Westinghouse

High Voltage Power Fuses

Types BAL, CLV, CLT, CLE-PT, CLE, CLE-1, CLS-1, CLE-2 and CLS-2

Performance Curves

This envelope contains time-current characteristic curves of high voltage current limiting fuses as listed below:

Fuse Type	Voltage Range, Kv	Curve Number	
		Melting	Total Clearing
BAL-PT, 10, 25, 200 and 300	2.4 to 23.0①	18	19
CLS and BAL-LR	2.4 to 4.8	20	21
CLS-2	2.0 to 5.5	24	25
CLE-1, 50E to 225X	2.0 to 5.5	26	27
CLE-1, 30E and 40E	2.0 to 5.5	28	29
CLE-2, 250E to 400X	2.0 to 5.5	30	31
CLE-1, 30E to 125E; CLE-2, 150E to 200E	7.2 to 8.25	32	33
CLE-1, 30E to 65E; CLE-2, 80E to 125X	14.4	34	35
CLE-2, 450X	2.0 to 5.5	36	36
CLE, CLE-PT, .5E to 25E (Indicating)	2.4 to 23.0	37	38
CLE-PT, .25E to 5E (Non-Indicating)	2.0 to 5.5	39	40
CLV 2E to 20E (Non-Indicating)	600 Volts	41	42
CLT S#678C245G02-G03	15.0	43	43
CLT 4A to 18A	15.0	44	44
CLT 5A to 75A	2.4 to 8.0	45	45
CLT-1, 30A, 60A and 150A	2.4 to 5.0	46	47 (Long Time)
CLT, 4A to 18A	15.0	..	48 (Long Time)
CLE-PT, 2.0E (Non-Indicating)	8.0	49	49
CLTB S#678C245G01	8.3	50	..
BAL-1, 1A and 5A	600 VDC	51	..
CLE-1 and CLE-2 (Emergency Overload)	15.0	52	..

① 23 Kv for potential transformer (PT).

These curves to be used in conjunction with Application Data 36-660 and 36-661.

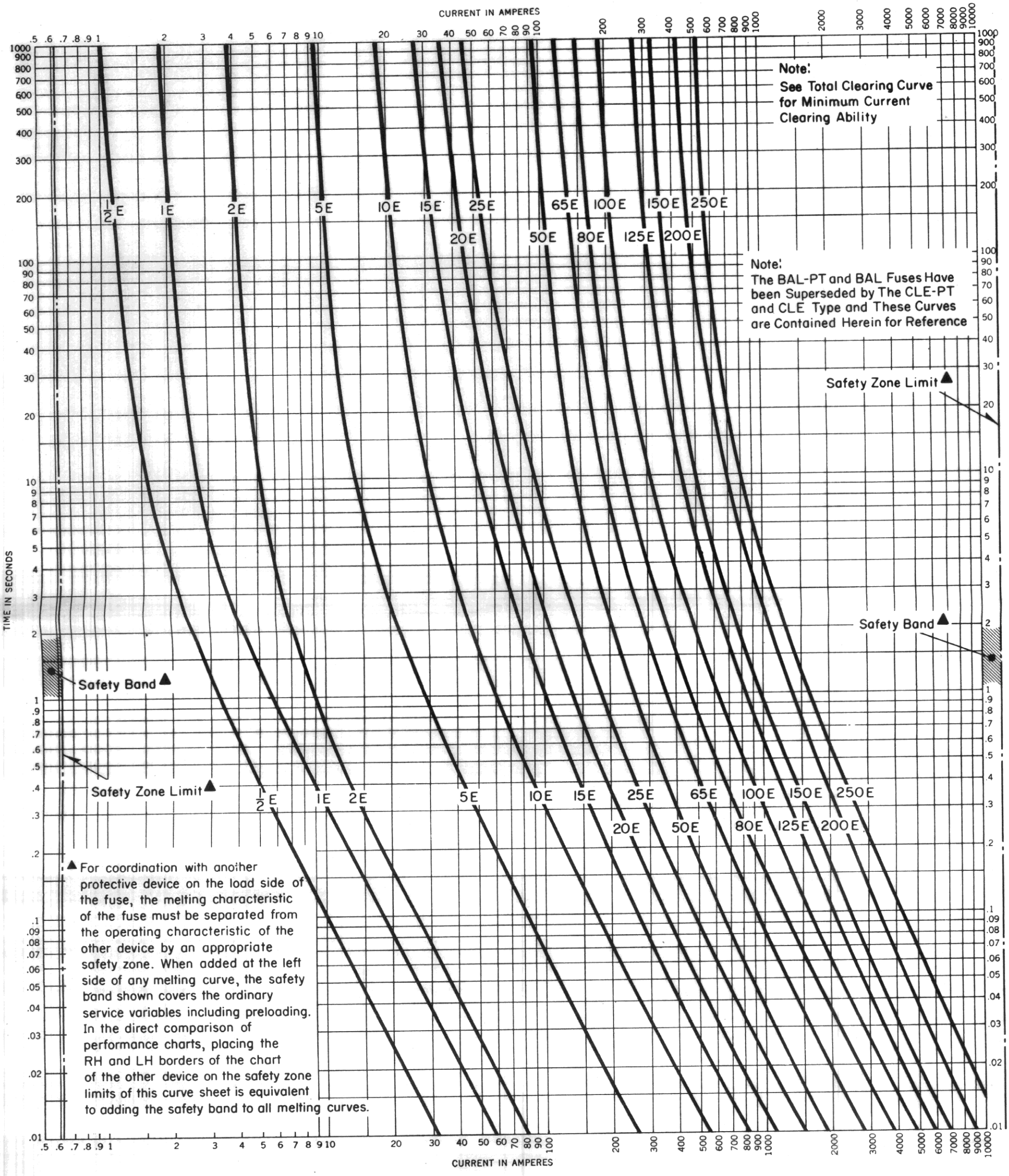
Note: The new fuse types are to use the curve numbers for melting and total clearing time-current characteristics as indicated below:

CLE-11, CLE-12	2.0 Kv to 5.5 Kv, Curve Nos. 26, 27, 28, 29
CLE-21, CLE-22	2.0 Kv to 5.5 Kv, Curve Nos. 30, 31
CLS-11, CLS-12, CLS-13, CLS-14	2.4 Kv to 4.8 Kv, Curve Nos. 20, 21
CLS-21, CLS-22, CLS-23, CLS-24	2.4 Kv to 4.8 Kv, Curve Nos. 24, 25
CLE-3, 150E, 175E/200X	14.4 Kv, Curve Nos. 53, 54

Westinghouse Electric Corporation
Switchgear Division, Power Switching Equipment, East Pittsburgh, Pa.
Printed in USA

December, 1967
Supersedes Envelope dated November 1966
E. D. C/1971/AD

AD 36-661-A



Type BAL-PT, -10, -25, -200 and -300 Current Limiting Power Fuses

Melting time-current characteristics, 2.4 to 34.5 Kv

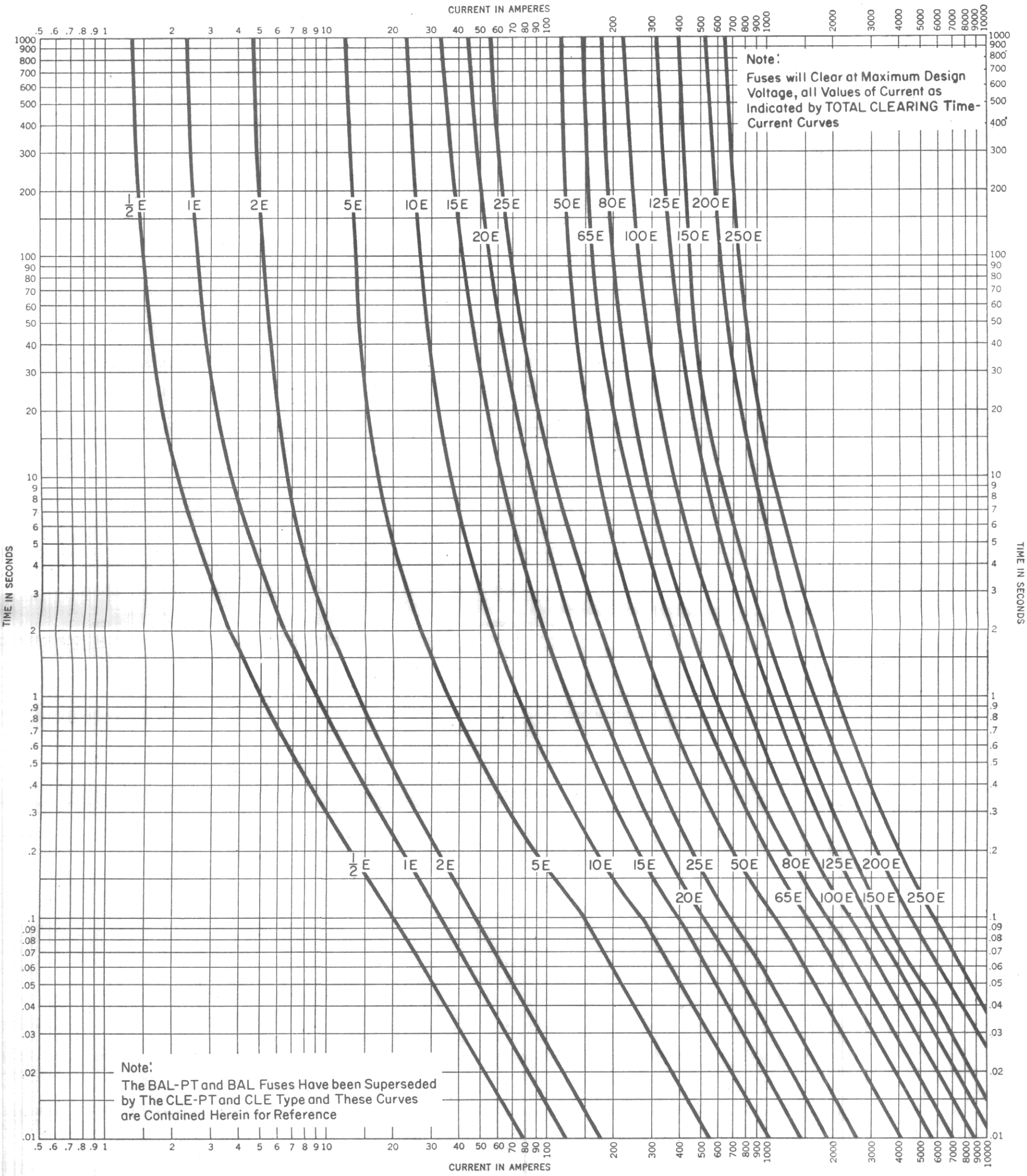
Curves are based on tests starting with fuse units at an ambient temperature of 25°C and without initial load. Curves are plotted to minimum test points so variations should be positive.

Westinghouse Electric Corporation
Switchgear Division, Power Switching Equipment, East Pittsburgh, Pa.
Printed in USA

Curve No. **18**

Supersedes Curve No. 18, dated January, 1961
Reference No. 459344
May, 1968

AD 36-661-A



Type BAL-PT, -10, -25, -200 and -300 Current Limiting Power Fuses

Total clearing time-current characteristics, 2.4 to 34.5 Kv

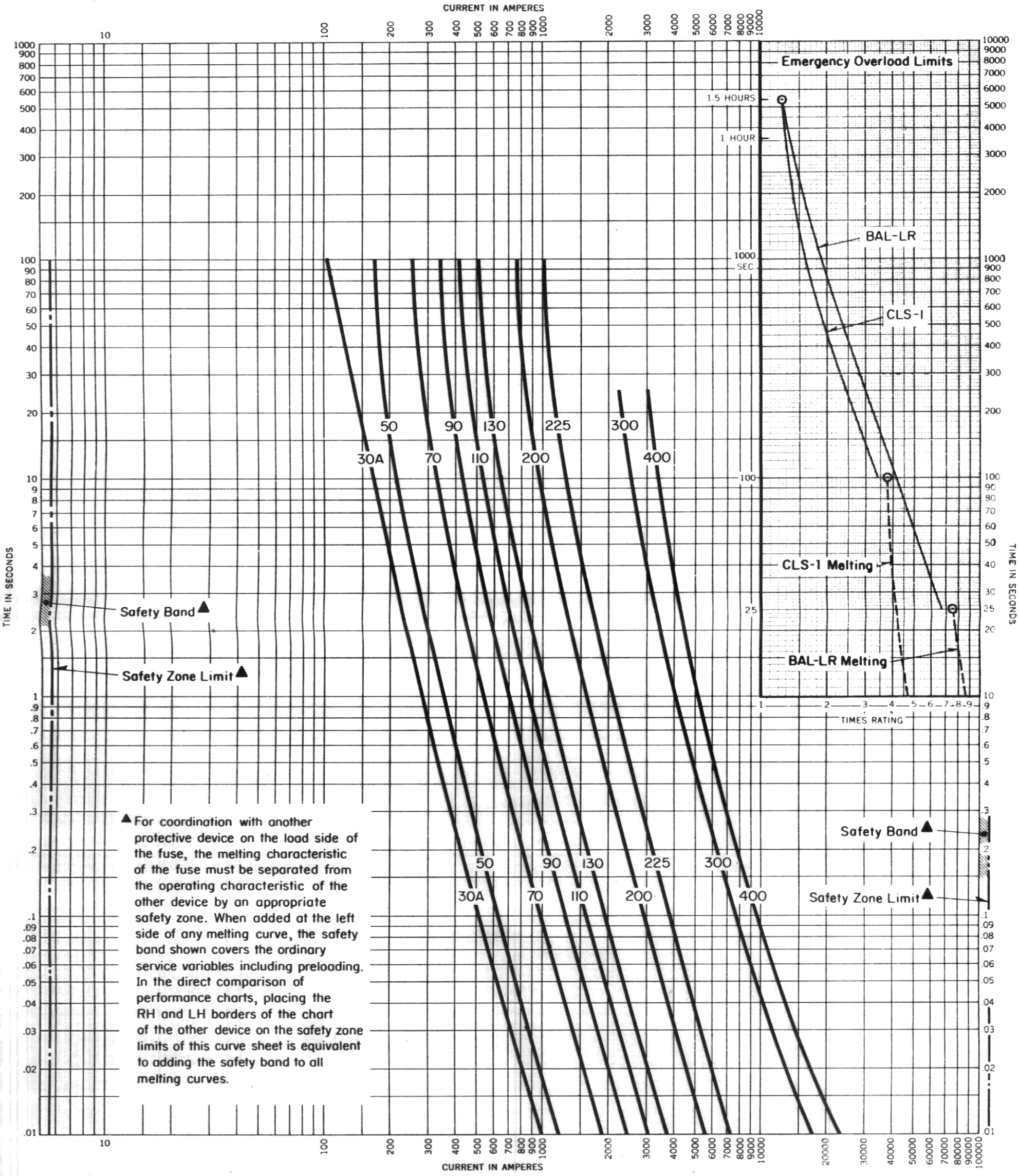
Curves are based on tests starting with fuse units at an ambient temperature of 25°C and without initial load. Curves are plotted to maximum test points so variations should be negative.

Westinghouse Electric Corporation
Switchgear Division, Power Switching Equipment, East Pittsburgh, Pa.
Printed in USA

Curve No. **19**

Supersedes Curve No. 19, dated January, 1961
Reference No. 459292
May, 1968

AD 36-661-A



Type CLS-1 and BAL-LR Current Limiting Fuses

Melting time-current characteristics, 2.0 to 5.5 Kv

Curves are based on tests starting with fuse units at an ambient temperature of 25°C and without initial load. Curves are plotted to minimum test points so variations should be positive.

Westinghouse Electric Corporation
Switchgear Division, Power Switching Equipment, East Pittsburgh, Pa.
Printed in USA

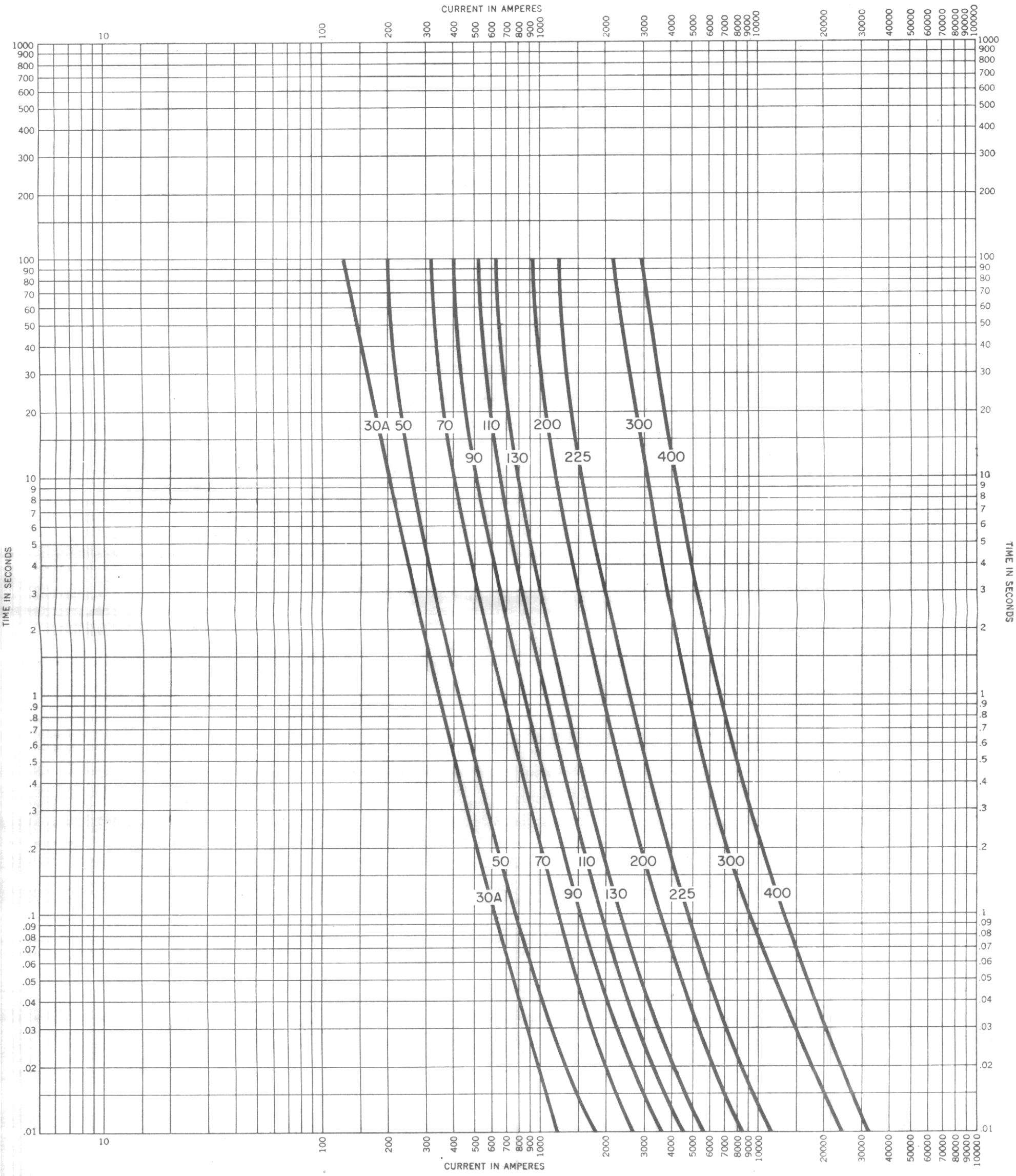
Curve No. **20**

Supersedes Curve No. 20, dated January, 1961

Reference No. 512853

May, 1968

AD 36-661-A



Type CLS-1 and BAL-LR Current Limiting Fuses

Total clearing time-current characteristics, 2.0 to 5.5 Kv

Curves are based on tests starting with fuse units at an ambient temperature of 25°C and without initial load. Curves are plotted to maximum test points so variations should be negative.

