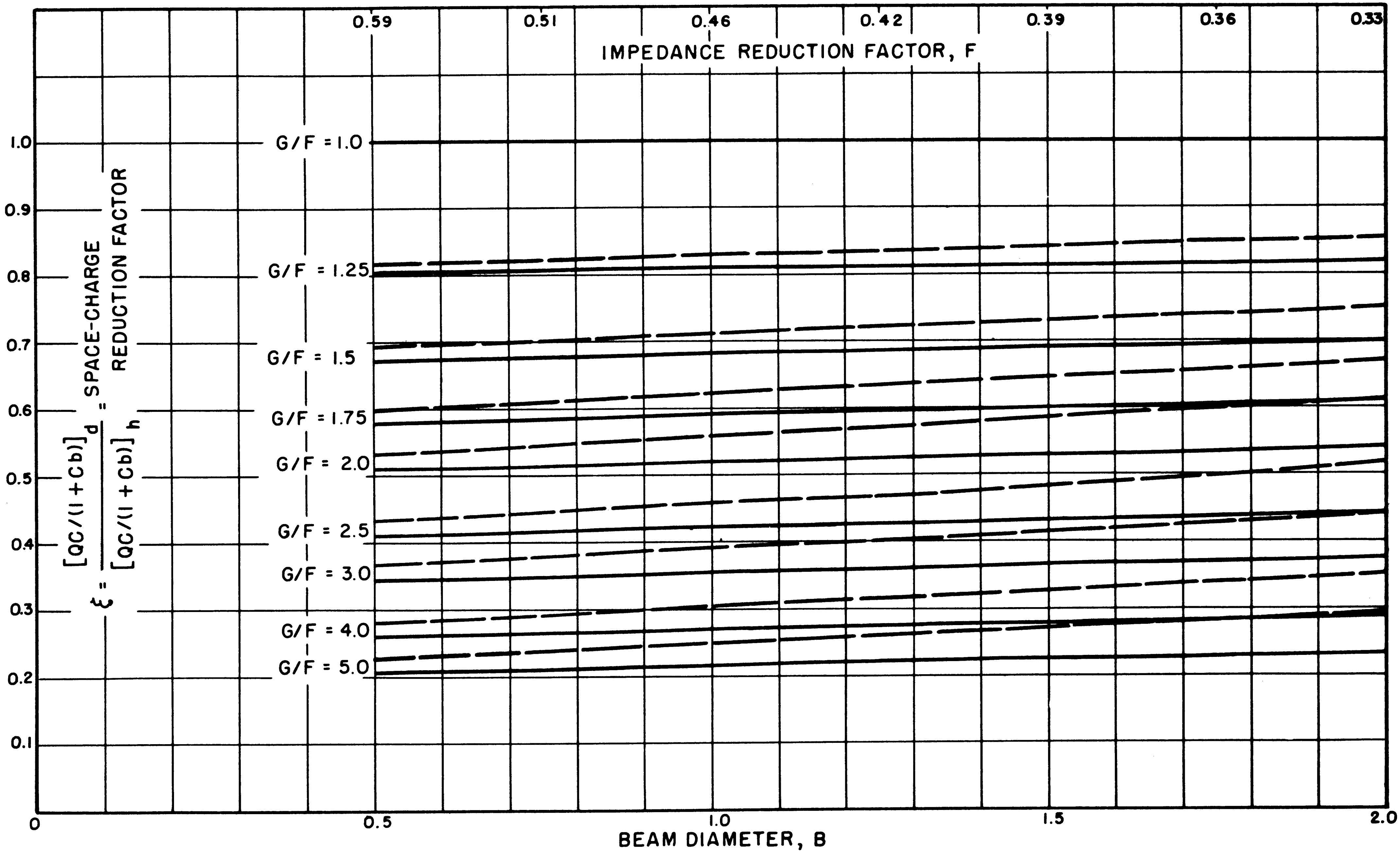


FIG. J.6 SPACE-CHARGE REDUCTION FACTOR VS. BEAM DIAMETER.
($C = 0.1$ ——, $C = 0.2$ — —, $a'/b' = 1.2$, $V_0 = 10$ KV, DLF = 90 %)

