

ELECTRICAL PENETRATION PROTECTION CONTROL CIRCUITS

NORTH ANNA POWER STATION - UNIT 2
VIRGINIA ELECTRIC AND POWER COMPANY



STONE & WEBSTER ENGINEERING CORPORATION
BOSTON, MASSACHUSETTS

8002260

723

POSITION	PENETRATION		LOAD	TIME-CURRENT CURVE		PRIMARY PROTECTIVE DEVICE	NOTES & COMMENTS	SECONDARY PROTECTIVE DEVICE	NOTES & COMMENTS
	TYPE	CONDUCTOR		12050-SK(C)-	FULL LOAD AMPS				
2F1-2	IC	10-AWG	Fuel Transfer Control Cab (2-EI-CB-92)	IC-1	3.9A	Fuse Busman NON-15A			
6B-2	IB	14-AWG	a) Stem Limit Switch (SLS MOV-2865A)	IB-1	170mA	Breaker GE TQB 5A			
			b) Loop 1 Red CRT	IB-2	300mA	Fuse Busman ABC 10A			
			c) Loop 1 x Conn (MOV-2585)	IB-3	170mA	Fuse Busman NON-15A			
			d) Hot Leg Isol (MOV-2590)	IB-3	170mA	Fuse Busman NON-15A			
			e) Cold Leg Isol (MOV-2591)	IB-3	170mA	Fuse Busman NON-15A			
			f) St. Generator Surface Sample (TV-SS212A)	IB-4	447mA	Breaker GE TE 15A			
			g) Acc TK 1 CD LG (MOV-2865A)	IB-3	170mA	Fuse Busman NON-15A			
			h) ACC TK 1 CD LG (MOV-2865A)	IB-5	170mA	Fuse Busman ABC 3A			
			i) ACC TK 2 CD LG (MOV-2865B)	IB-3	170mA	Fuse Busman NON-15A			
			j) Acc TK 2 CD LG (MOV-2865B)	IB-5	170mA	Fuse Busman ABC 3A			
			k) Loop 1 Regen Hx Outlet (HCV-2200A)	IB-6	20mA	Breaker GE THED-15A			
			l) Loop 1 Regen Hx Outlet (HCV-2200A)	IB-6	20mA	Breaker GE THED-15A			
			m) Loop 1 Regen Hx Outlet (HCV-2200A)	IB-6	20mA	Breaker GE THED-15A			
			n) Loop 2 Regen Hx Outlet (HCV-2200B)	IB-6	20mA	Breaker GE THED-15A			
			o) Loop 2 Regen Hx Outlet (HCV-2200B)	IB-6	20mA	Breaker GE THED-15A			
			p) Loop 3 Regen Hx Outlet (HCV-2200C)	IB-5	20mA	Fuse Busman ABC 3A			
			q) Loop 3 Regen Hx Outlet (HCV-2200C)	IB-6	20mA	Breaker GE THED-15A			
			r) Loop 3 Regen Hx Outlet (HCV-2200C)	IB-2	20mA	Fuse Busman ABC 10A			
			s) Press to Relief TK (PCV-2455C)	IB-6	54mA	Breaker GE THED-15A			
			t) Loop 1 Recirc Air Coil (TV-CC205A)	IB-1	447mA	Breaker GE TQB 5A			
			u) Containment Instr Air (TV-IA201A)	IB-1	447mA	Breaker GE TQB 5A			