Westinghouse Electric Corporation
Switchgear Division, Power Switching Equipment, East Pittsburgh, Pa.
Printed in USA

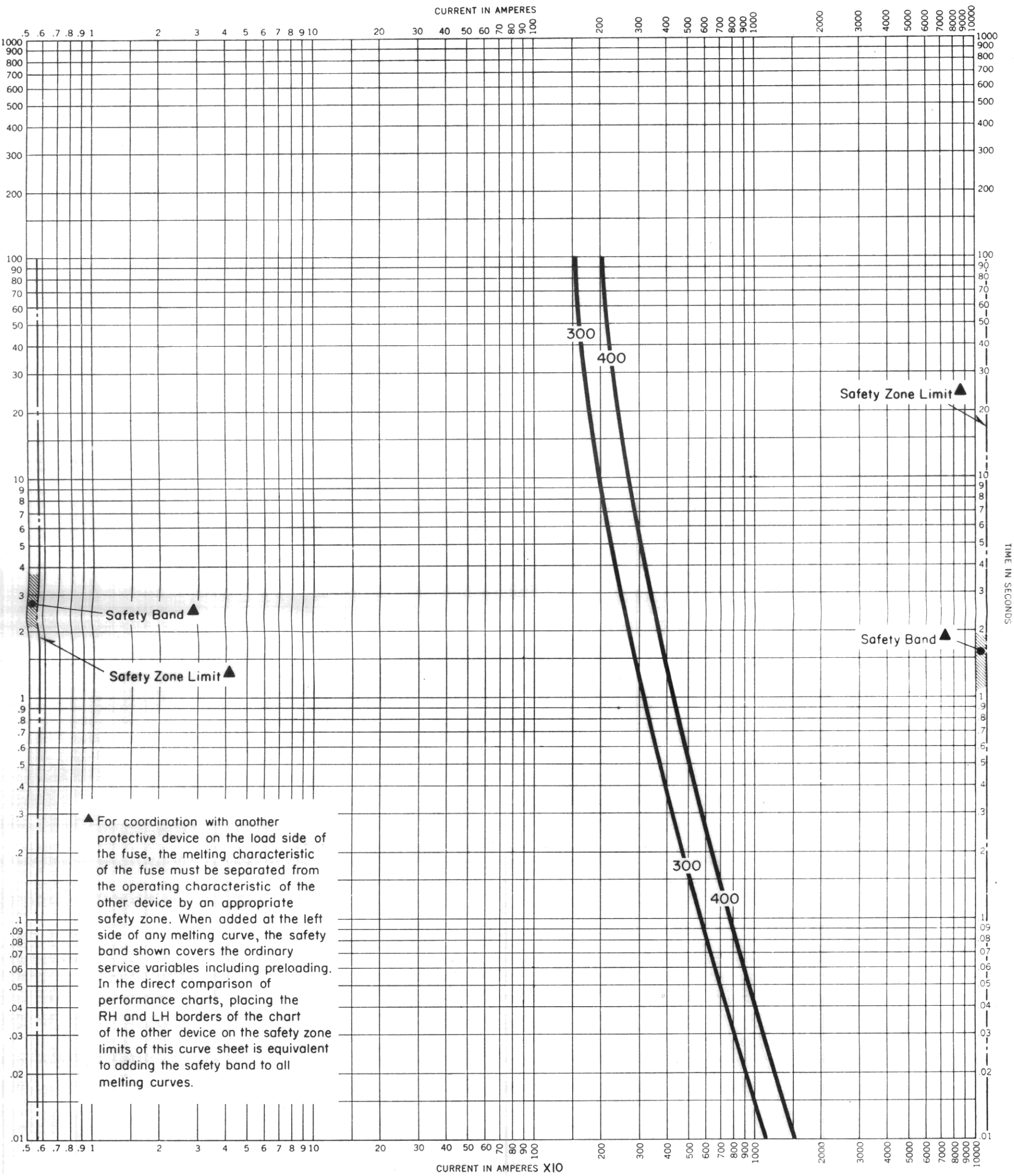
Curve No. **21**

Supersedes Curve No. 21, dated January, 1961

Reference No. 512854

May, 1968

AD 36-661-A



▲ For coordination with another protective device on the load side of the fuse, the melting characteristic of the fuse must be separated from the operating characteristic of the other device by an appropriate safety zone. When added at the left side of any melting curve, the safety band shown covers the ordinary service variables including preloading. In the direct comparison of performance charts, placing the RH and LH borders of the chart of the other device on the safety zone limits of this curve sheet is equivalent to adding the safety band to all melting curves.

Type CLS-2 Current Limiting Power Fuses

Melting time-current characteristics, 2.0 to 5.5 Kv

Curves are based on tests starting with fuse units at an ambient temperature of 25°C and without initial load. Curves are plotted to minimum test points so variations should be positive.

Westinghouse Electric Corporation
Switchgear Division, Power Switching Equipment, East Pittsburgh, Pa.
Printed in USA

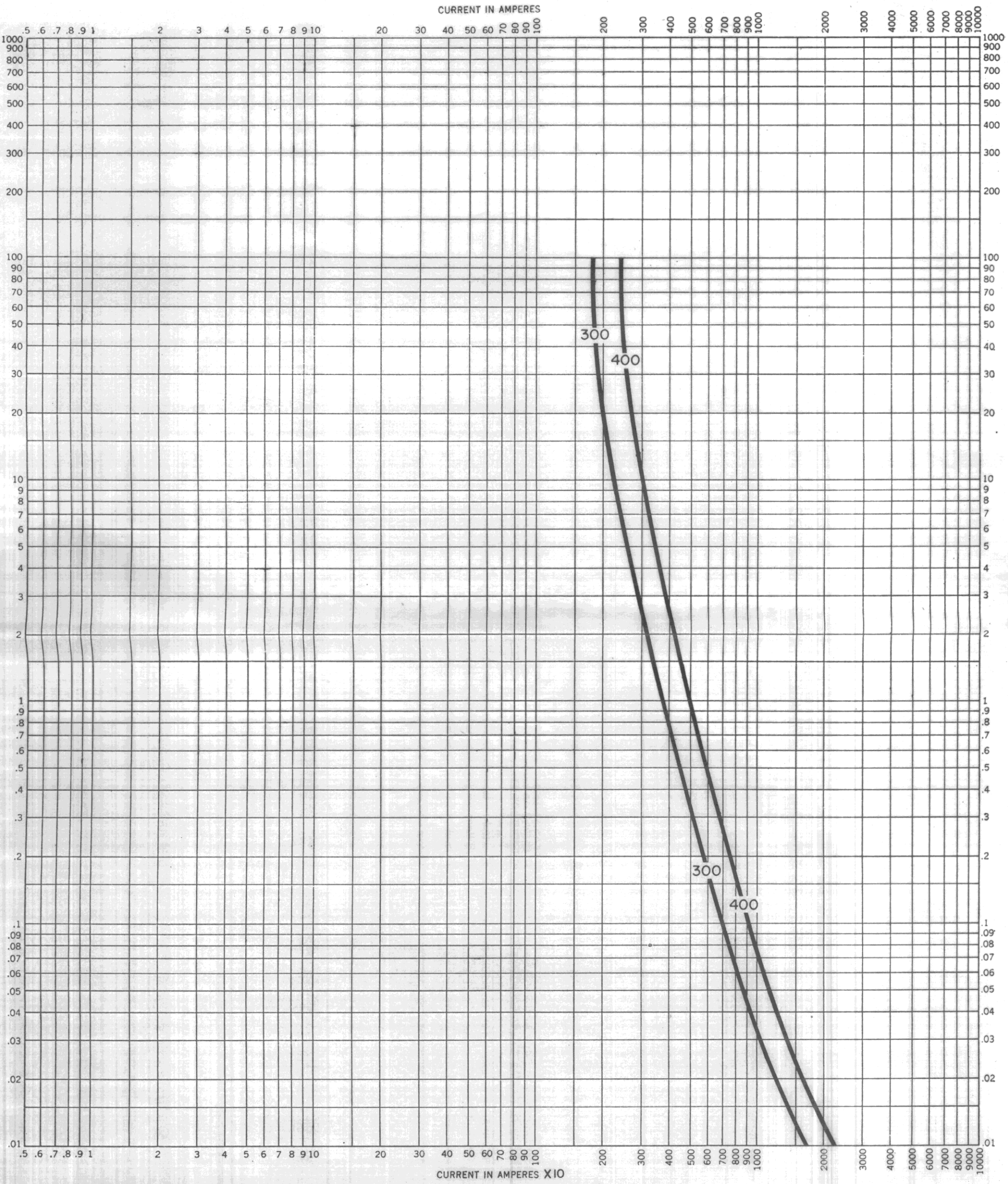
Curve No. **24**

Supersedes Curve No. 24, dated April, 1962

Reference No. 536863

May, 1968

AD 36-661-A



Type CLS-2 Current Limiting Power Fuses

Total clearing time-current characteristics, 2.0 to 5.5 Kv

Curves are based on tests starting with fuse units at an ambient temperature ef 25°C and without initial load. Curves are plotted to maximum test points so variations should be negative.

Westinghouse Electric Corporation
Switchgear Division, Power Switching Equipment, East Pittsburgh, Pa.
Printed in USA

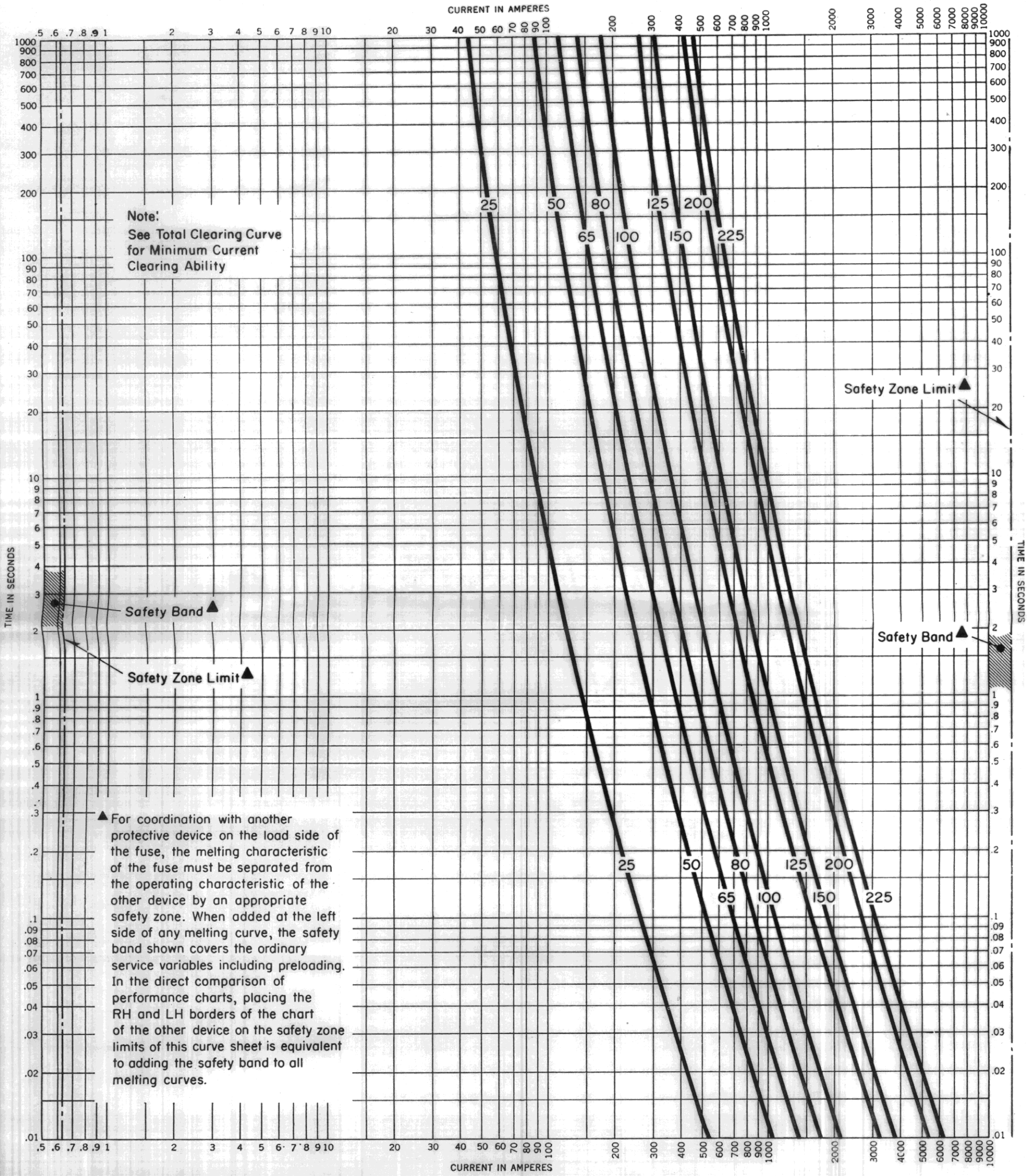
Curve No. **25**

Supersedes Curve No. 25, dated April, 1962

Reference No. 536864

May, 1968

AD 36-661-A



Type CLE-1 Current Limiting Power Fuses

Melting time-current characteristics, 2.0 to 5.5 Kv

Curves are based on tests starting with fuse units at an ambient temperature of 25°C and without initial load. Curves are plotted to minimum test points so variations should be positive.

Westinghouse Electric Corporation
Switchgear Division, Power Switching Equipment, East Pittsburgh, Pa.
Printed in USA

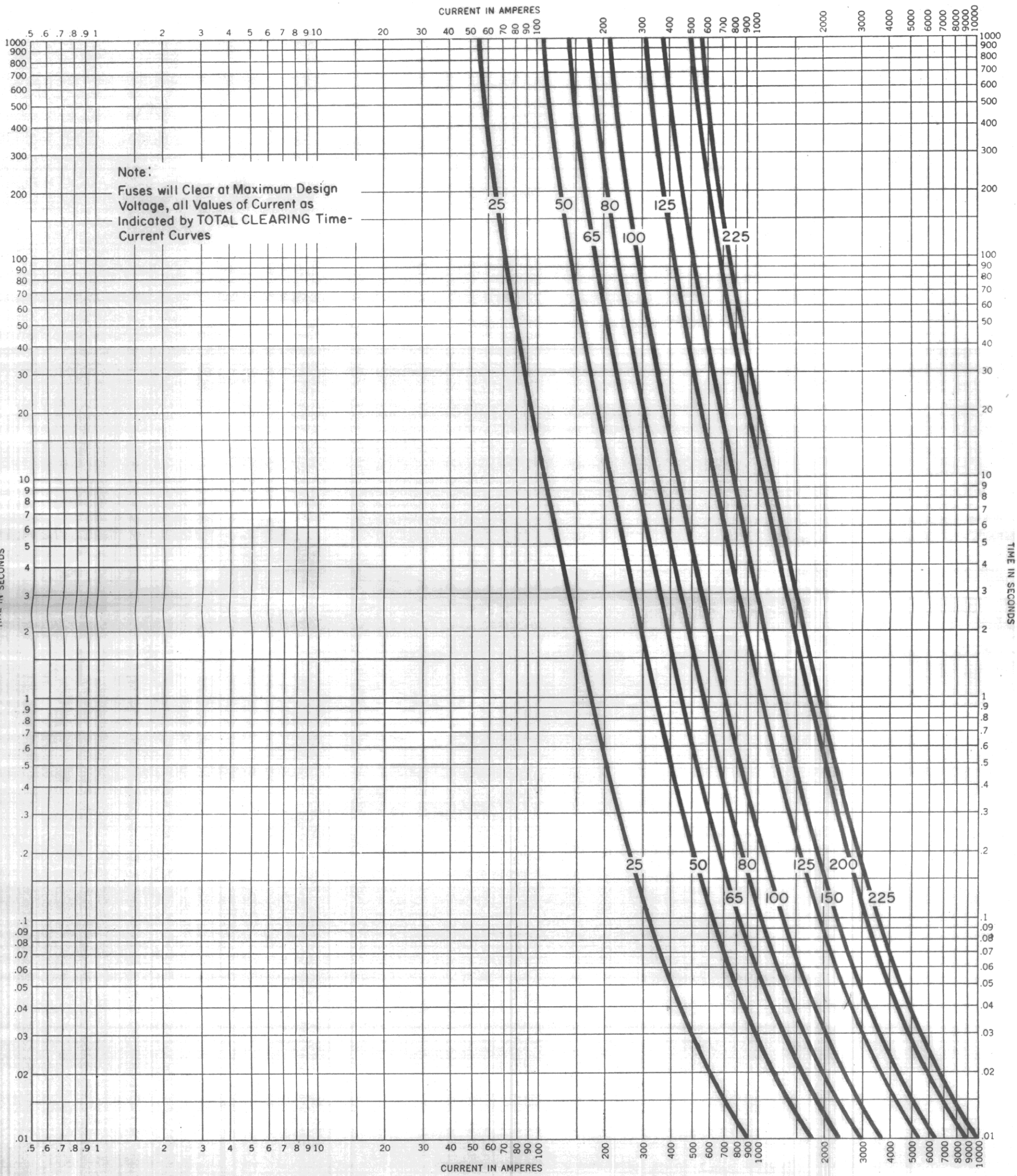
Curve No. **26**

Supersedes Curve No. 26, dated April, 1962

Reference No. 536861

May, 1968

AD 36-661-A



Type CLE-1 Current Limiting Power Fuses

Total clearing time-current characteristics, 2.0 to 5.5 Kv

Curves are based on tests starting with fuse units at an ambient temperature of 25°C and without initial load. Curves are plotted to maximum test points so variations should be negative.