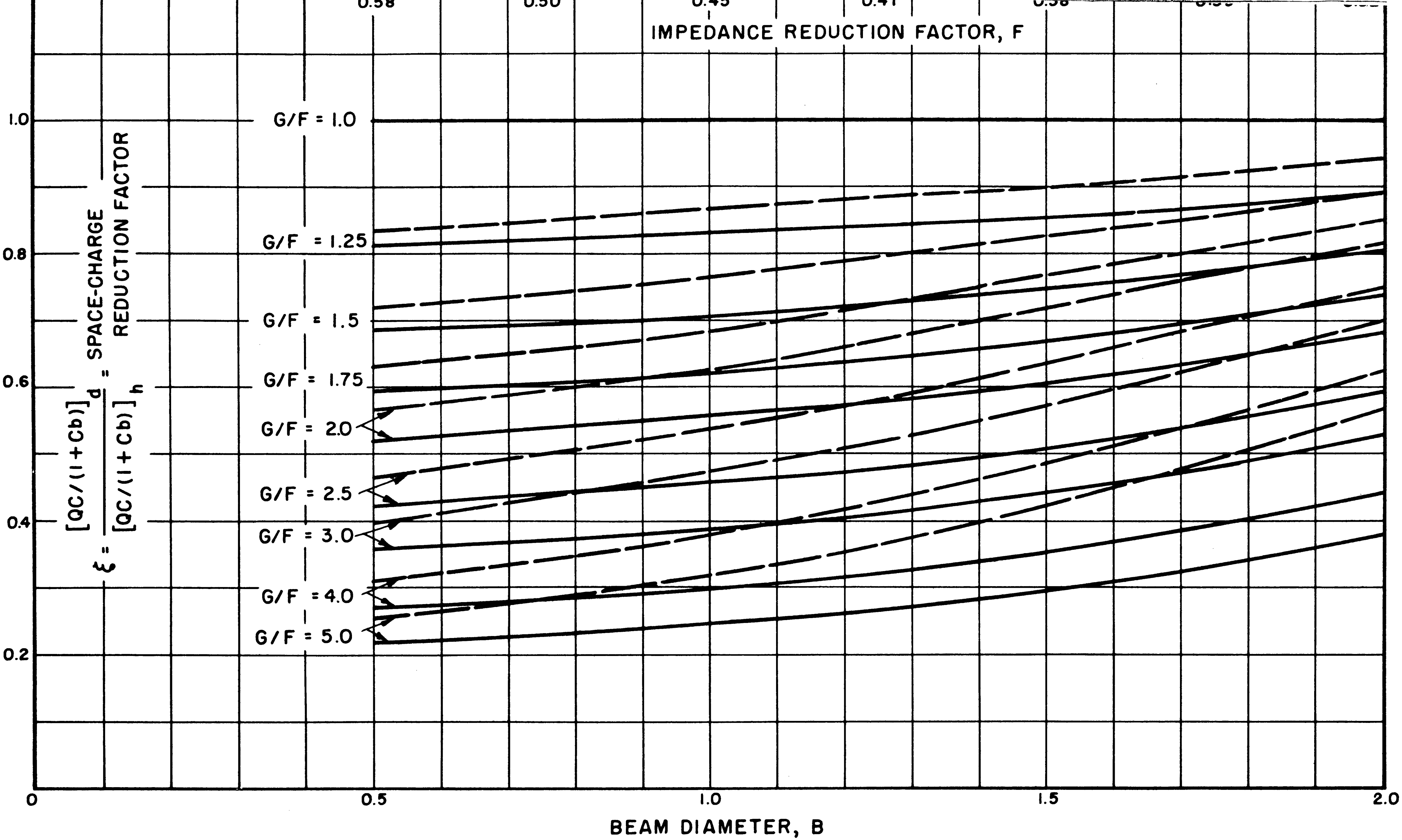


FIG. J.7 SPACE-CHARGE REDUCTION FACTOR VS. BEAM DIAMETER.
(C = 0.1 ——— , C = 0.2 — — , d'/b' = 2.0, V_0 = 5 KV, DLF = 90 %)