POSITION	PENETRATION		LOAD	TIME-CURRENT CURVE		PRIMARY PROTECTIVE DEVICE	NOTES & COMMENTS	SECONDARY PROTECTIVE DEVICE	NOTES & COMMENTS
	TYPE	CONDUCTOR		12050-SK(C)-	FULL LOAD AMPS				
			v) (Rack 2-108)	IB-2	380mA	Fuse Busman ABC 10A			
			w) Press to Relief TK (MOV-2536)	IB-3	140mA	Fuse Busman NON-15A			
			x) Loop 1 HT IG CON (MOV-2790)	IB-3	170mA	Fuse Busman NON-15A			
			y) Acc TK 3 Disch (MOV-2720A)	IB-3	170mA	Fuse Busman NON-15A			
			z) Neutron Det Evacuation (2-ND-EH-01)	IB-5	Later	Busman ABC 3A			
6C-2	IB	14-AWG	a) Rack 2-120	IB-2	380mA	Fuse Busman ABC 10A			
			b) Loop 2 X Conn (MOV-2586)	IB-3	170mA	Fuse Busman NON-15A			
			c) Loop Red CRT	IB-2	300mA	Fuse Busman ABC 10A			
			d) Hot Leg Isol (MOV-2592)	IB-2	170mA	Fuse Busman NON-15A			
			e) Cold Leg Isol (MOV-2593)	IB-3	170mA	Fuse Busman NON-15A			
			f) Recirc Spray (2-RS-P-01A w/6 SW)	Later	Later	Fuse Busman NON-35A			
			g) Air Operated Damper (HV257A)	IB-1	73mA	Breaker GE TQB 5A			
			h) Air Operated Damper (HV257B)	N/R	N/R	Spare			
			i) Air Operated Damper (HV257C)	IB-1	73mA	Breaker GE TQB 5A			
			j) Cont Vacuum Eject Inlt (TV-CV200)	IB-1	330mA	Breaker GE TQB 5A			
			k) Loop 2 Recirc Air Coil (TV-CC205B)	IB-1	447mA	Breaker GE TQB 5A			
			l) Loop 3 Recirc Air Coil (TV-CC205C)	IB-1	447mA	Breaker GE TQB 5A			
			m) Press Liquid Space (TV-SS200A)	IB-1	447mA	Breaker GE TQB 5A			
			n) Press Vapor Space (TV-SS201A)	IB-1	447mA	Breaker GE TQB 5A			
			o) Press Liquid Space (TV-SS200A)	IB-1	447mA	Breaker GE TQB 5A			
			p) Press Rel TK Gas Space (TV-SS204A)	IB-1	447mA	Breaker GE TQB 5A			
			q) Prim Cool Hot Leg Hdr (TV-SS206A)	IB-1	447mA	Breaker GE TQB 5A			
			r) RCP SWHX DIS (MOV-2380)	IB-3	174mA	Fuse Busman NON-15A			

POSITION	PENETRATION		LOAD	TIME-CURRENT CURVE 12050-SK(C)-	FULL LOAD AMPS	PRIMARY PROTECTIVE DEVICE	NOTES & COMMENTS	SECONDARY PROTECTIVE DEVICE	NOTES & COMMENTS
	TYPE	CONDUCTOR							
6E-2	IB	14-AWG	a) Letdown Line Loop 2 (LCV-2460B)	IB-7	84mA	GE TEB-10A			
			b) Loop 1 RCP Seal Lk Off (HCV-2303A)	IB-7	20mA	GE TEB-10A			
			c) Loop 2 RCP Seal Lk Off (HCV-2303B)	IB-7	20mA	GE TEB-10A			
			d) Loop 2 Accum Test Line (HCV-2850C)	IB-7	20mA	GE TEB-10A			
			e) Loop 2 Accum Test Line (HCV-2850D)	IB-7	20mA	GE TEB-10A			
			f) Loop 2 Accum Mk Up Line (HCV-2851b)	IB-7	20mA	GE TEB-10A			
			g) Loop 2 Accum Prim XFER (HCV-2852B)	IB-7	20mA	GE TEB-10A			
			h) Loop 2 Accum N2 Supply (HCV-2853B)	IB-7	20mA	GE TEB-10A			
			i) Loop 2 Stand Pipe Trip (TV-2522B)	IB-7	40mA	GE TEB-10A			
			j) Pri Grd Wtr to Rel TK (HCV-2519)	IB-7	20mA	GE TEB-10A			
			k) Auxiliary Spray Line (HCV-2311)	IB-7	20mA	GE TEB-10A			
			l) PR Rel TK to PO XFER TK (TV-2523)	IB-7	40mA	GE TEB-10A			
			m) Loop 1 Letdown Line (LCV-2460A)	IB-7	84mA	GE TEB-10A			
			n) Loop 2 Drain Line (HCV-2557B)	IB-7	20mA	GE TEB-10A			
			o) Loop 2 FIL Line Header (HCV-2556B)	IB-7	20mA	GE TEB-10A			