Westinghouse Electric Corporation
Switchgear Division, Power Switching Equipment, East Pittsburgh, Pa.
Printed in USA

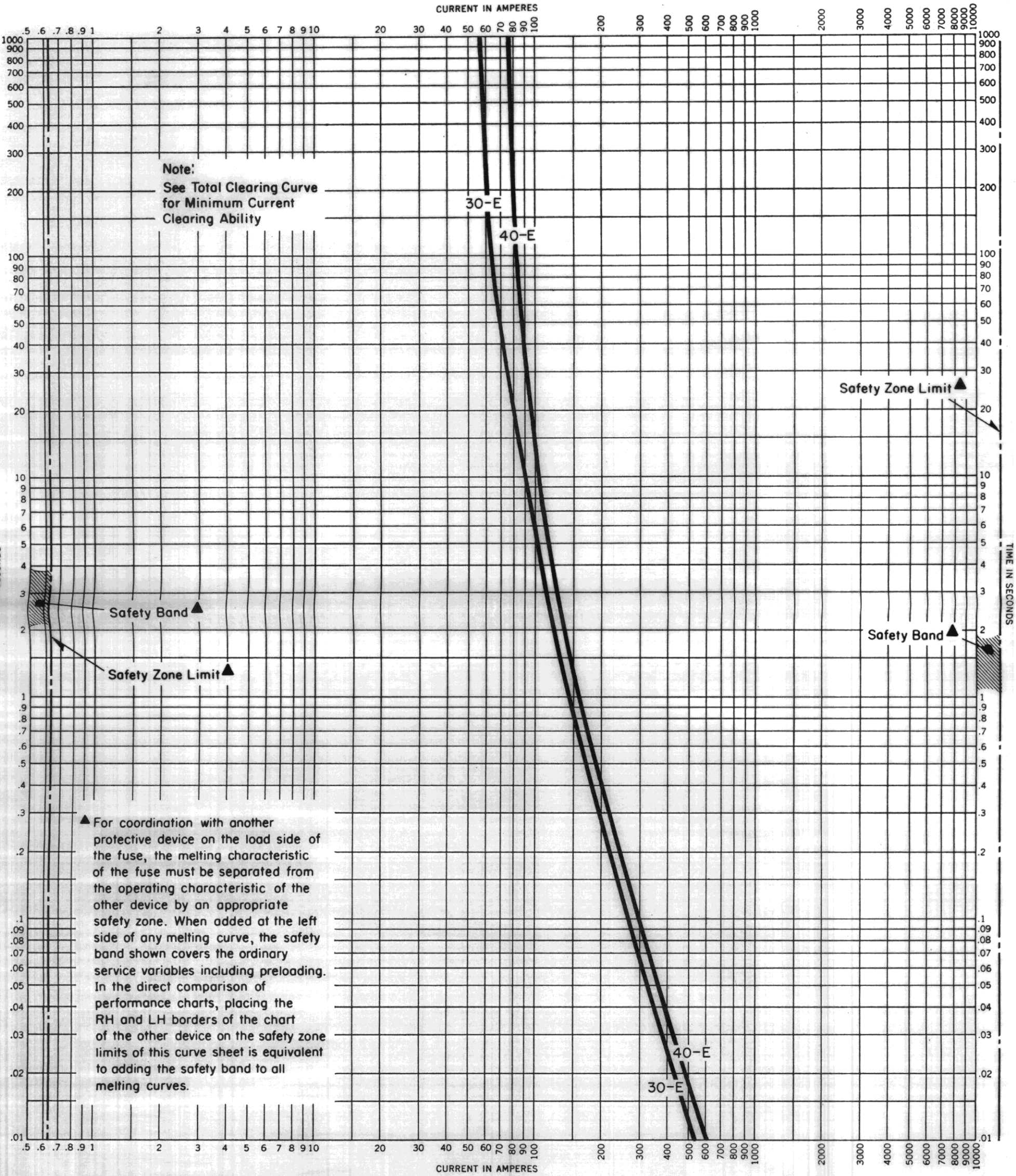
Curve No. **27**

Supersedes Curve No. 27, dated April, 1962

Reference No. 536862

May, 1968

AD 36-661-A



Type CLE-1 Current Limiting Power Fuses

Melting time-current characteristics, 2.0 to 5.5 Kv

Curves are based on tests starting with fuse units at an ambient temperature of 25°C and without initial load. Curves are plotted to minimum test points so variations should be positive.

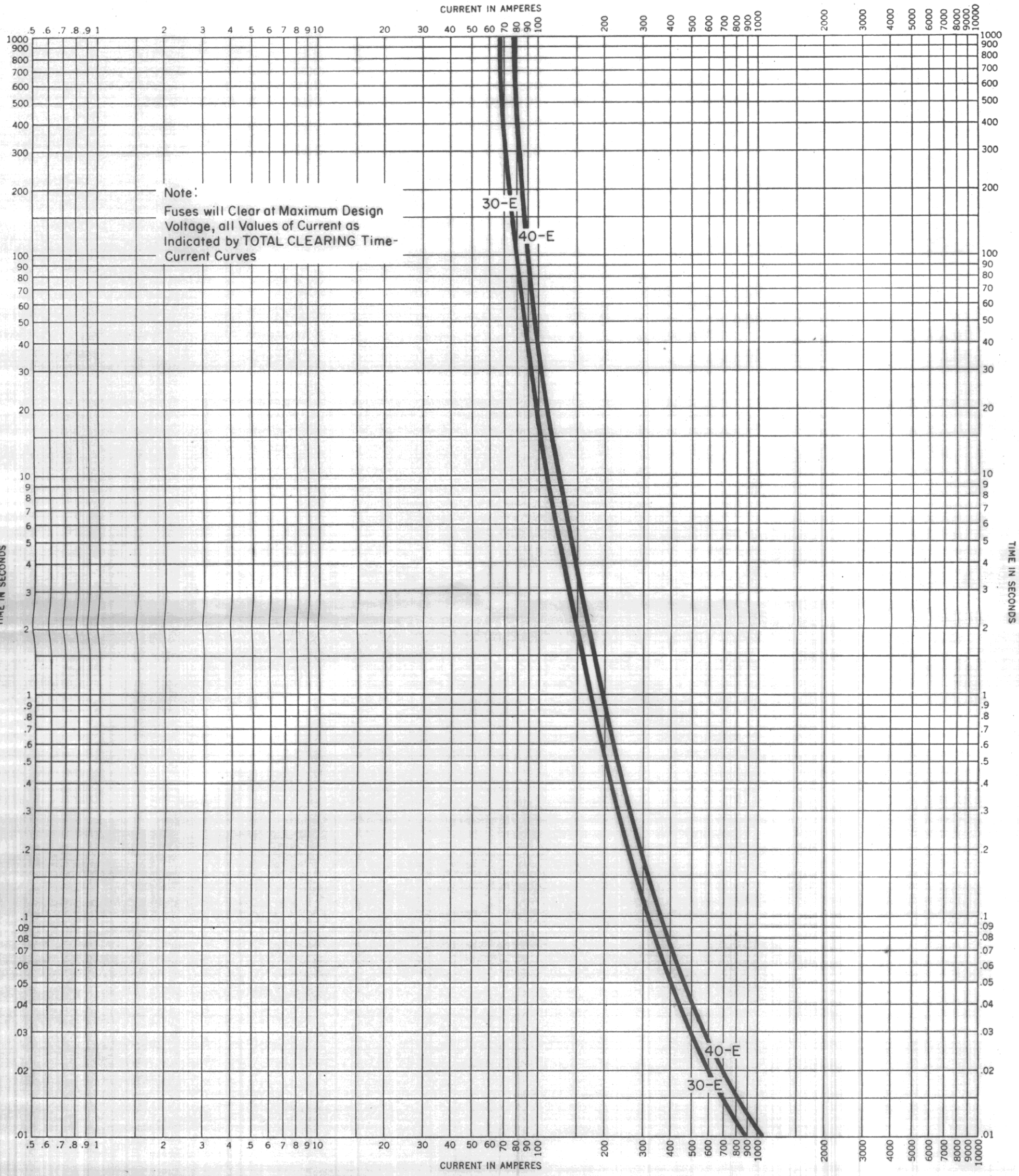
Westinghouse Electric Corporation
Switchgear Division, Power Switching Equipment, East Pittsburgh, Pa.
Printed in USA

Curve No. **28**

Supersedes Curve No. 28, dated September, 1964

Reference No. 536903

May, 1968



Type CLE-1 Current Limiting Power Fuses

Total clearing time-current characteristics, 2.0 to 5.5 Kv

Curves are based on tests starting with fuse units at an ambient temperature of 25°C and without initial load. Curves are plotted to maximum test points so variations should be negative.

Westinghouse Electric Corporation
Switchgear Division, Power Switching Equipment, East Pittsburgh, Pa.
Printed in USA

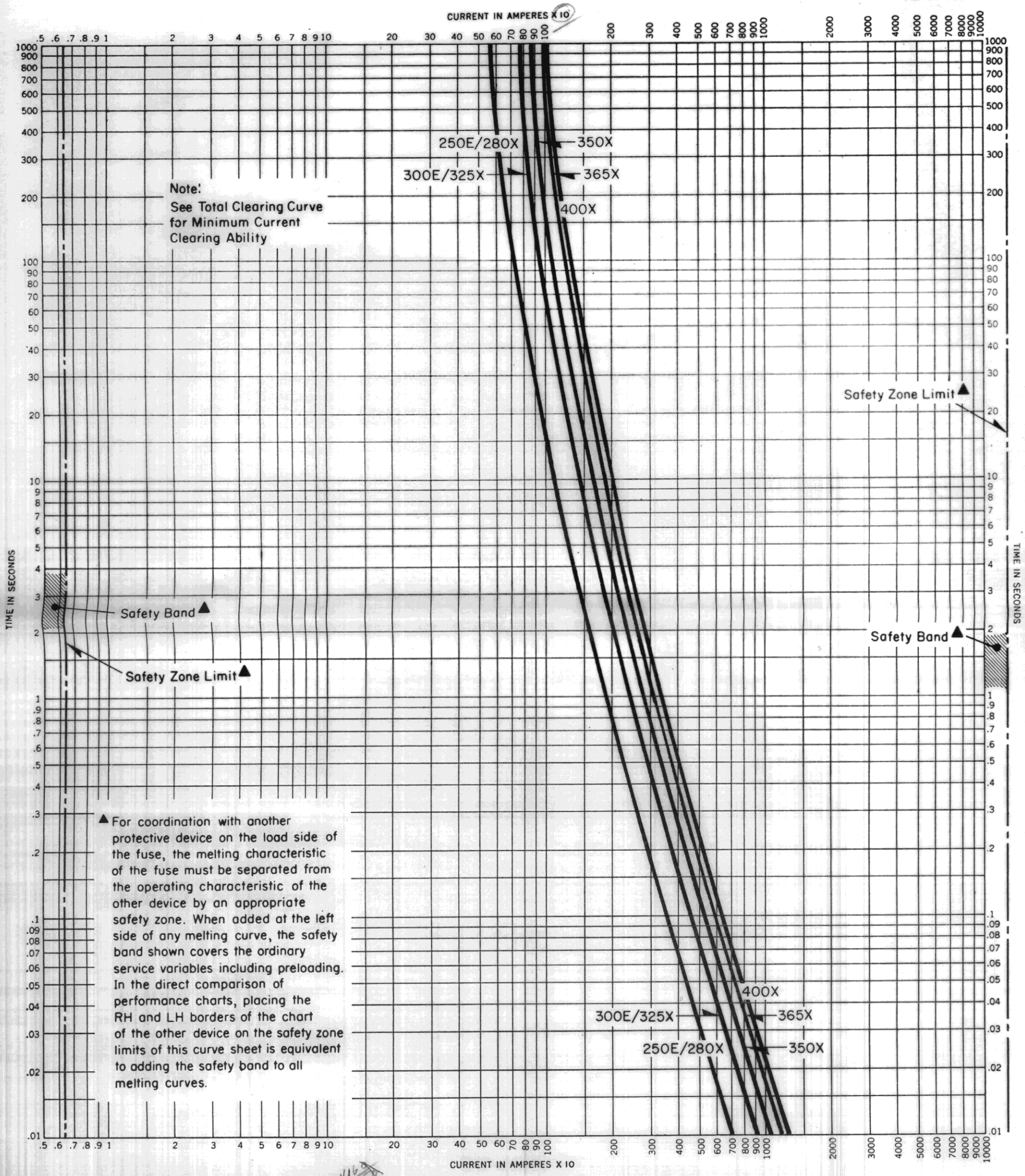
Curve No. **29**

Supersedes Curve No. 29, dated September, 1964

Reference No. 536904

May, 1968

AD 36-661-A



▲ For coordination with another protective device on the load side of the fuse, the melting characteristic of the fuse must be separated from the operating characteristic of the other device by an appropriate safety zone. When added at the left side of any melting curve, the safety band shown covers the ordinary service variables including preloading. In the direct comparison of performance charts, placing the RH and LH borders of the chart of the other device on the safety zone limits of this curve sheet is equivalent to adding the safety band to all melting curves.

Type CLE-2 Current Limiting Power Fuses

Melting time-current characteristics, 2.0 to 5.5 Kv

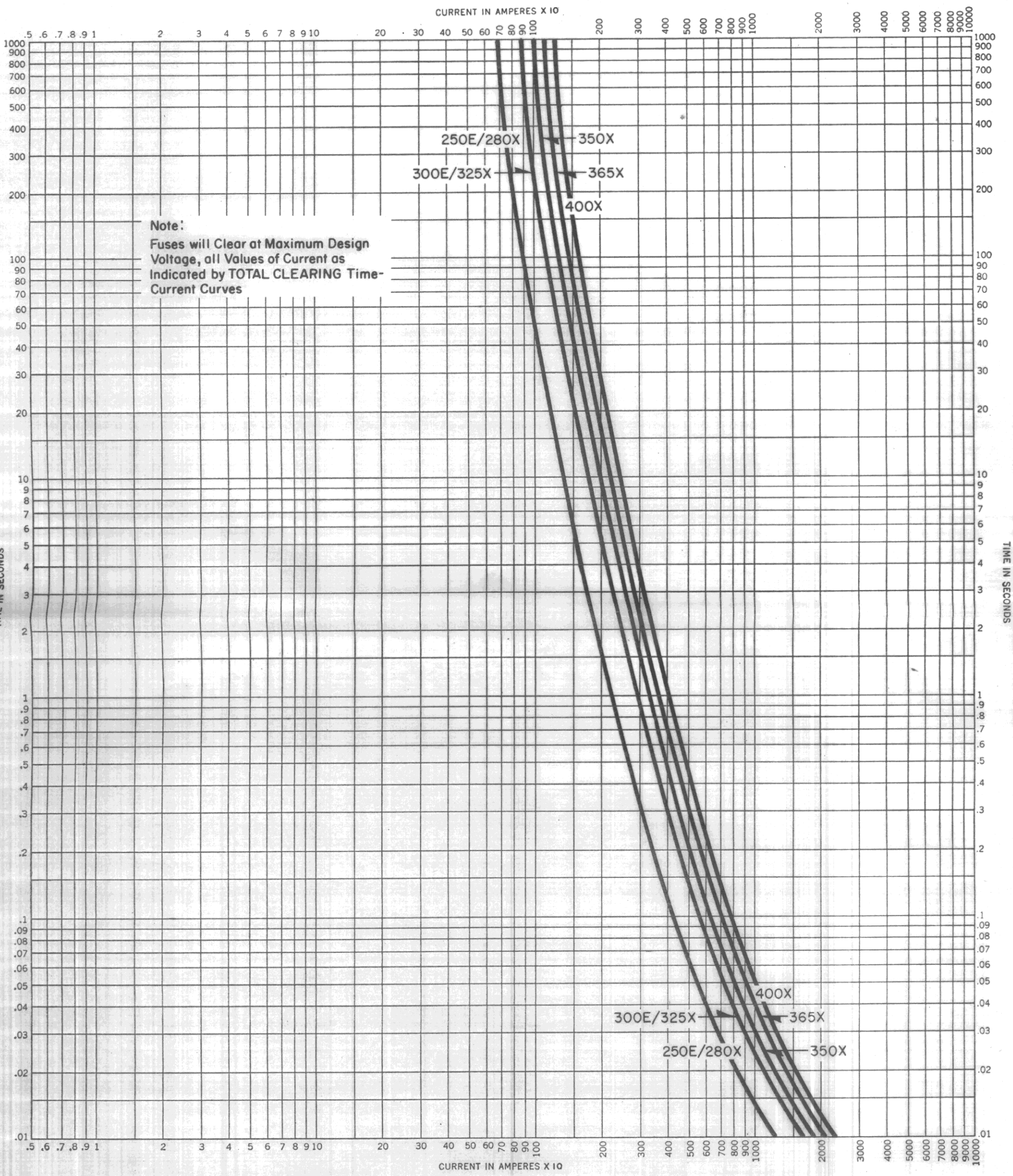
Curves are based on tests starting with fuse units at an ambient temperature of 25°C and without initial load. Curves are plotted to minimum test points so variations should be positive.

Curve No. 30

Westinghouse Electric Corporation
Switchgear Division, Power Switching Equipment, East Pittsburgh, Pa.
Printed in USA

Supersedes Curve No. 30, dated September, 1964
Reference No. 536900
May, 1968

AD 36-661-A



Type CLE-2 Current Limiting Power Fuses

Total clearing time-current characteristics, 2.0 to 5.5 Kv

Curves are based on tests starting with fuse units at an ambient temperature of 25°C and without initial load. Curves are plotted to maximum test points so variations should be negative.