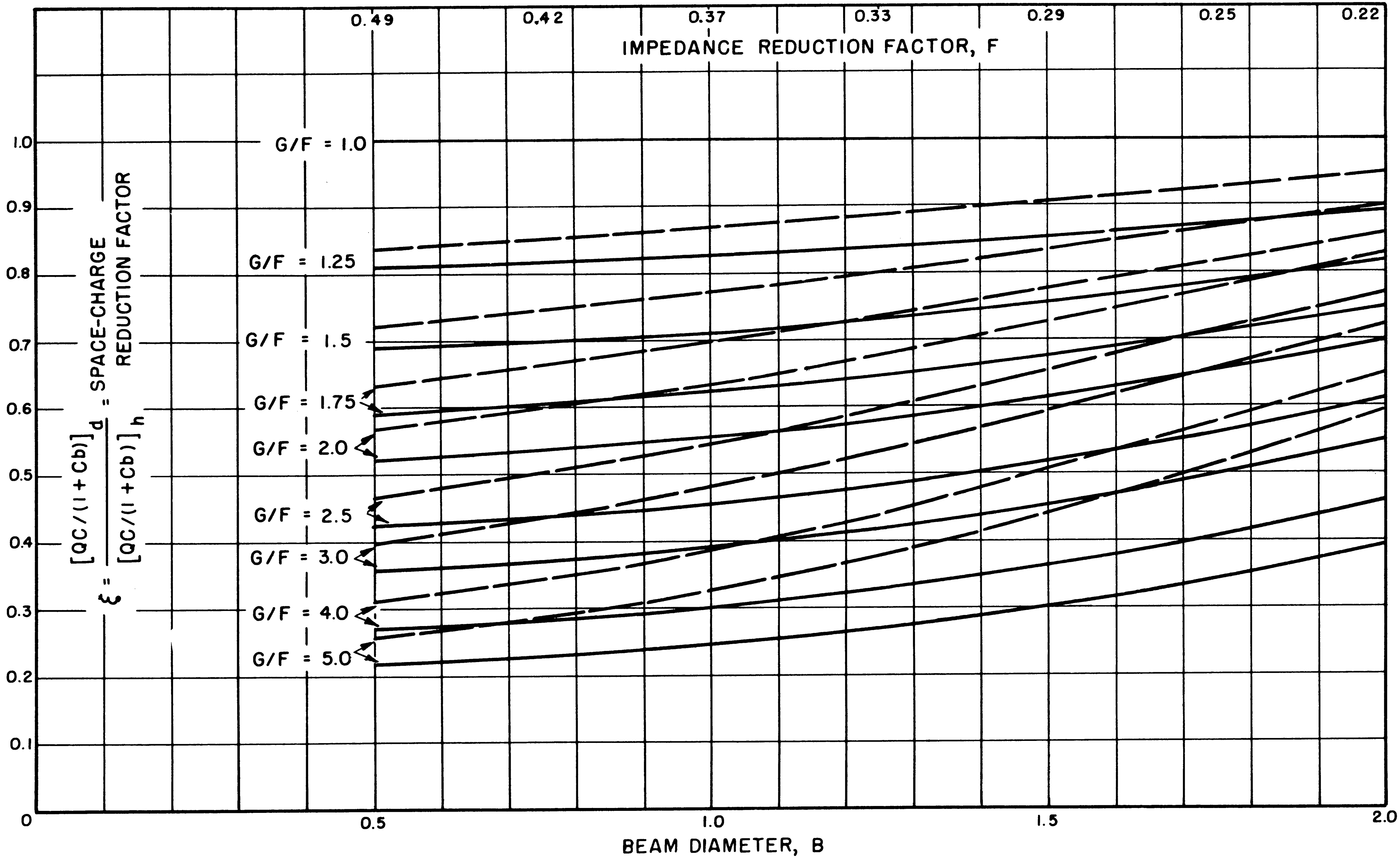


FIG. J.8 SPACE-CHARGE REDUCTION FACTOR VS. BEAM DIAMETER.
(C = 0.1 ———, C = 0.2 — — —, a'/b' = 2.0, V_0 = 10 KV, DLF = 90%)

SECTION K

TUBE LENGTH AND CHANGE IN PHASE SHIFT vs. INPUT-SIGNAL LEVEL

The optimum tube length and the change in phase shift through the tube are given as functions of the input-signal level ψ, relative to CI_0V_0.

Parameter	Range
C	0.1
B	1.0
QC	0, 0.05, 0.125, 0.25, and 0.5.