POSITION	PENETRATION		LOAD	TIME-CURRENT CURVE		PRIMARY PROTECTIVE DEVICE	NOTES & COMMENTS	SECONDARY PROTECTIVE DEVICE	NOTES & COMMENTS
	TYPE	CONDUCTOR		12050-F ² (C)-	FULL LOAD AMPS				
6D-2	IB	14-AWG	a) Loop 3 X Conn (MDV-2587)	IB-3	170mA	Fuse Busman NON-15A			
			b) Loop 3 Red CRT	IB-2	300mA	Fuse Busman ABC 10A			
			c) Hot Leg Iscl (MDV-2594)	IB-3	170mA	Fuse Busman NON-15A			
			d) Cold Leg Iscl (MDV-2595)	IB-3	170mA	Fuse Busman NON-15A			
			e) Loop 2 Charging Line (HCV-2310)	IB-7	20mA	Breaker GE TEB-10A			
			f) Neut Shld TK Cool A Inlt (TV-CC207A)	IB-1	330mA	Breaker GE TQB-5A			
			g) Neut Shld TK Cool A Outlet (T-CC208A)	IB-1	330mA	Breaker GE TQB-5A			
			h) Neut Shld TK Cool B Inlt (TV-CC207B)	IB-1	330mA	Breaker GE TQB-5A			
			i) Skid Comp A (2-IA-0-02A)	IB-3	935mA	Fuse Busman NOR-15A			
			j) Neut Shld TK Cool B Outlet (TV-CC208B)	IB-1	330mA	Breaker GE TQB-5A			
			k) Press Rel TK W2 Purge (HCV-2550)	IB-7	20mA	Breaker GE TEB-10A			
			l) Loop 2 Inlet Header (TV-CC208B)	IB-1	330mA	Breaker GE TQB-5A			
			m) RCP Bearing Lift Fp (FS-13-2)	IB-3	35mA	Fuse Busman NON-15A			
			n) RCP Bearing Lift Fp (FS-13-2)	Later	6.7A for 4.5 Cycles	Fuse Busman NON-30A			
			o) RCP Bearing Lift Fp (FS-14-2)	Later	6.7A for 4.5 Cycles	Fuse Busman NON-30A			
p) RACK 2-102	IB-2	300mA	Fuse Busman ABC 10A						
q) Neutron Shld Cool Make Up (SCV-NS201)	IB-1	330mA	Breaker GE TQB-5A						
11A-2	IC	10-AWG	a) Steam Gen Blow Down (TV-BD200G)	IC-2	447mA	Breaker GE TQB-5A			
			b) Steam Gen Blow Down (TV-BD200H)	IC-2	447mA	Breaker GE TQB-5A			
			c) Steam Gen Blow Down (TV-BD200J)	IC-2	447mA	Breaker GE TQB-5A			
11C-2	IC	10-AWG	a) Loop 1 SLS CRTS	IC-3	330mA	Fuse Busman ABC 10A			
			b) RACK 2-106	IC-3	300mA	Fuse Busman ABC 10A			