Westinghouse Electric Corporation
Switchgear Division, Power Switching Equipment, East Pittsburgh, Pa.
Printed in USA

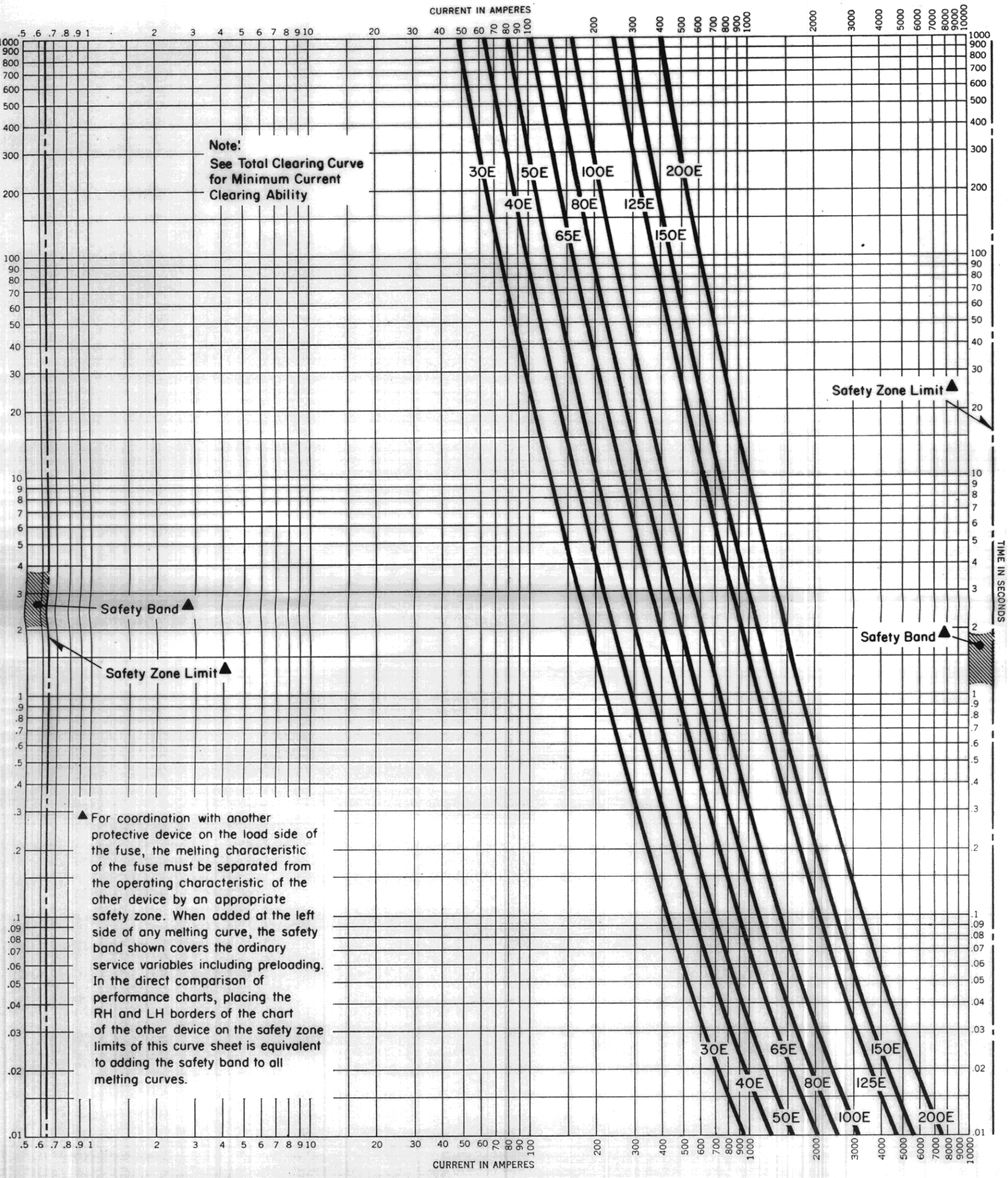
Curve No. **31**

Supersedes Curve No. 31, dated September, 1964

Reference No. 536901

May, 1968

AD 36-661-A



Types CLE-1 and CLE-2 Current Limiting Power Fuses

Melting time-current characteristics, 7.2 to 8.25 Kv

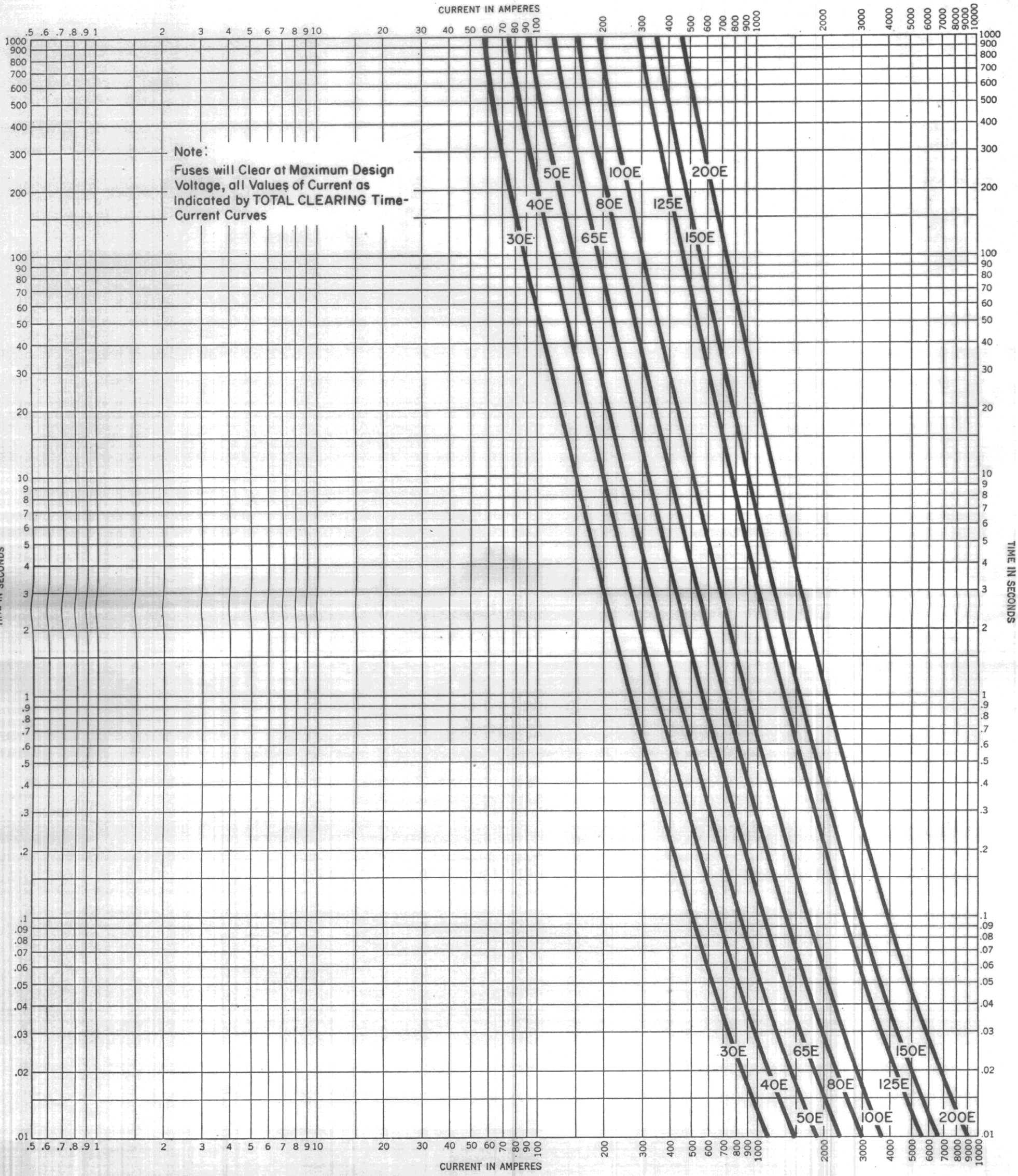
Curves are based on tests starting with fuse units at an ambient temperature of 25°C and without initial load. Curves are plotted to minimum test points so variations should be positive.

Westinghouse Electric Corporation
Switchgear Division, Power Switching Equipment, East Pittsburgh, Pa.
Printed in USA

Curve No. **32**

Supersedes Curve No. 32, dated September, 1964
Reference No. 536910-A
May, 1968

AD 36-661-A



Types CLE-1 and CLE-2 Current Limiting Power Fuses

Total clearing time-current characteristics, 7.2 to 8.25 Kv

Curves are based on tests starting with fuse units at an ambient temperature of 25°C and without initial load. Curves are plotted to maximum test points so variations should be negative.

Westinghouse Electric Corporation
Switchgear Division, Power Switching Equipment, East Pittsburgh, Pa.
Printed in USA

Curve No. **33**

Supersedes Curve No. 33, dated September, 1964

Reference No. 536911-A

May, 1968

AD 36-661-A

CURRENT IN AMPERES

.5 .6 .7 .8 .9 1 2 3 4 5 6 7 8 9 10 20 30 40 50 60 70 80 90 100 200 300 400 500 600 700 800 900 1000 2000 3000 4000 5000 6000 7000 8000 9000 10000

TIME IN SECONDS

1000 900 800 700 600 500 400 300 200 100 90 80 70 60 50 40 30 20 10 9 8 7 6 5 4 3 2 1 .9 .8 .7 .6 .5 .4 .3 .2 .1 .09 .08 .07 .06 .05 .04 .03 .02 .01

30E 40E 50E 65E 80E 100E 125X

Note:
See Total Clearing Curve for Minimum Current Clearing Ability

Safety Zone Limit

Safety Band

For coordination with another protective device on the load side of the fuse, the melting characteristic of the fuse must be separated from the operating characteristic of the other device by an appropriate safety zone.
When added at the left side of any melting curve, the safety band shown covers the ordinary service variables including preloading.
In the direct comparison of performance charts, placing the RH and LH borders of the chart of the other device on the safety zone limits of this curve sheet is equivalent to adding the safety band to all melting curves.

Type CLE-1 and CLE-2 Current Limiting Power Fuses

Melting time-current characteristics, 14.4 Kv

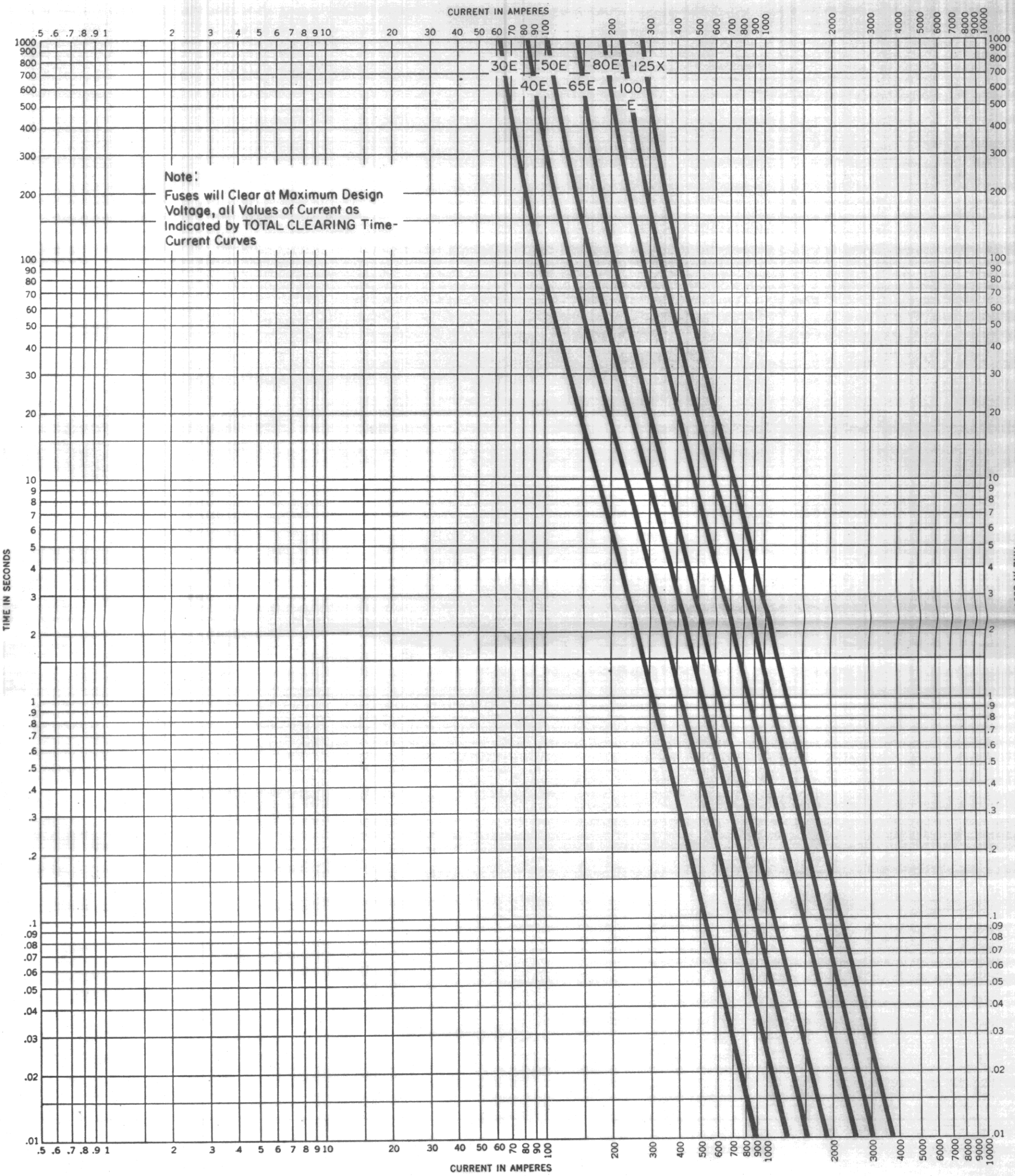
Curves are based on tests starting with fuse units at an ambient temperature of 25°C and without initial load. Curves are plotted to minimum test points so variations should be positive.

Westinghouse Electric Corporation
Switchgear Division, Power Switching Equipment, East Pittsburgh, Pa.
Printed in USA

Curve No. **34**

Supersedes Curve No. 34, dated November, 1966
Reference No. 598783
May, 1968

AD 36-661-A



Types CLE-1 and CLE-2 Current Limiting Power Fuses

Total clearing time-current characteristics, 14.4 Kv

Curves are based on tests starting with fuse units at an ambient temperature of 25°C and without initial load. Curves are plotted to maximum test points so variations should be negative.

Westinghouse Electric Corporation
Switchgear Division, Power Switching Equipment, East Pittsburgh, Pa.
Printed in USA

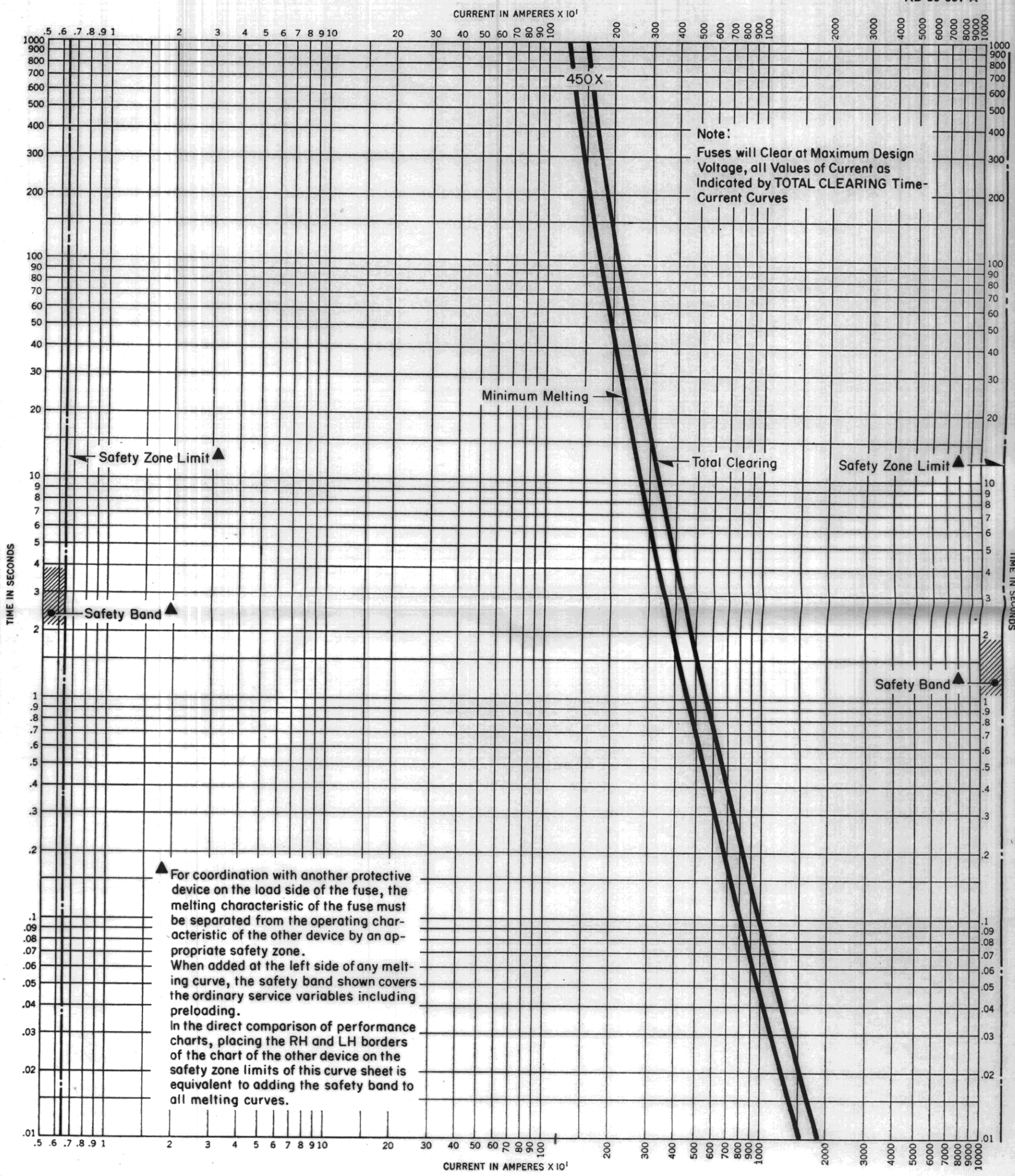
Curve No. 35

Supersedes Curve No. 35, dated November, 1966

Reference No. 598784

May, 1968

AD 36-661-A



Type CLE-2 Current Limiting Power Fuses

Melting and total clearing time-current characteristics, 2.0 to 5.5 Kv

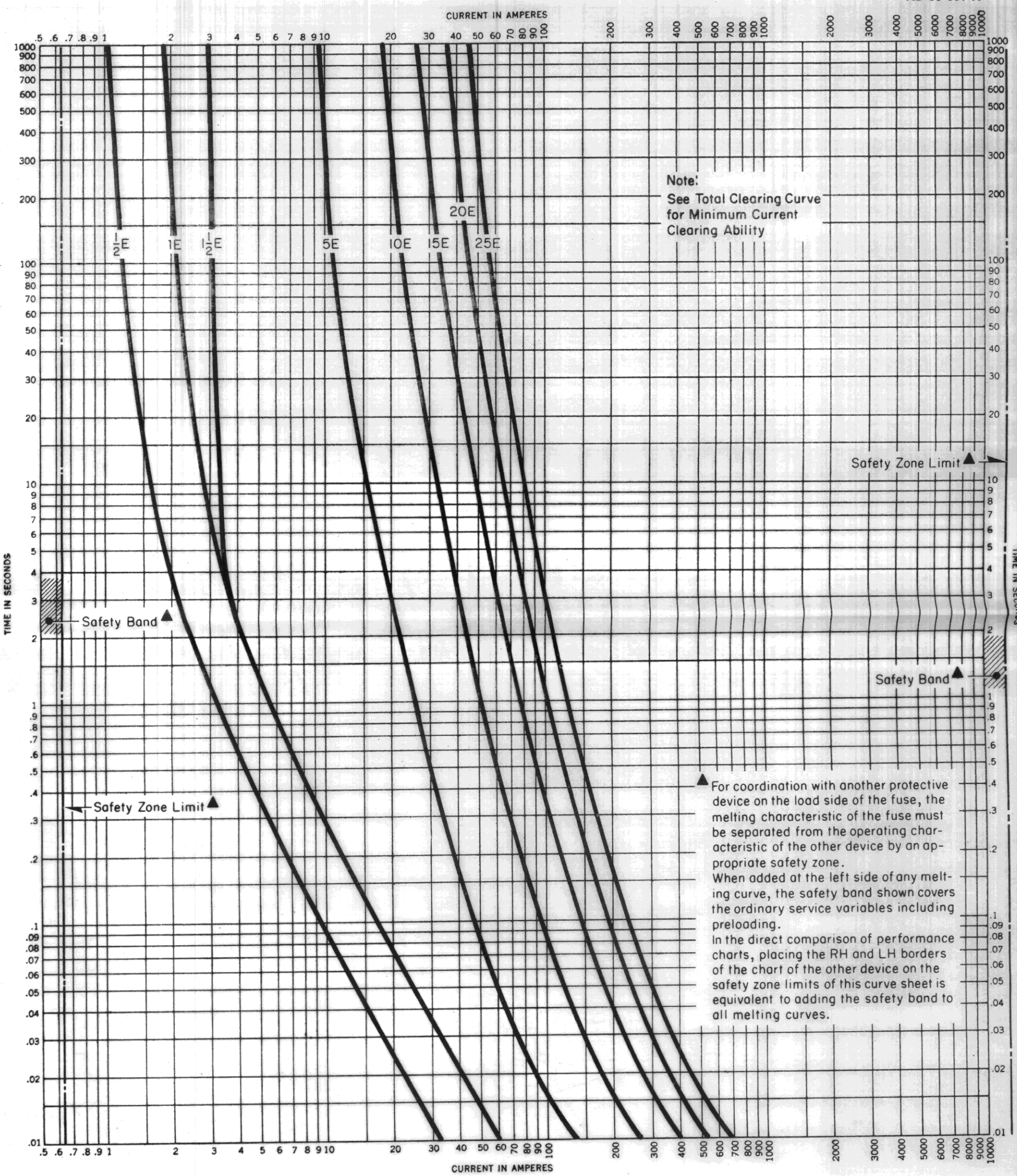
Curves are based on tests starting with fuse units at an ambient temperature of 25°C and without initial load. Curves are plotted to minimum test points on melting, and maximum on total clearing, so variations should be positive on melting and negative on total clearing.