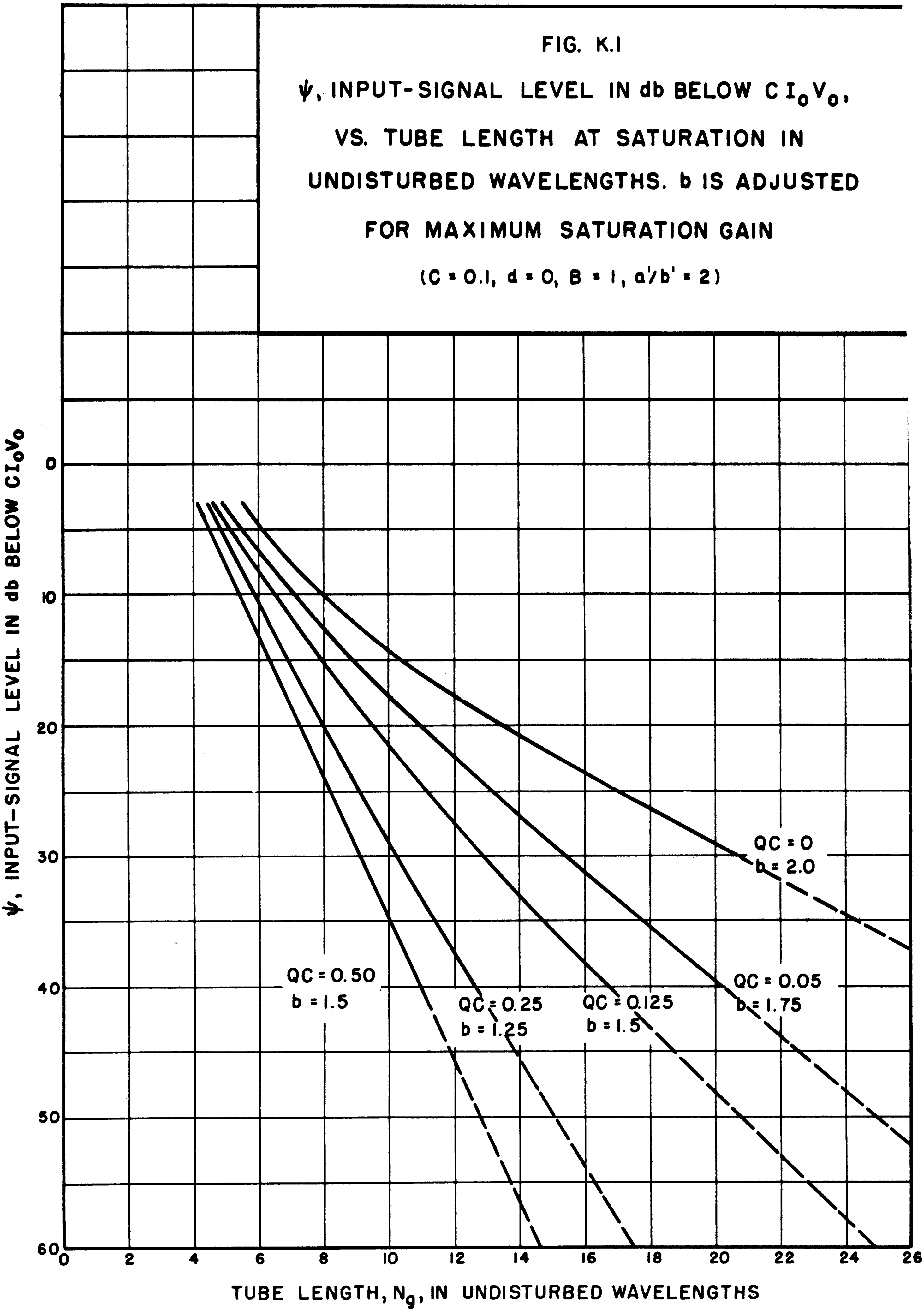


FIG. K.1

ψ, INPUT-SIGNAL LEVEL IN db BELOW $C I_0 V_0$, VS. TUBE LENGTH AT SATURATION IN UNDISTURBED WAVELENGTHS. b IS ADJUSTED FOR MAXIMUM SATURATION GAIN

($C = 0.1$, $d = 0$, $B = 1$, $a'/b' = 2$)