POSITION	PENETRATION		LOAD	TIME-CURRENT CURVE		PRIMARY PROTECTIVE DEVICE	NOTES & COMMENTS	SECONDARY PROTECTIVE DEVICE	NOTES & COMMENTS			
	TYPE	CONDUCTOR		12090-BK(C)-	FULL LOAD AMPS							
11D-2	IC	10-AWG	a) Loop 2 SLS CKTS	IC-3	300mA	Fuse Busman ABC 10A						
			b) RACK 2-117	IC-3	380mA	Fuse Busman ABC 10A						
			c) Press Relief N ₂ Supply (80V-2590-3)	IC-4	1.6A	Breaker GE TEB-10A						
11E-2	IC	10-AWG	a) Loop 3 SLS CKTS	IC-3	300mA	Fuse Busman ABC 10A						
			b) RACK 2-103	IC-3	380mA	Fuse Busman ABC 10A						
14F-2	IB	14-AWG	a) Resid Heat Rem Hdr A (TV-SS207A)	IB-4	330mA	Breaker GE TE-15A						
			b) Resid Heat Rem Hdr B (TV-SS207B)	IB-4	330mA	Breaker GE TE-15A						
			c) Loop 1, 2&3 S/G Sample Selector (TV-SS211A-C)	IB-4	330mA	Breaker GE TE-15A						
			d) Reactor Leak DET Line (HCV-2544)	IB-7	20mA	Breaker GE TEB-10A						
			e) Loop 1 Inlet Header (TV-CC206A)	IB-1	330mA	Breaker GE TQB-5A						
			f) Loop 3 Inlet Header (TV-CC206C)	IB-1	330mA	Breaker GE TQB-5A						
			g) RCP Bearing Lift Fp (PS-10-3)	IB-3	30mA	Fuse Busman NON-15A						
			h) RHR Return (HCV-CC209A)	IB-3	174mA	Fuse Busman NON-15A						
			i) RHR Return (HCV-CC209B)	IB-3	174mA	Fuse Busman NON-15A						
			19A-2	IB	14-AWG	a) Loop 1, 2&3 Prim Cool CLD LG TE-SS209A-C	IB-4	330mA	Breaker GE TE-15A			
						b) Loop 3 Drain Cont V (HCV-2557C)	IB-7	20mA	Breaker GE TEB-10A			
c) Loop 1 Accum Test Line (HCV-2850A)	IB-7	20mA				Breaker GE TEB-10A						
d) Loop 1 Accum Test Line (HCV-2850B)	IB-7	20mA				Breaker GE TEB-10A						
e) Loop 3 Accum Test Line (HCV-2850E)	IB-7	20mA				Breaker GE TEB-10A						
f) Loop 3 Accum Test Line (HCV-2850F)	IB-7	20mA				Breaker GE TEB-10A						
g) Loop 1 Accum Mkup Line (HCV-2851A)	IB-7	20mA				Breaker GE TEB-10A						
h) Loop 3 Accum Mkup Line (HCV-2851C)	IB-7	20mA				Breaker GE TEB-10A						
i) Loop 1 Accum Prim XFER (HCV-2852A)	IB-7	20mA				Breaker GE TEB-10A						
j) Loop 3 Accum Prim XFER (HCV-2852C)	IB-7	20mA				Breaker GE TEB-10A						

POSITION	PENETRATION		LOAD	TIME-CURRENT CURVE 12090-SK(C)-	FULL LOAD AMPS	PRIMARY PROTECTIVE DEVICE	NOTES & COMMENTS	SECONDARY PROTECTIVE DEVICE	NOTES & COMMENTS
	TYPE	CONDUCTOR							
			k) Loop 1 Accum N2 Supply (HCV-2853A)	IB-7	20mA	Breaker GE TEP-10A			
			l) Loop 3 Acc m N2 Supply (HCV-2853C)	IB-7	20mA	Breaker GE TEP-10A			
			m) Exc Letdown Hx Inlet (HCV-2201)	IB-7	20mA	Breaker GE TEP-10A			
			n) Press Rel TK N2 Line (HCV-2898)	IB-7	20mA	Breaker GE TEP-10A			
			o) Reactor Coolant FP (SOV-CC216A)	IB-8	597mA	Breaker W Quik Lag 5A			
			p) Reactor Coolant FP (SOV-CC216B)	IB-8	597mA	Breaker W Quik Lag 5A			
			q) Reactor Coolant FP (SOV-CC216C)	IB-8	597mA	Breaker W Quik Lag 5A			
			r) Rel Tank W/D SYS Line (HCV-2549)	IB-7	20mA	Breaker GE TEP-10A			
			s) Excs Letdown Hx Outlet (HCV-2389)	IB-7	20mA	Breaker GE TEP-10A			
			t) RCP Bearing Lift Fp (FS-14-2)	IB-3	36mA	Fuse Busman NON-15A			
			u) Primary Drain Transfer Tk (LE-DG203)	IB-3	123mA	Fuse Busman NON-15A			
			v) Primary Drain Transfer Tk (LE-DG203)	IB-3	123mA	Fuse Busman NON-15A			
			w) RC Purge System Supply (MOV-H.200A)	IB-3	176mA	Fuse Busman NON-15A			
			x) RC Purge System BME (MOV-HV200C)	IB-3	176mA	Fuse Busman NON-15A			
			y) Cont Cab RAD near 2-RC-P-1A (2-FP-CP-06)	IB-6	5mA	Breaker GE THED-15A			
			z) Cont Cab RAD near 2-RC-P-1B (2-FP-CP-07)	IB-6	5mA	Breaker GE THED-15A			
			aa) Cont Cab RAD near 2-RC-P-1C (2-FP-CP-08)	IB-6	5mA	Breaker GE THED-15A			
190-2	IB	14-AWG	a) ACC TK 3 CD LG (MOV-2853C)	IB-3	176mA	Fuse Busman NON-15A			
			b) ACC TK 3 CD LG (MOV-2853C)	IB-5	176mA	Fuse Busman ABC 3A			
			c) Recirc Spray (2-RC-P-01B V1B SW)	Later	Later	Fuse Busman NON-35A			
			d) Press To Relief TK (PCV-2456)	IB-6	54mA	Breaker GE THED-15A			