Westinghouse Electric Corporation
Switchgear Division, Power Switching Equipment, East Pittsburgh, Pa.
Printed in USA

Curve No. **36**

Supersedes Curve No. 36, dated November, 1964
Reference No. 598839
May, 1968

AD 36-661-A



Type CLE-PT and CLE (Indicating) Current Limiting Power Fuses

Melting time-current characteristics, 2.4 Kv to 23.0 Kv

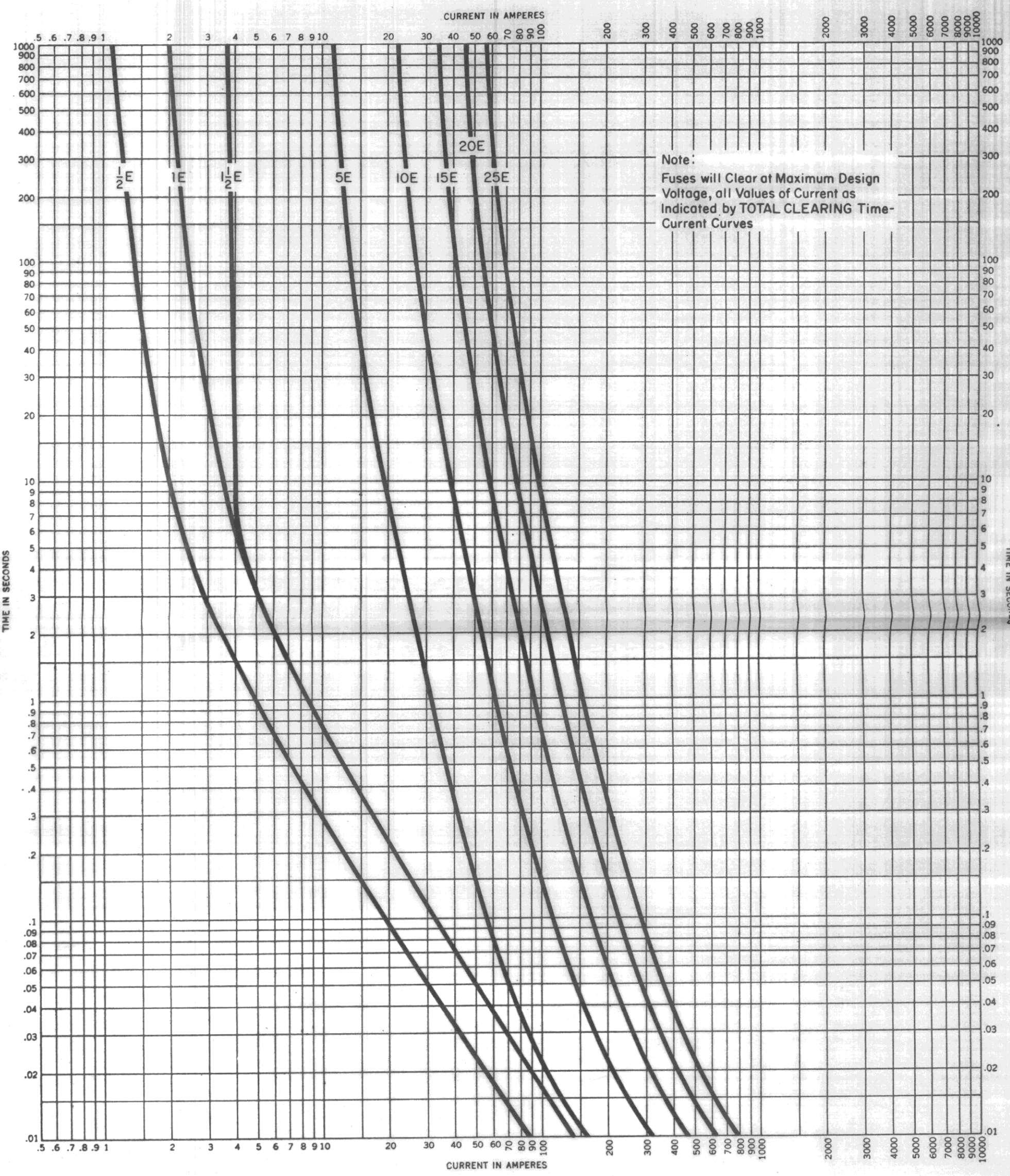
Curves are based on tests starting with fuse units at an ambient temperature of 25°C and without initial load. Curves are plotted to minimum test points so variations should be positive.

Westinghouse Electric Corporation
Switchgear Division, Power Switching Equipment, East Pittsburgh, Pa.
Printed in USA

Curve No. **37**

Supersedes Curve No. 37, dated November, 1966
Reference No. 563532
May, 1968

AD 36-661-A



Type CLE-PT and CLE (Indicating) Current Limiting Power Fuses

Total clearing time-current characteristics, 2.4 to 23.0 Kv

Curves are based on tests starting with fuse units at an ambient temperature of 25°C and without initial load. Curves are plotted to maximum test points so variations should be negative.

Westinghouse Electric Corporation
Switchgear Division, Power Switching Equipment, East Pittsburgh, Pa.
Printed in USA

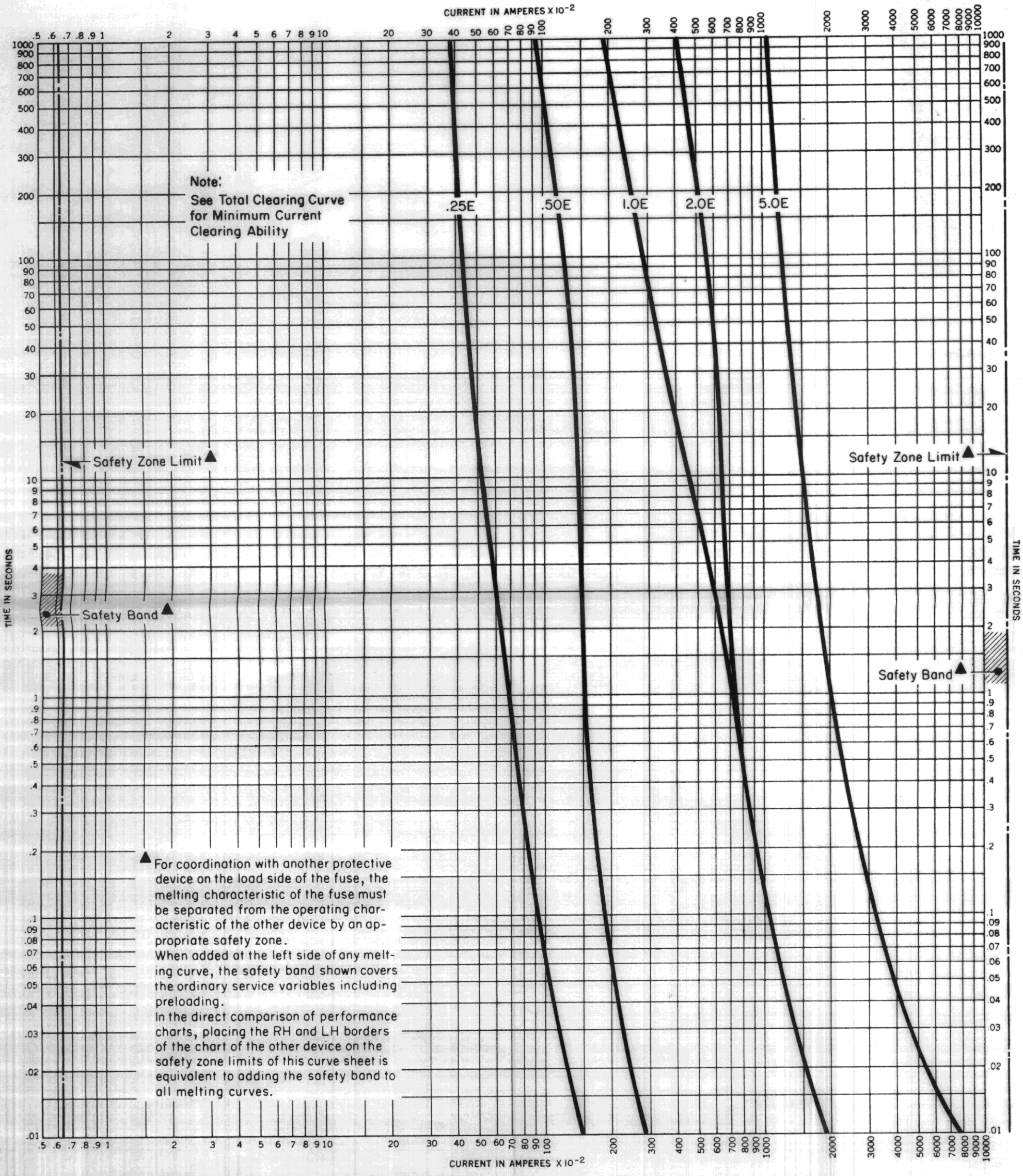
Curve No. 38

Supersedes Curve No. 38, dated November, 1966

Reference No. 563533

May, 1968

AD 36-661-A



Type CLE-PT (Non-Indicating) Current Limiting Power Fuses

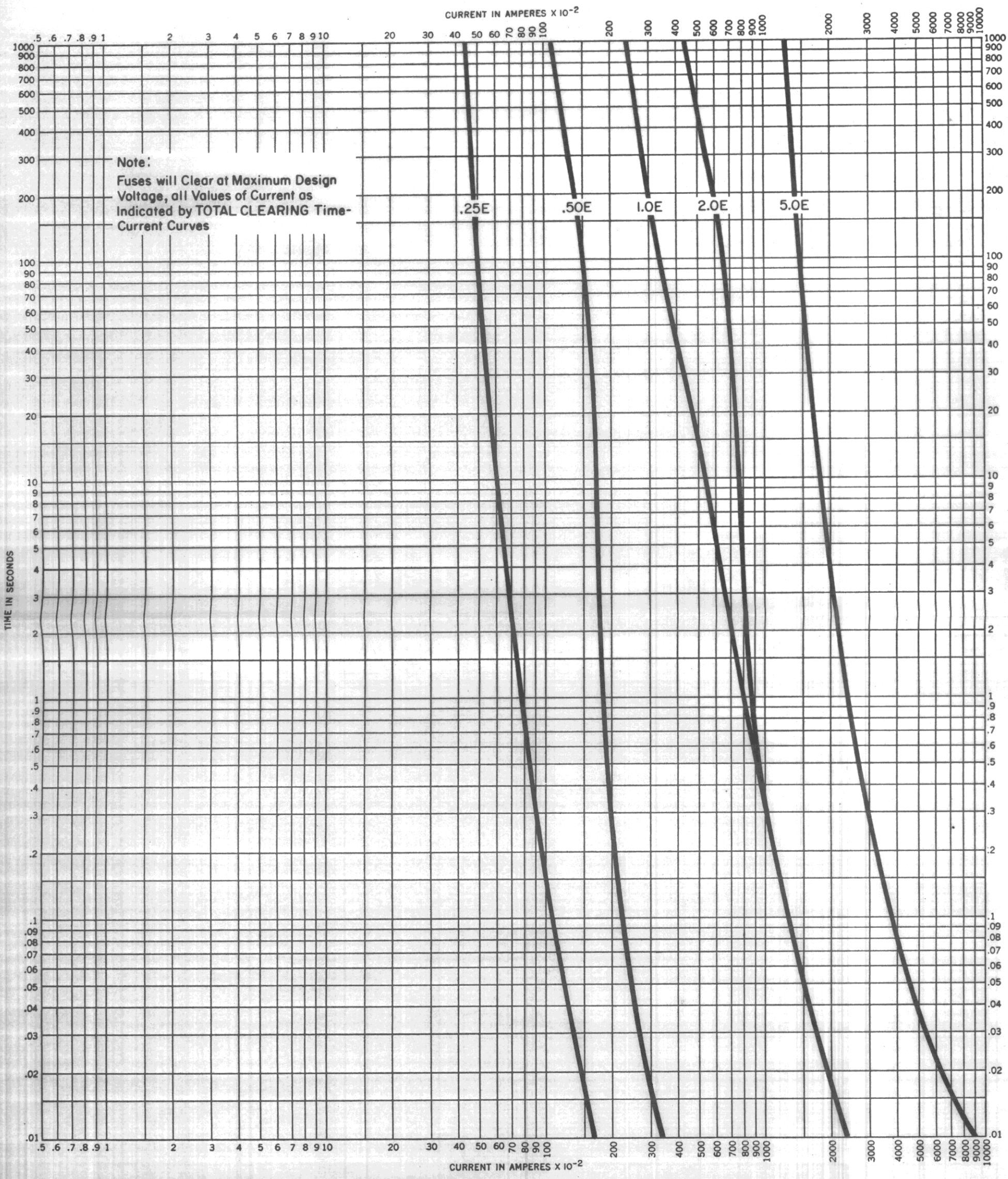
Melting time-current characteristics, 2.0 Kv to 5.5 Kv

Curves are based on tests starting with fuse units at an ambient temperature of 25°C and without initial load. Curves are plotted to minimum test points so variations should be positive.

Westinghouse Electric Corporation
Switchgear Division, Power Switching Equipment, East Pittsburgh, Pa.
Printed in USA

Curve No. 39

Supersedes Curve No. 39, dated November, 1966
Reference No. 563572
May, 1968



Type CLE-PT (Non-Indicating) Current Limiting Power Fuses

Total clearing time-current characteristics, 2.0 Kv to 5.5 Kv

Curves are based on tests starting with fuse units at an ambient temperature of 25°C and without initial load. Curves are plotted to maximum test points so variations should be negative.

Westinghouse Electric Corporation
Switchgear Division, Power Switching Equipment, East Pittsburgh, Pa.
Printed in USA

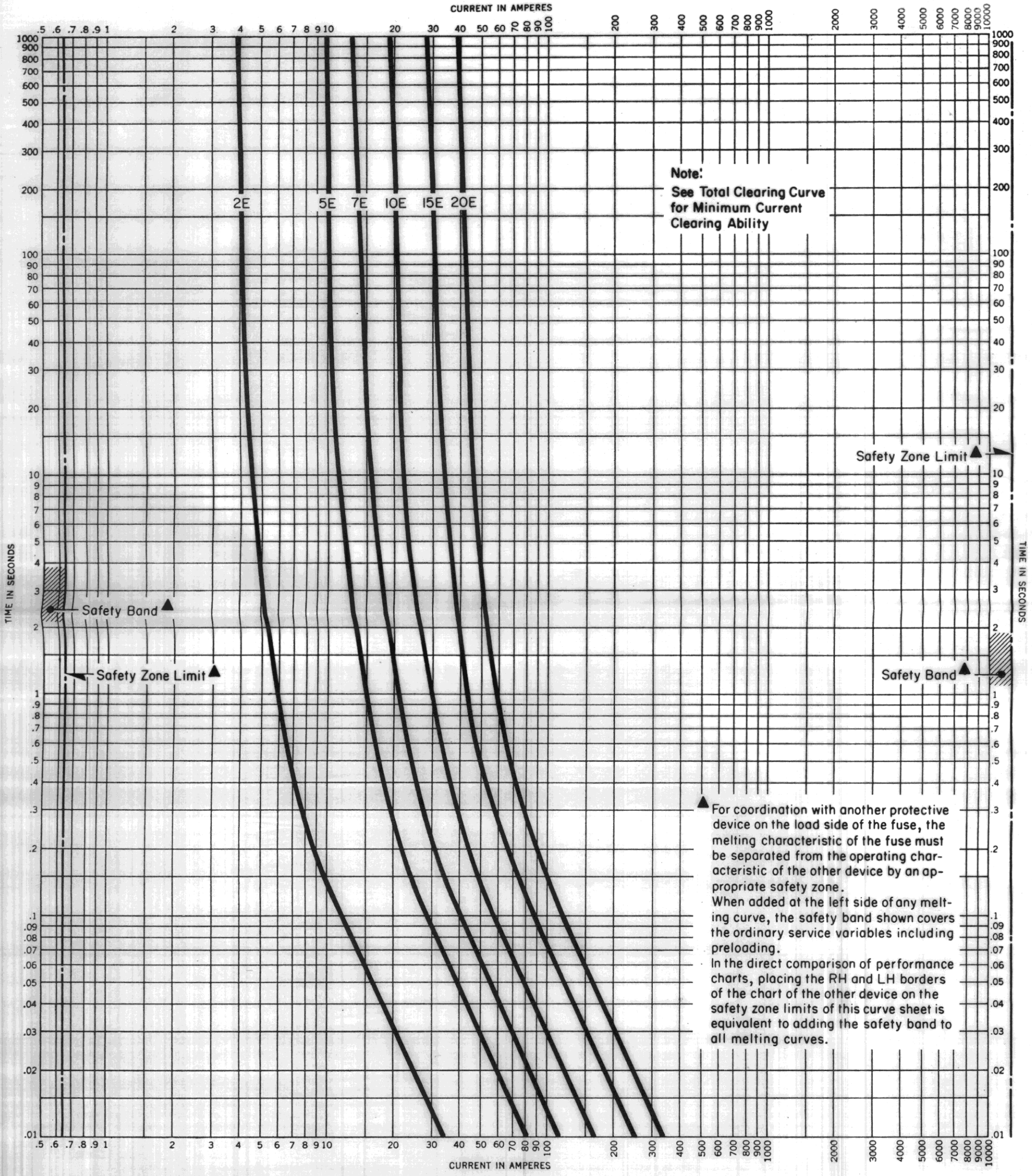
Curve No. **40**

Supersedes Curve No. 40, dated November, 1966

Reference No. 598837

May, 1968

AD 36-661-A



Type CLV (Non-Indicating) Current Limiting Power Fuses

Melting time-current characteristics, 600 Volts

Curves are based on tests starting with fuse units at an ambient temperature of 25°C and without initial load. Curves are plotted to minimum test points so variations should be positive.