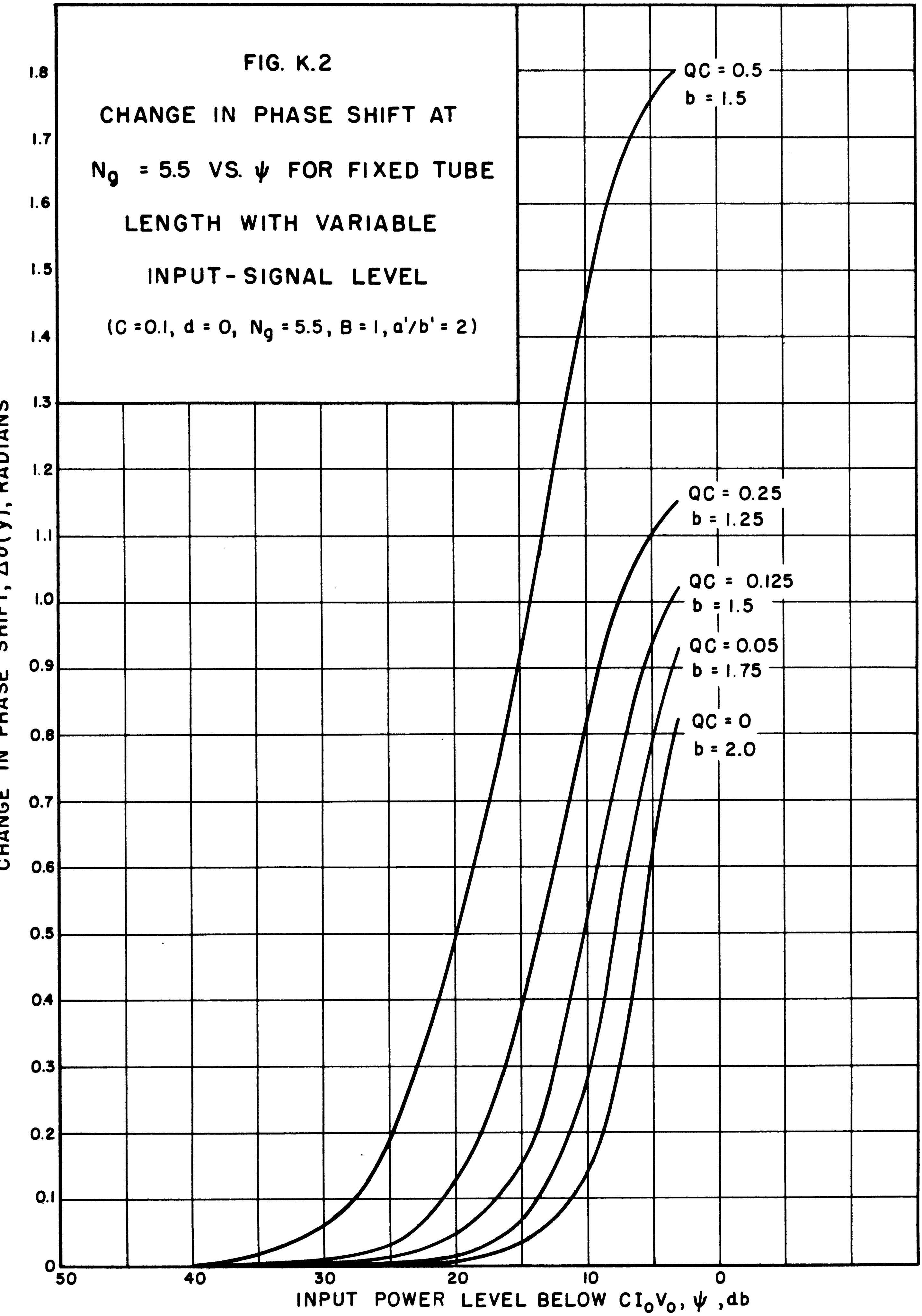


FIG. K.2

CHANGE IN PHASE SHIFT AT N_g = 5.5 VS. ψ FOR FIXED TUBE LENGTH WITH VARIABLE INPUT-SIGNAL LEVEL

($C = 0.1$, $d = 0$, $N_g = 5.5$, $B = 1$, $a'/b' = 2$)

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