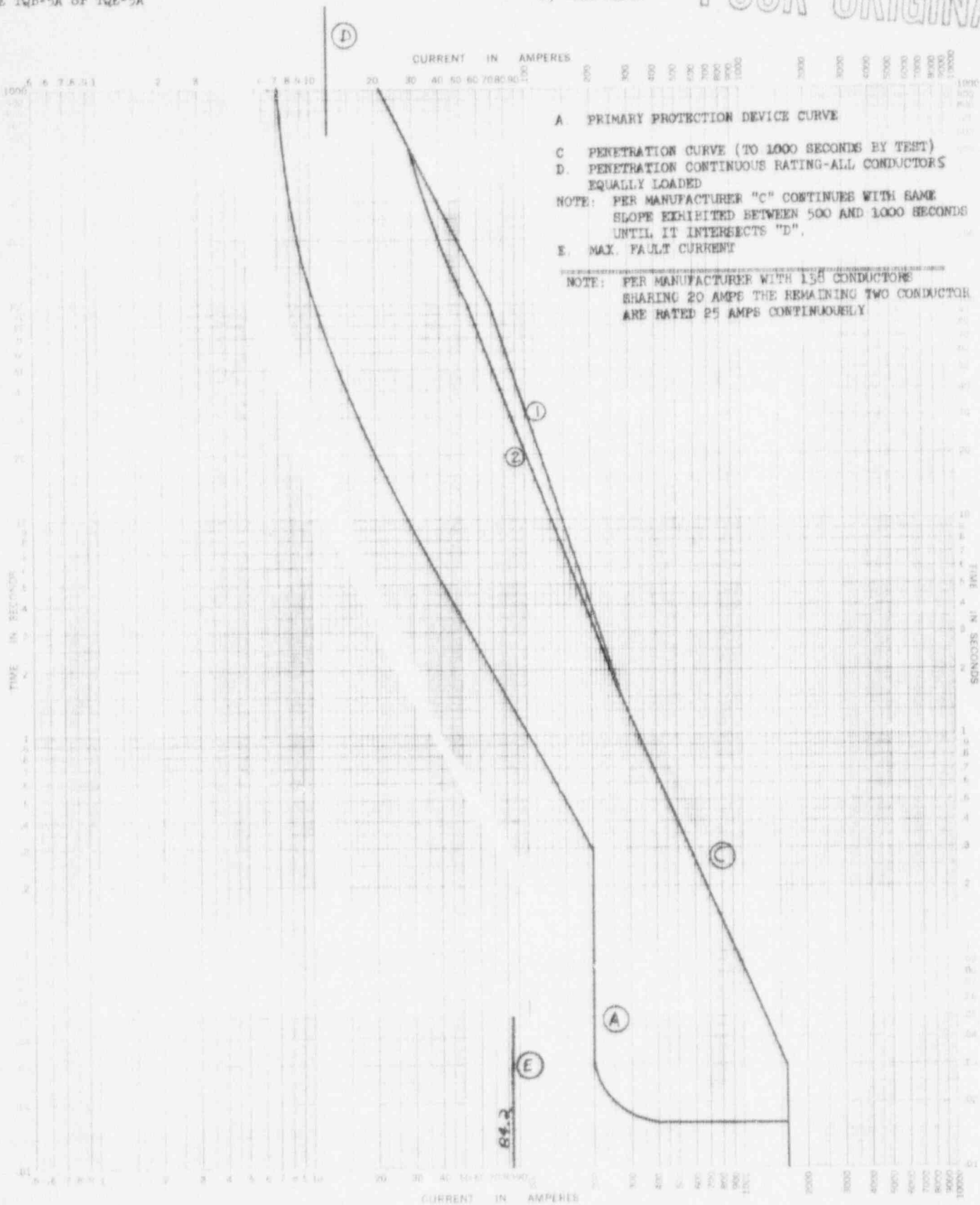
POSITION	PENETRATION		LOAD	TIME-CURRENT CURVE 12050-SK(C)-	FULL LOAD AMPS	PRIMARY PROTECTIVE DEVICE	NOTES & COMMENTS	SECONDARY PROTECTIVE DEVICE	NOTES & COMMENTS
	TYPE	CONDUCTOR							
			e) Elevator	IB-9	Later	Fuse Busman Type AGC-6A			
			f) Elevator	IB-9	Later	Fuse Busman Type AGC-6A			
			g) Air Operated Damper (HV257B)	IB-1	73mA	Breaker GE TQB 5A			
			h) Air Operated Damper (HV257C)	IB-1	73mA	Breaker GE TQB 5A			
			i) RCP Thermal Barrier (TV-CC201B)	IB-1	447mA	Breaker GE TQB 5A			
			j) Loop 1 Return Header (TV-CC202B)	IB-1	447mA	Breaker GE TQB 5A			
			k) Loop 2 Return Header (TV-CC202D)	IB-1	447mA	Breaker GE TQB 5A			
			l) Loop 3 Return Header (TV-CC202F)	IB-1	447mA	Breaker GE TQB 5A			
			m) Reac Cont Sump Pp Disch (TV-DA200B)	IB-1	447mA	Breaker GE TQB 5A			
			n) Prim Drain XFER LP Dis (TV-DC200B)	IB-1	447mA	Breaker GE TQB 5A			