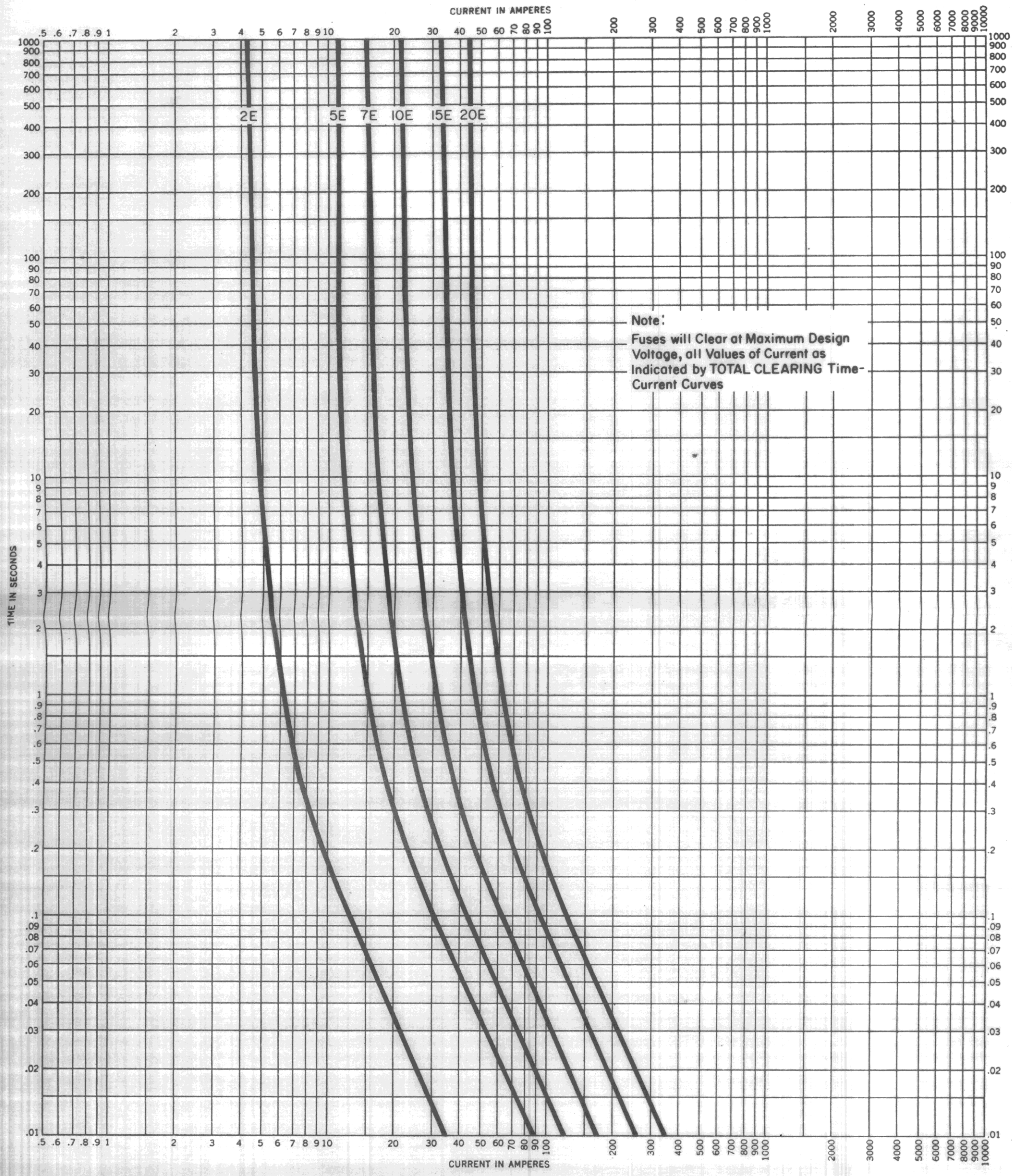
Westinghouse Electric Corporation
Switchgear Division, Power Switching Equipment, East Pittsburgh, Pa.
Printed in USA

Curve No. **41**

Supersedes Curve No. 41, dated November, 1966

Reference No. 563562

May, 1968



Type CLV (Non-Indicating) Current Limiting Power Fuses

Total clearing time-current characteristics, 600 Volts

Curves are based on tests starting with fuse units at an ambient temperature of 25°C and without initial load. Curves are plotted to maximum test points so variations should be negative.

Westinghouse Electric Corporation
Switchgear Division, Power Switching Equipment, East Pittsburgh, Pa.
Printed in USA

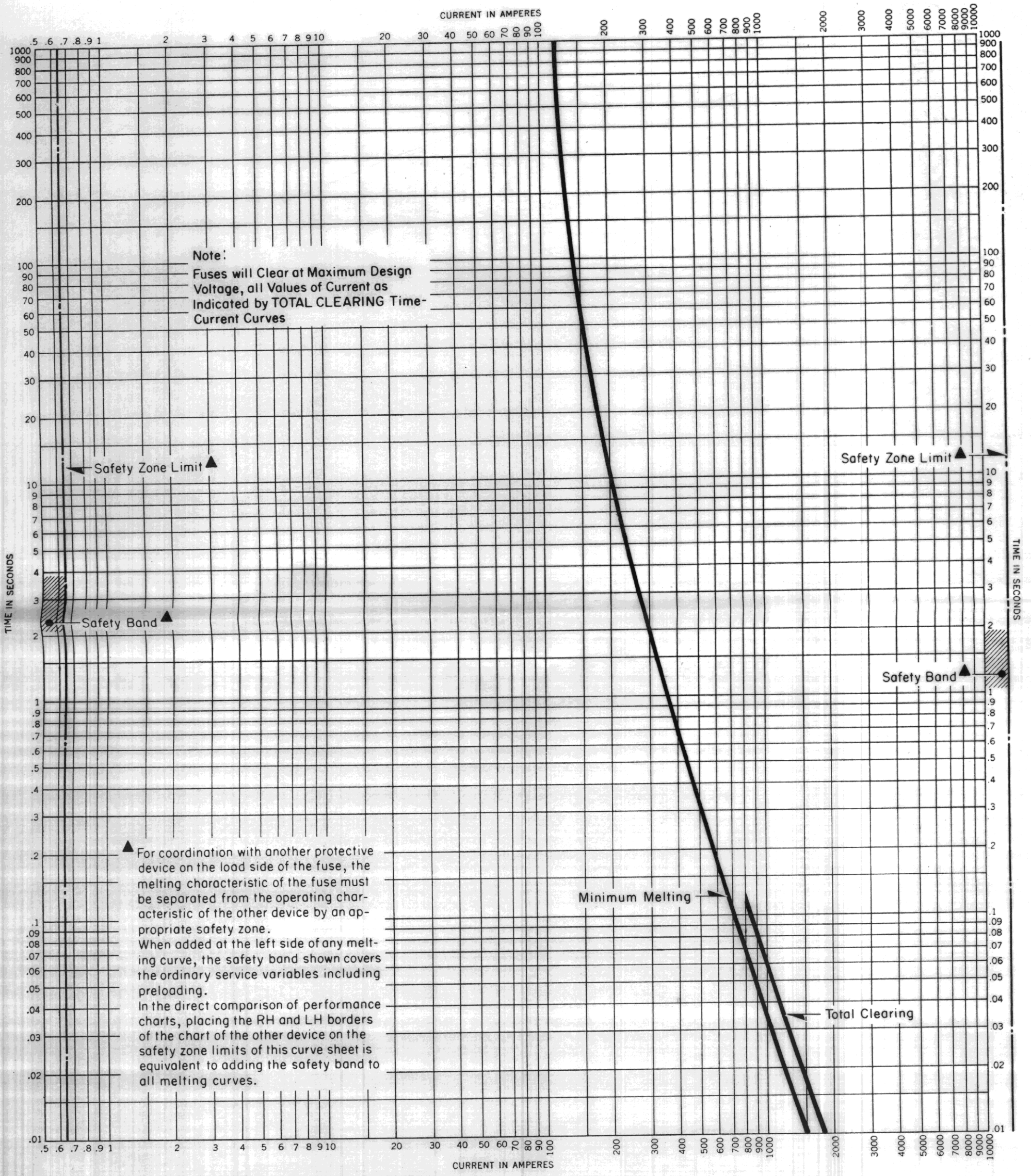
Curve No. **42**

Supersedes Curve No. 42, dated November, 1966

Reference No. 563563

May, 1968

AD 36-661-A



Type CLT Current Limiting Power Fuses (S#678C245G02 and G03)

Melting and total clearing time-current characteristics, 14.4 Kv

Curves are based on tests starting with fuse units at an ambient temperature of 25°C and without initial load. Curves are plotted to minimum test points on melting, and maximum on total clearing, so variations should be positive on melting, and negative on total clearing.

Westinghouse Electric Corporation
Switchgear Division, Power Switching Equipment, East Pittsburgh, Pa.
Printed in USA

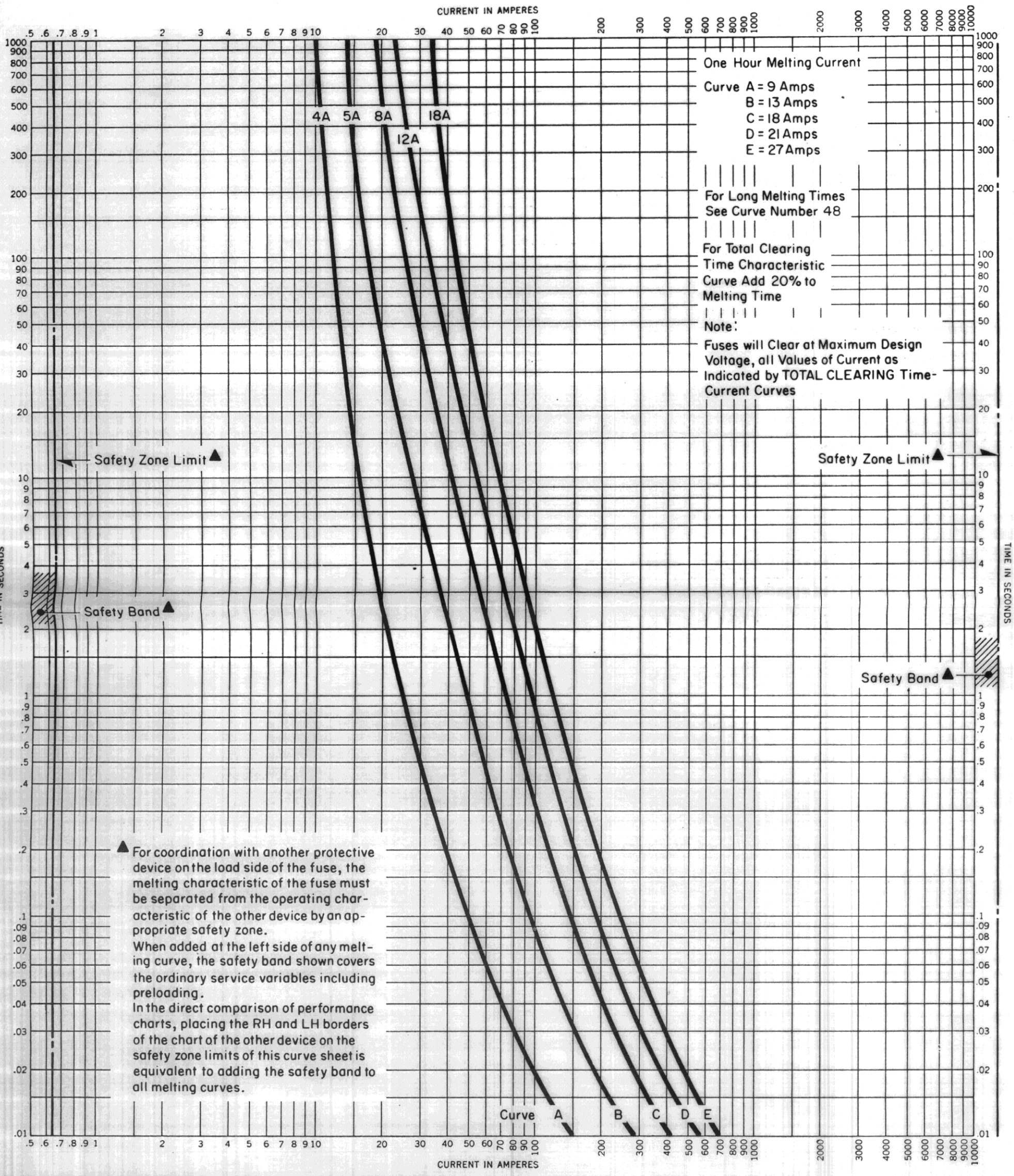
Curve No. **43**

Supersedes Curve No. 43, dated November, 1966

Reference No. 598838

May, 1968

AD 36-661-A



Type CLT Current Limiting Power Fuses (EFD Type)

Melting time-current characteristics, 15 Kv

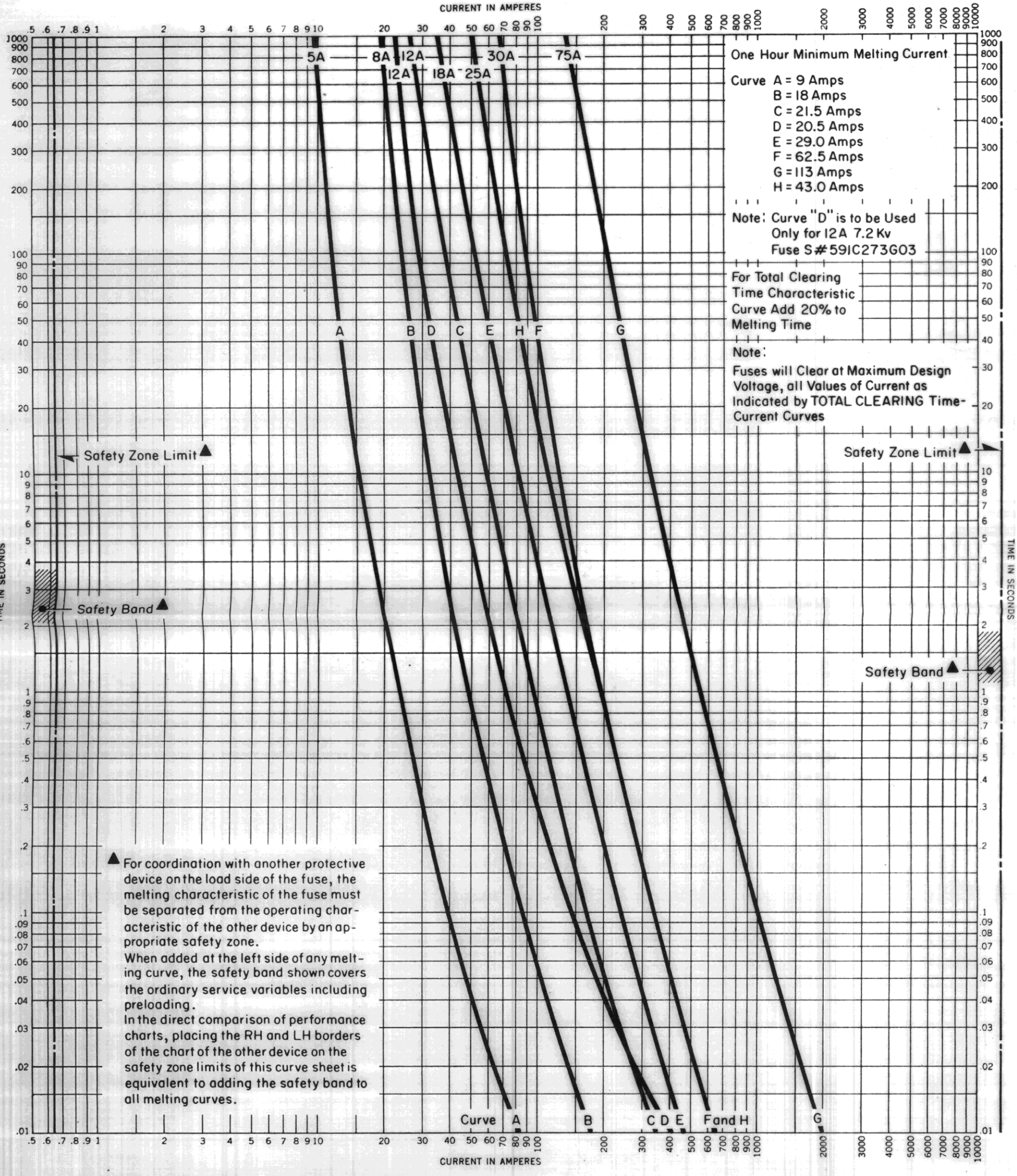
Curves are based on tests starting with fuse units at an ambient temperature of 25°C and without initial load. Curves are plotted to minimum test points so variations should be positive.