			o) Limit SW ON TV-RM200C (TV-RM200C)	IB-1	447mA	GE TQB 5A			
			p) Skid Comp B (2-1A-C-02B)	IB-3	939mA	Fuse Busman NON-15A			
			q) Containment Isol (TV-2842)	IB-6	158mA	Breaker GE THED-15A			
			r) Hri Drn XFER TK Vent (TV-VG200B)	IB-1	447mA	Breaker GE TQB-5A			
			s) H2 Supply Line (HCV-2936)	IB-6	20mA	Breaker GE THED-15A			
			t) Press to Rel TK (MOV-2535)	IB-3	176mA	Fuse Busman NON-15A			
			u) LP + HT LG CON (MOV-2701)	IB-3	176mA	Fuse Busman NON-15A			
			v) ACC TK 3 DISCH (MOV-2720B)	IB-3	176mA	Fuse Busman NON-15A			
19D-2	IB	14-AWG	a) Primary Coolant Hot Leg (TV-SS200A-N)	IB-4	330mA	Breaker GE TE-15A			
			b) Primary Coolant Hot Leg (TV-SS200A-D)	IB-4	330mA	Breaker GE TE-15A			
			c) Loop 1 Letdown Line (LCV-2460A)	IB-7	84mA	Breaker GE TEB-10A			
			d) Incore Instr RM Sump (IS-DA206)	IB-10	8mA	Breaker GE TQB-15			

POSITION	PENETRATION		LOAD	TIME-CURRENT CURVE 12050-SK(C)-	FULL LOAD AMPS	PRIMARY PROTECTIVE DEVICE	NOTES & COMMENTS	SECONDARY PROTECTIVE DEVICE	NOTES & COMMENTS
	TYPE	CONDUCTOR							
			e) Loop 1 Stand Pipe Trip (TV-2522A)	IB-7	46mA	Breaker GE TEB-10			
			f) Loop 3 Stand Pipe Trip (TV-2522C)	IB-7	46mA	Breaker GE TEB-10			
			g) Loop 3 RCP Seal LK-OFF (HCV-2303C)	IB-7	46mA	Breaker GE TEB-10			
			h) Recirc Seal Wtr Outlet (HCV-2307)	IB-7	20mA	Breaker GE TEB-10			
			i) Loop 1 Fill Line Header (HCV-2556A)	IB-7	20mA	Breaker GE TEB-10			
			j) Loop 3 Fill Line Header (HCV-2556C)	IB-7	20mA	Breaker GE TEB-10			
			k) Loop 1 Drain Line (HCV-2557A)	IB-7	20mA	Breaker GE TEB-10			
			l) Elevator	IB-9	Later	Fuse Busman Type AGC 6A			
			m) Elevator	IB-9	Later	Fuse Busman Type AGC 6A			
			n) Elevator	IB-9	Later	Fuse Busman Type AGC 6A			
			o) Elevator	IB-9	Later	Fuse Busman Type AGC 6A			
			p) Elevator	IB-9	Later	Fuse Busman Type AGC 6A			
			q) Elevator	IB-9	Later	Fuse Busman Type AGC 6A			
			r) Elevator	IB-5	Later	Fuse Busman Type AGC 6A			
			s) Elevator	IB-9	Later	Fuse Busman Type AGC 6A			
			t) RCP Bearing Lift Pp (PS-12-2)	Later	6.7A for 4.5 Cycles	Fuse Busman NON 30A			
21D-2	IC	10-AWG	a) Steam Gen Blowdown (TV-BD200B)	IC-2	447mA	Breaker GE TQB-5A			
			b) Steam Gen Blowdown (TV-BD200D)	IC-2	447mA	Breaker GE TQB-5A			
			c) Steam Gen Blowdown (TV-BD200F)	IC-2	447mA	Breaker GE TQB-5A			
			d) RC Purge Sys Supply (MDV-HV200B)	N/R	N/R	Spare			
			e) Mot Oper VV For Contain Supply (MDV-HV200D)	IC-4	178mA	Breaker GE TEB-10A			
21D-2	IC	10-AWG	a) Press Rel N2 Supply (SOV-2456-3)	IC-4	1.6A	Breaker GE TEB-10A			