Westinghouse Electric Corporation
Switchgear Division, Power Switching Equipment, East Pittsburgh, Pa.
Printed in USA

Curve No. **44**

Supersedes Curve No. 44, dated November, 1966
Reference No. 598857
May, 1968

AD 36-661-A



Type CLT Current Limiting Power Fuses (EFD Type)

Melting time-current characteristics, 2.4 to 8.0 Kv

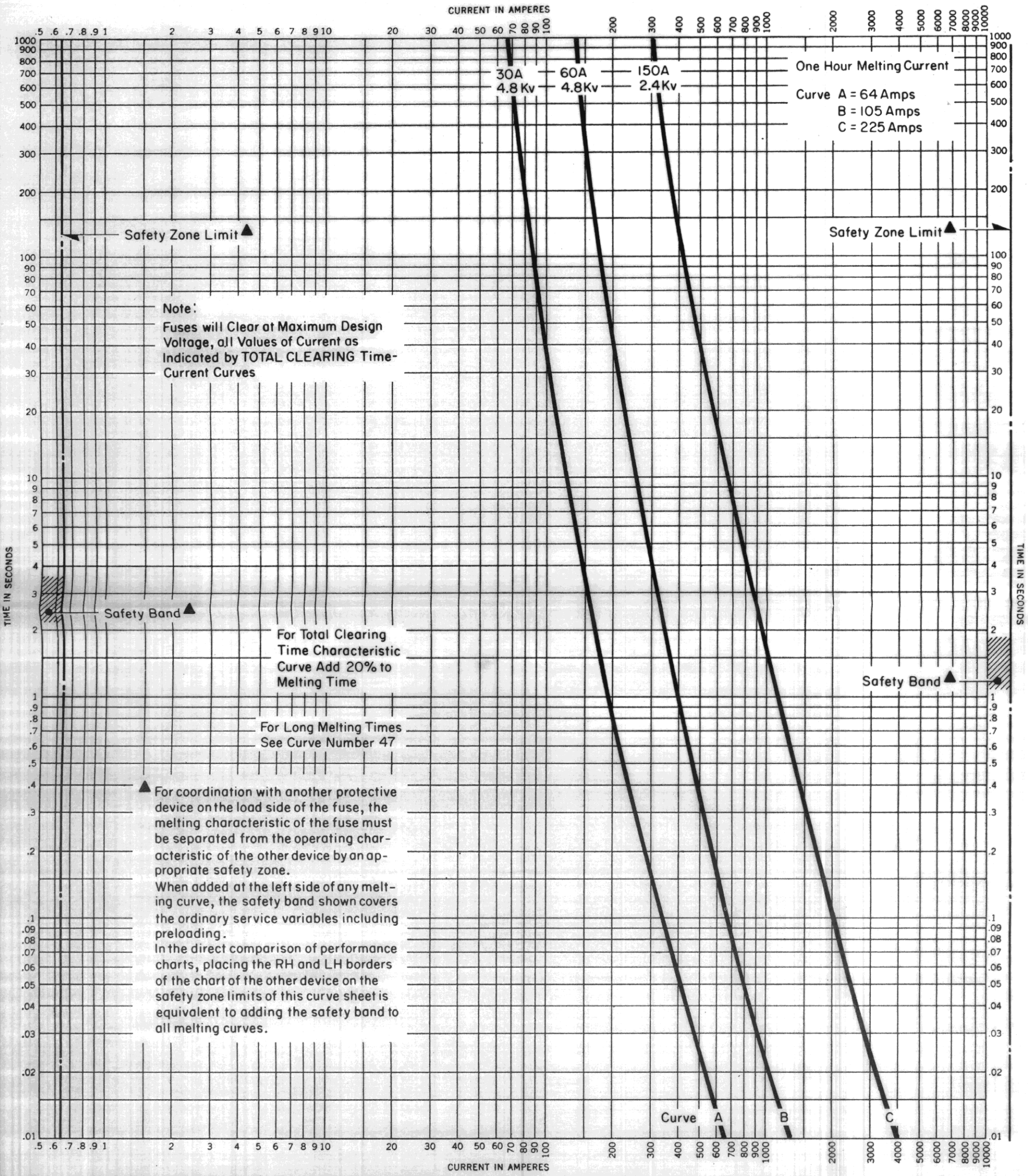
Curves are based on tests starting with fuse units at an ambient temperature of 25°C and without initial load. Curves are plotted to minimum test points so variations should be positive.

Westinghouse Electric Corporation
Switchgear Division, Power Switching Equipment, East Pittsburgh, Pa.
Printed in USA

Curve No. **45**

Supersedes Curve No. 45, dated November, 1966
Reference No. 598858
May, 1968

AD 36-661-A



Type CLT-1 Current Limiting Power Fuses (EFD-1 Type)

Melting time-current characteristics, 2.4, 4.8 Kv

Curves are based on tests starting with fuse units at an ambient temperature of 25°C and without initial load. Curves are plotted to minimum test points so variations should be positive.

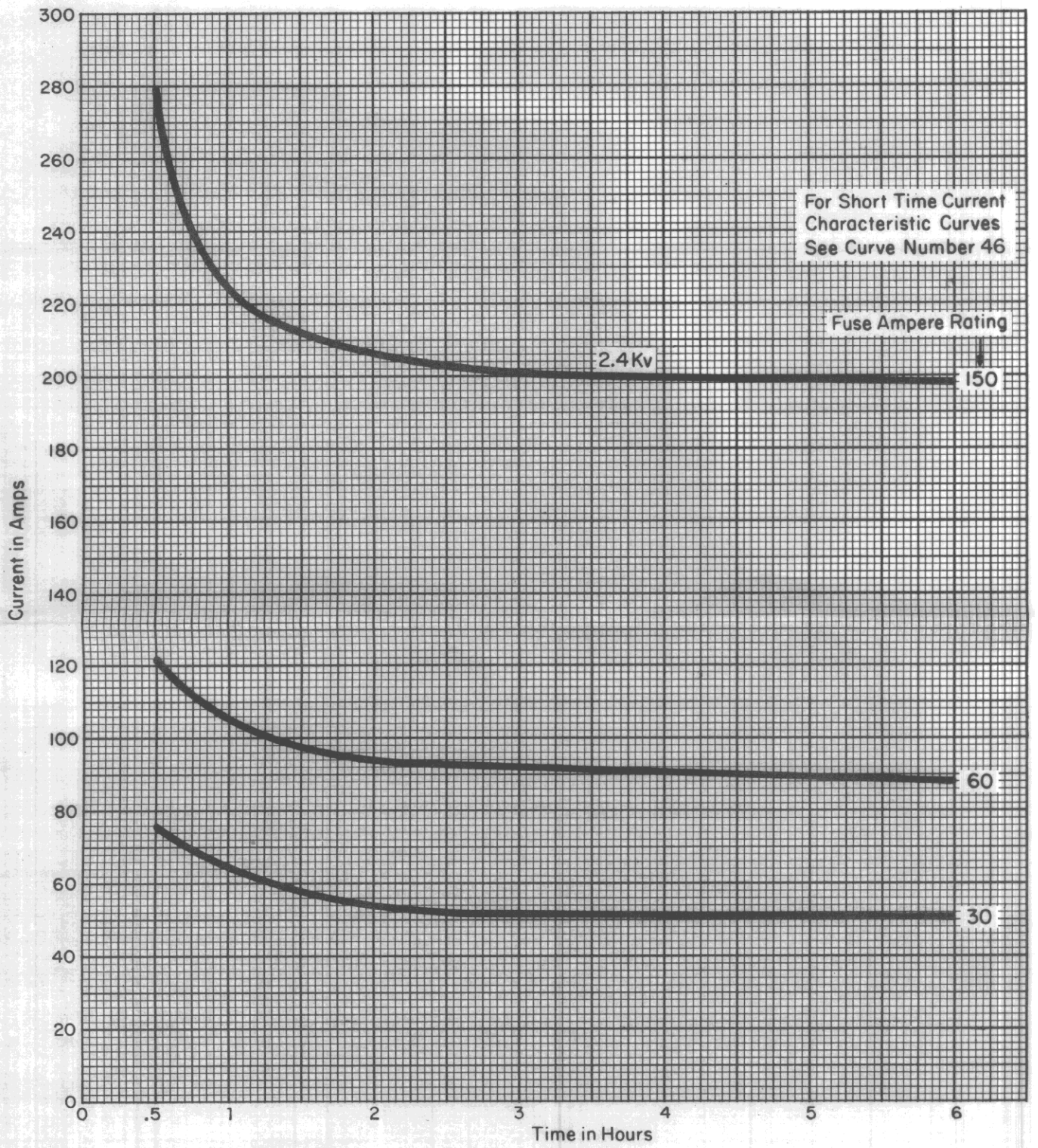
Westinghouse Electric Corporation
Switchgear Division, Power Switching Equipment, East Pittsburgh, Pa.
Printed in USA

Curve No. **46**

New Information

Reference No. 622094

May, 1968



Type CLT-1 Current Limiting Power Fuses (EFD-1)

Long melting time-current characteristics, 2.4, 4.8 Kv

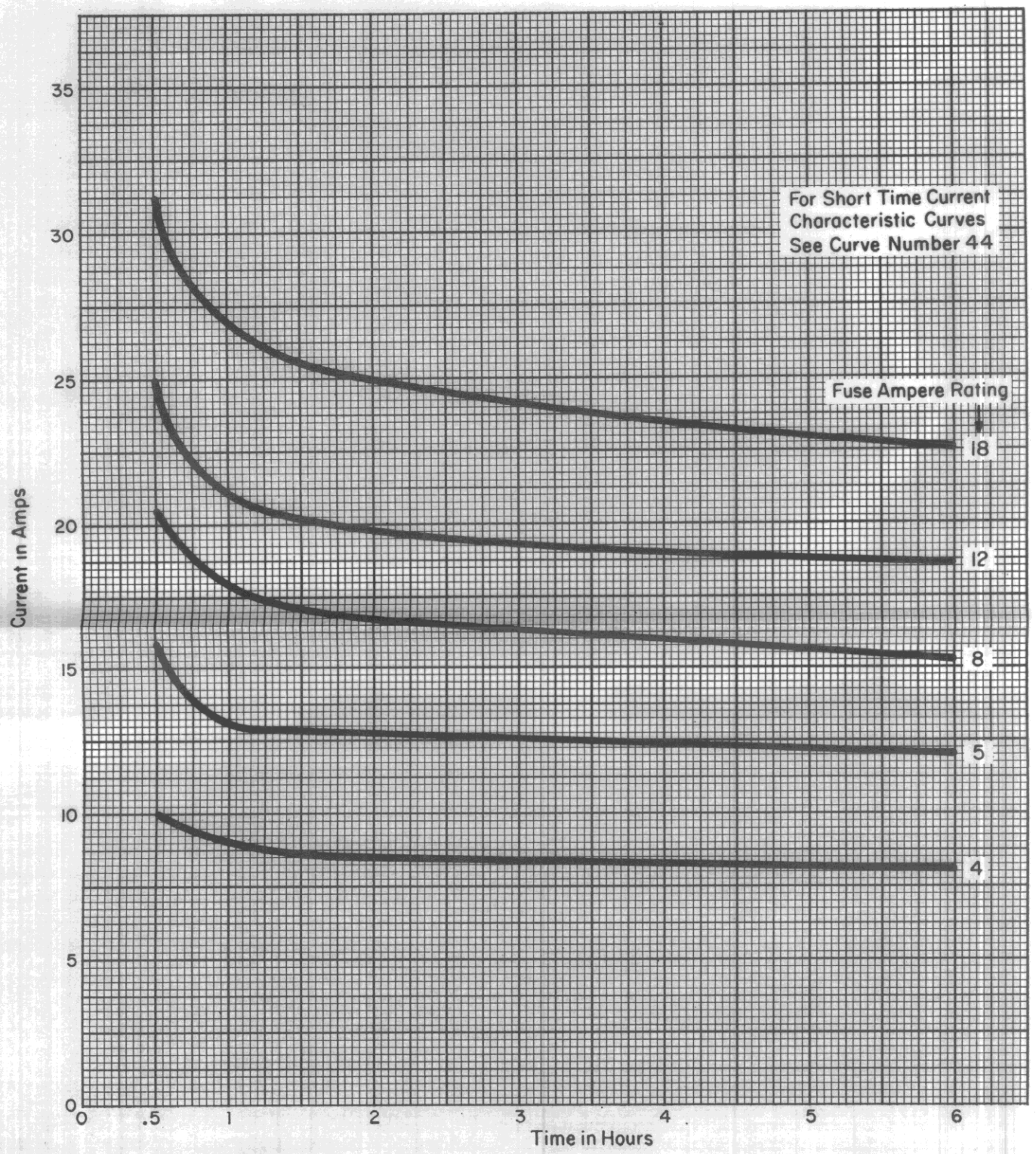
Westinghouse Electric Corporation
Switchgear Division, Power Switching Equipment, East Pittsburgh, Pa.
Printed in USA

Curve No. **47**

New Information

Reference No. 622126

May, 1968



Type CLT Current Limiting Power Fuses (EFD)

Long melting time-current characteristics, 15 Kv

Westinghouse Electric Corporation
Switchgear Division, Power Switching Equipment, East Pittsburgh, Pa.
Printed in USA

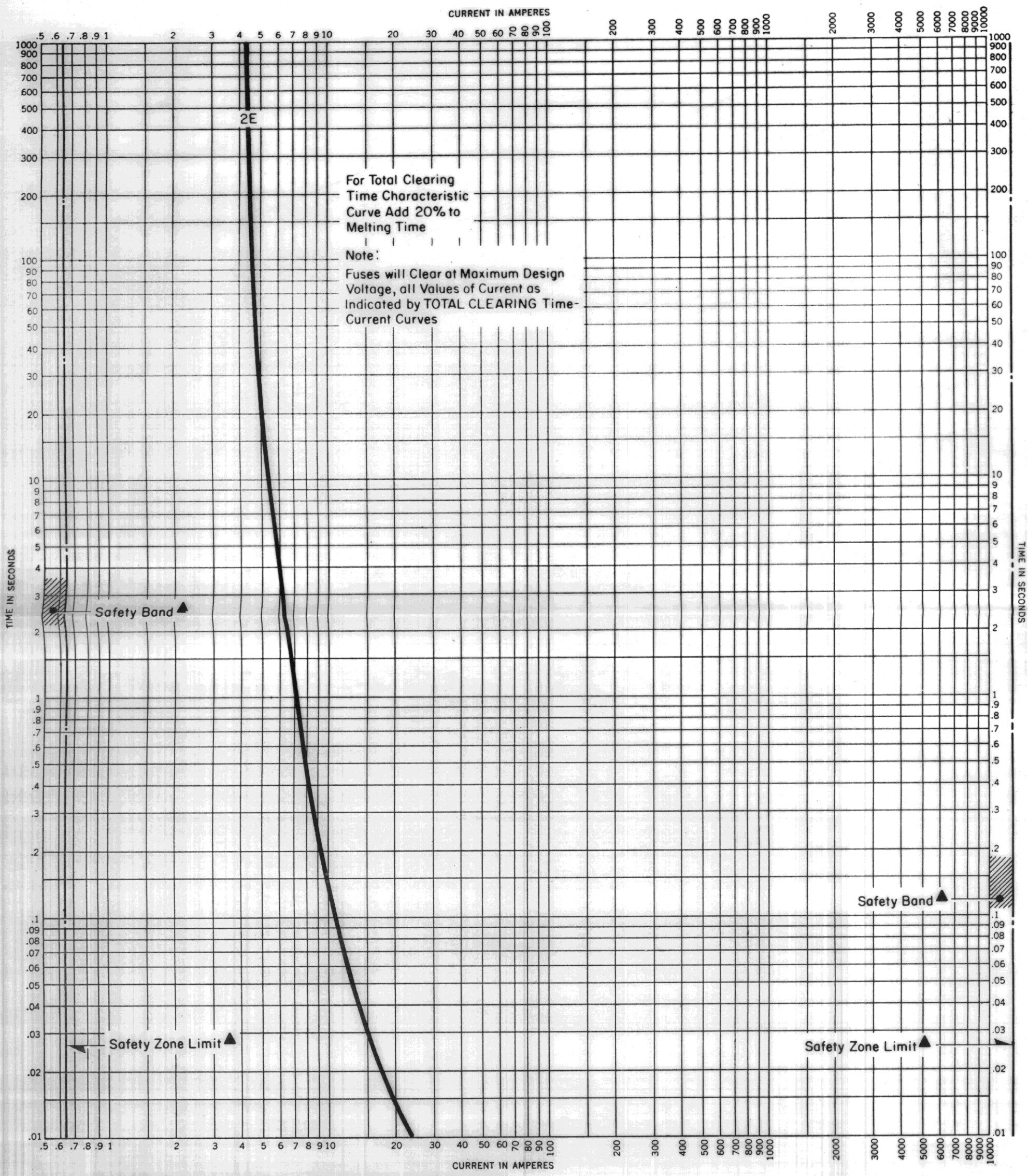
Curve No. **48**

New Information

Reference No. 622125

May, 1968

AD 36-661-A



Type CLE-PT Current Limiting Power Fuses (Non-Indicating) S※677C592G10

Melting and total clearing time-current characteristics, 8.0 Kv

Curves are based on tests starting with fuse units at an ambient temperature of 25°C and without initial load. Curves are plotted to minimum test points so variations should be positive.

Westinghouse Electric Corporation
Switchgear Division, Power Switching Equipment, East Pittsburgh, Pa.
Printed in USA

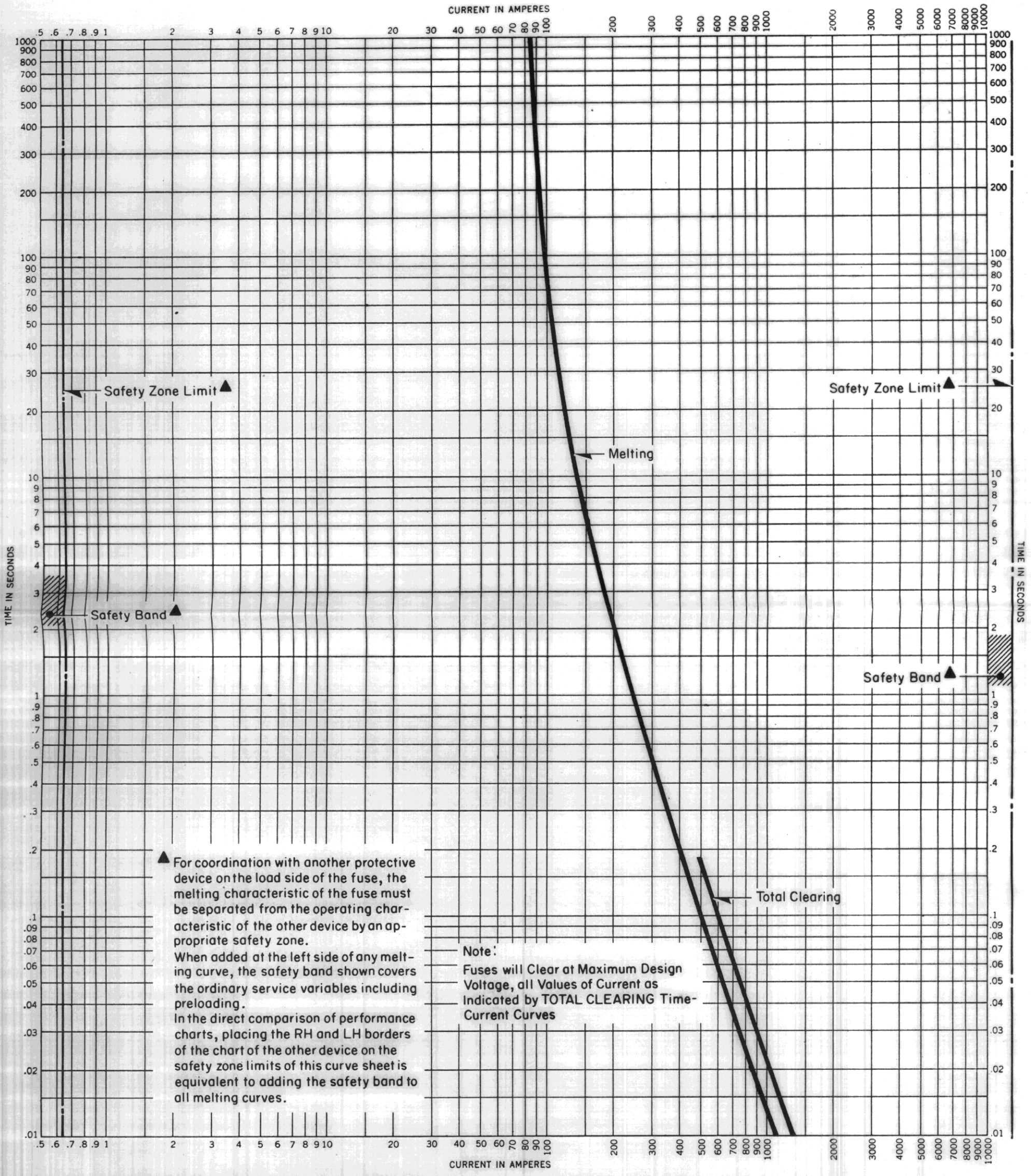
Curve No. **49**

New Information

Reference No. 598871

May, 1968

AD 36-661-A



▲ For coordination with another protective device on the load side of the fuse, the melting characteristic of the fuse must be separated from the operating characteristic of the other device by an appropriate safety zone.
When added at the left side of any melting curve, the safety band shown covers the ordinary service variables including preloading.
In the direct comparison of performance charts, placing the RH and LH borders of the chart of the other device on the safety zone limits of this curve sheet is equivalent to adding the safety band to all melting curves.

Type CLTB Current Limiting S#678C245G01 (Non-Indicating) Fuse

Melting and total clearing time-current characteristics, 8.3 Kv

Curves are based on tests starting with fuse units at an ambient temperature of 25°C and without initial load. Curves are plotted to minimum test points so variations should be positive.

Westinghouse Electric Corporation
Switchgear Division, Power Switching Equipment, East Pittsburgh, Pa.
Printed in USA

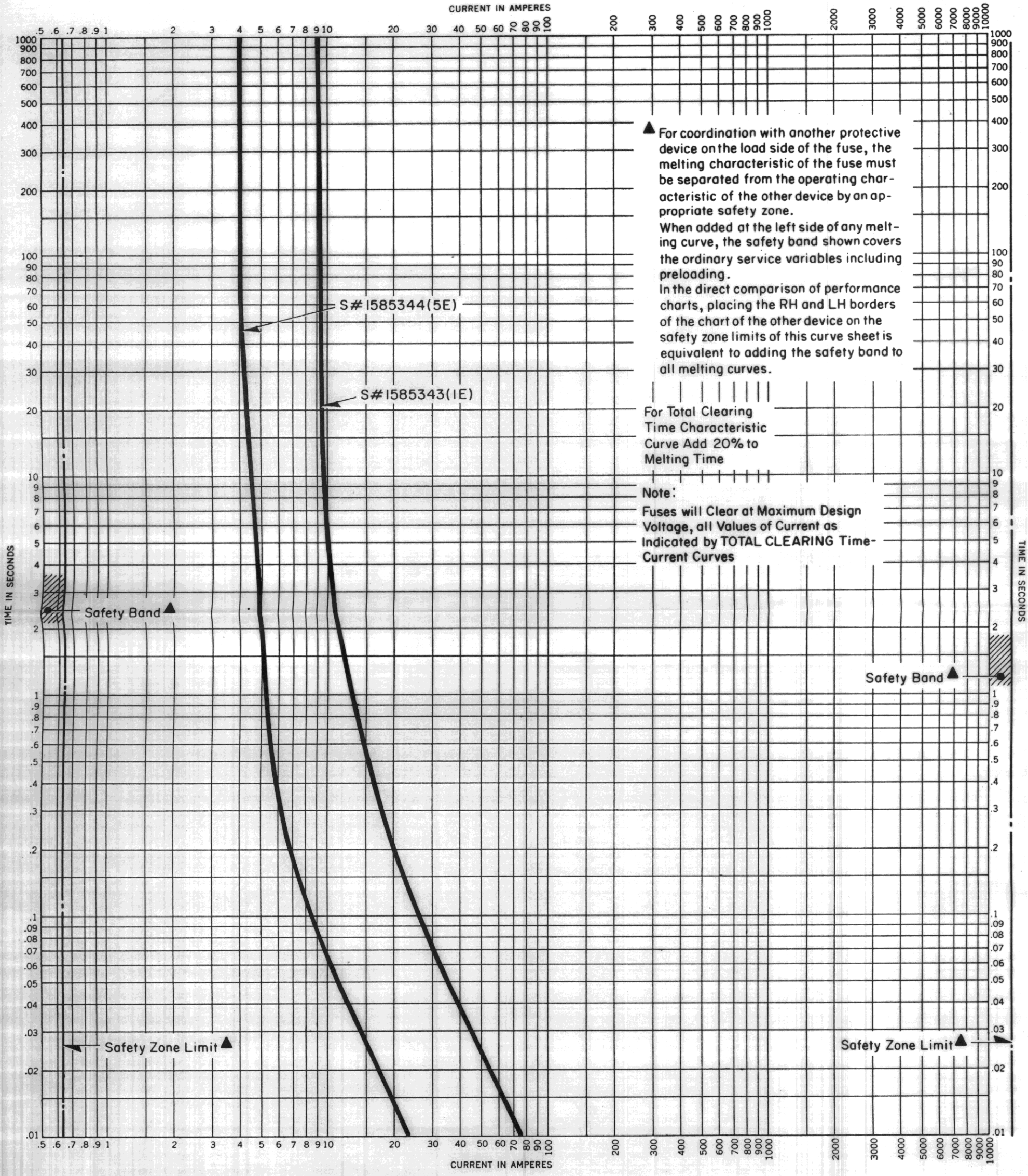
Curve No. **50**

New Information

Reference No. 622127

May, 1968

AD 36-661-A



Type BAL-1 Current Limiting (Non-Indicating) Fuse

Melting time-current characteristics, 600 VDC

Curves are based on tests starting with fuse units at an ambient temperature of 25°C and without initial load. Curves are plotted to minimum test points so variations should be positive.

Westinghouse Electric Corporation
Switchgear Division, Power Switching Equipment, East Pittsburgh, Pa.
Printed in USA

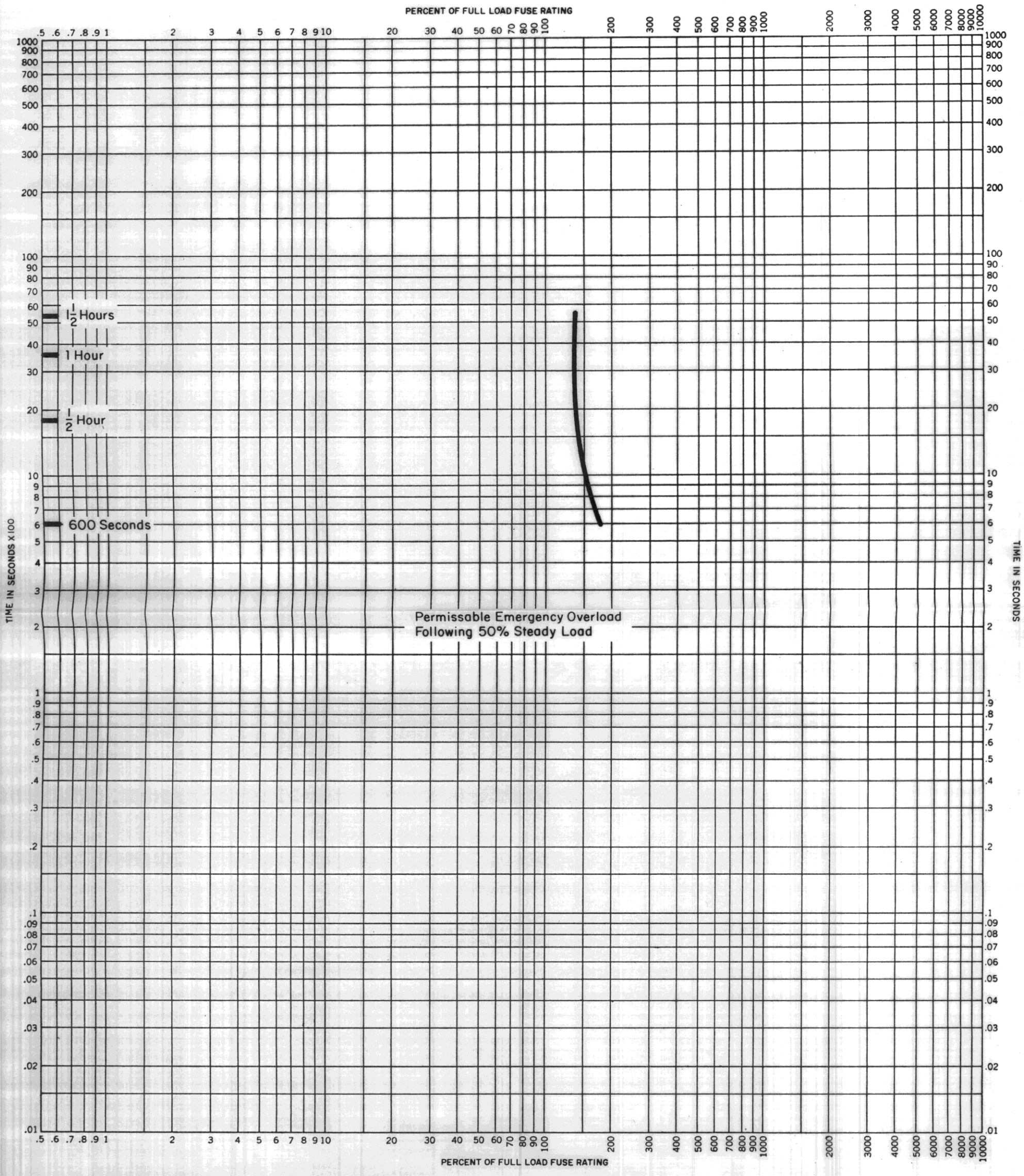
Curve No. **51**

New Information

Reference No. 424792-A

May, 1968

AD 36-661-A



Type CLE-1, CLE-2 Current Limiting Power Fuses

Emergency overload time-current characteristics, 15 Kv

Westinghouse Electric Corporation
Switchgear Division, Power Switching Equipment, East Pittsburgh, Pa.
Printed in USA

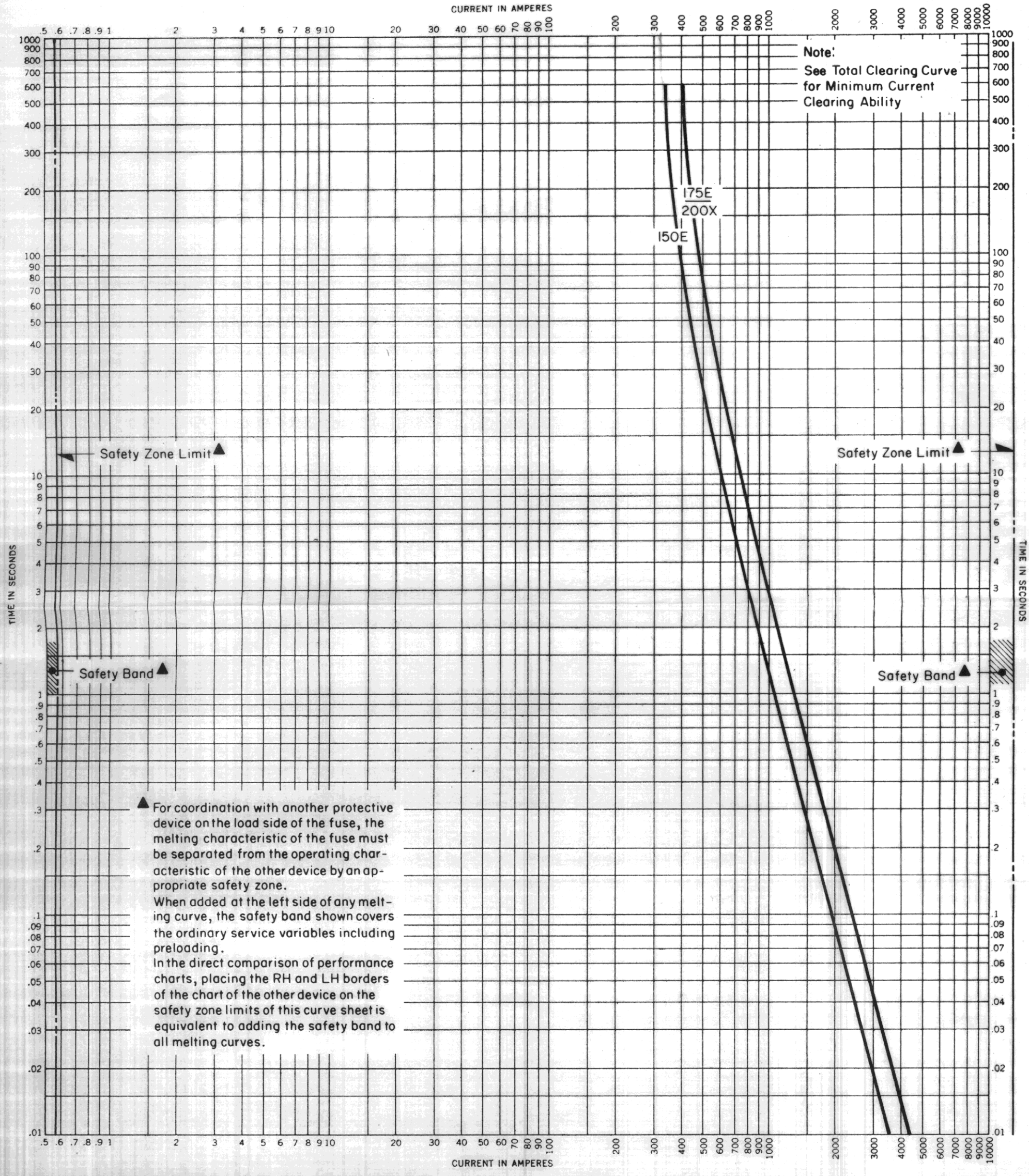
Curve No. 52

New Information

Reference No. 598958

May, 1968

AD 36-661-A



Type CLE-3 Current Limiting Power Fuses

Melting time-current characteristics, 14.4 Kv

Curves are based on tests starting with fuse units at an ambient temperature of 25°C and without initial load. Curves are plotted to minimum test points so variations should be positive.

Westinghouse Electric Corporation
Switchgear Division, Power Switching Equipment, East Pittsburgh, Pa.
Printed in USA

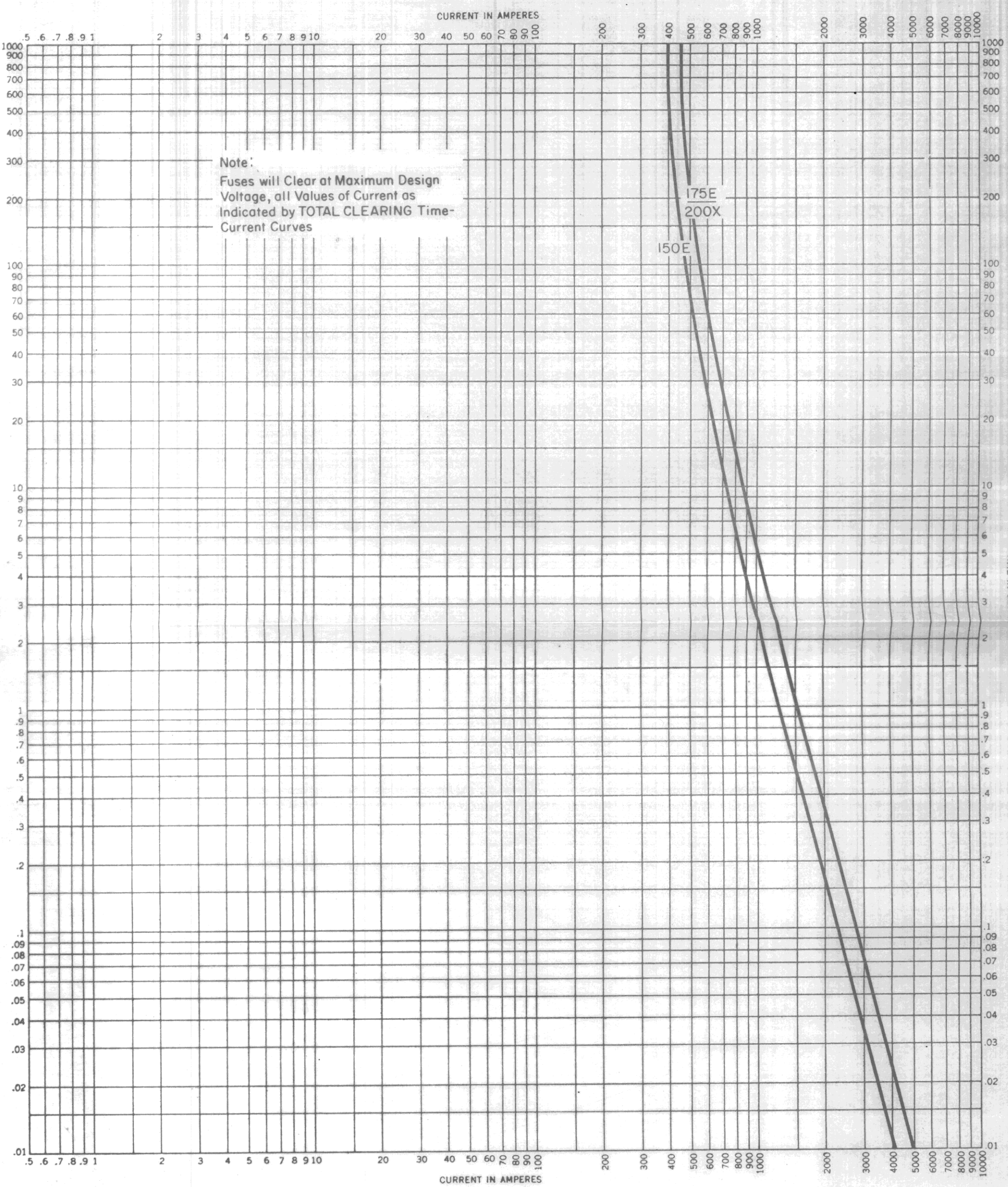
Curve No. **53**

New Information

Reference No. 622124 and 622129

May, 1968

AD 36-661-A



Type CLE-3 Current Limiting Power Fuses

Total clearing time-current characteristics, 14.4 Kv

Curves are based on tests starting with fuse units at an ambient temperature of 25°C and without initial load. Curves are plotted to minimum test points so variations should be negative.

Westinghouse Electric Corporation
Switchgear Division, Power Switching Equipment, East Pittsburgh, Pa.
Printed in USA

Curve No. **54**

New Information

Reference No. 622124 and 622129

May, 1968