#14 FEED THRU
 1) SINGLE SEAL
 2) TWO SEALS

POOR ORIGINAL

A GE TQB-5A or TQE-5A



A. PRIMARY PROTECTION DEVICE CURVE

C. PENETRATION CURVE (TO 1000 SECONDS BY TEST)

D. PENETRATION CONTINUOUS RATING-ALL CONDUCTORS EQUALLY LOADED

NOTE: PER MANUFACTURER "C" CONTINUES WITH SAME SLOPE EXHIBITED BETWEEN 500 AND 1000 SECONDS UNTIL IT INTERSECTS "D".

E. MAX. FAULT CURRENT

NOTE: PER MANUFACTURER WITH 150 CONDUCTORS SHARING 20 AMPS THE REMAINING TWO CONDUCTOR ARE RATED 25 AMPS CONTINUOUSLY

TIME-CURRENT CHARACTERISTIC CURVES

For BASIS FOR DATA Standards

1. Tests made at
2. Curves are plotted to

Volts a-c at

Test points so variations should be

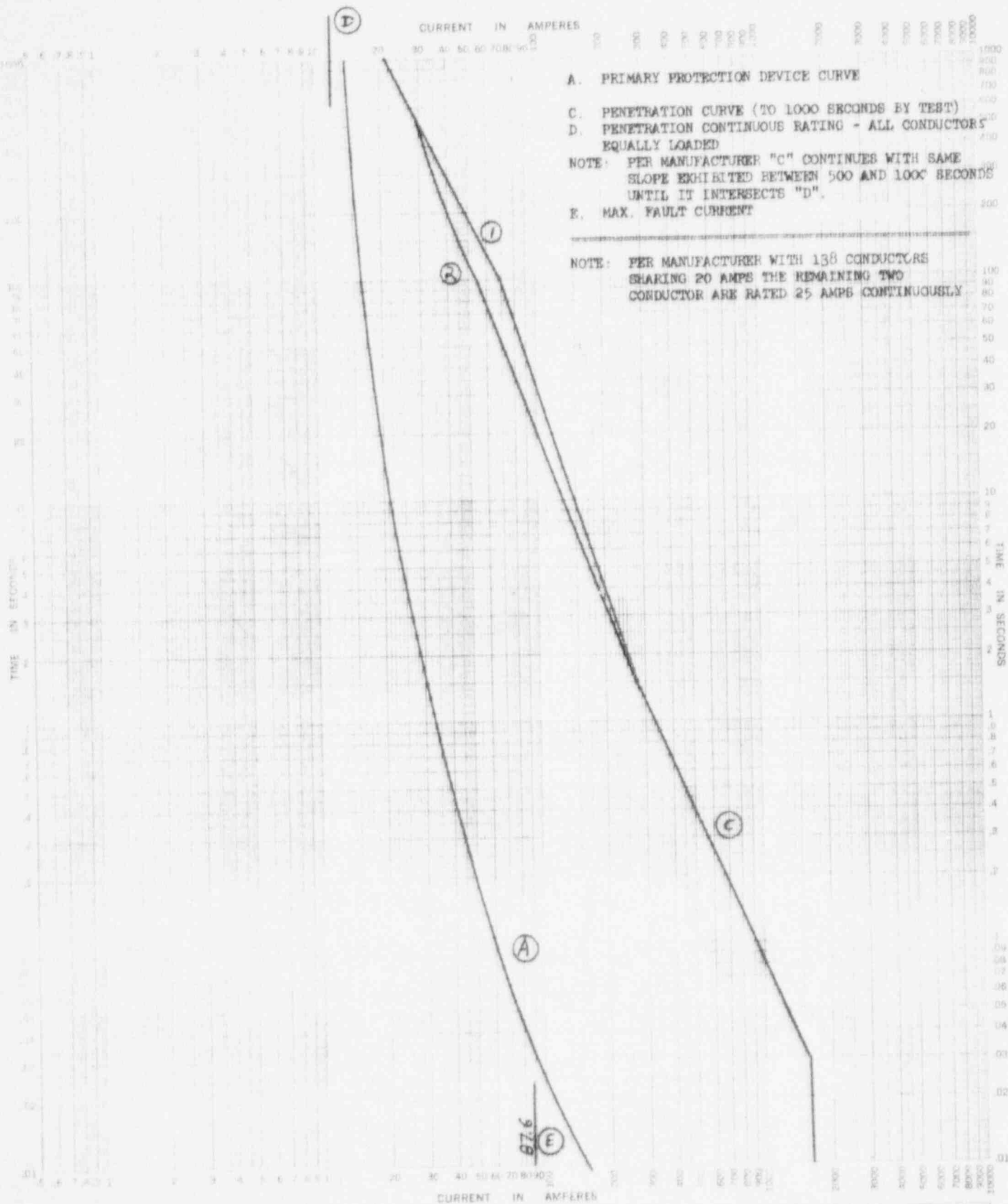
Dated

Fuse Links in

p1, starting at 250 with no initial load

No. 12050-BK(C)-IB-1
 Date 2/19/80 J40

POOR ORIGINAL



TIME-CURRENT CHARACTERISTIC CURVES

For Fuse Links in _____

Basis for Data Standards _____

Dated _____

1. Tests made at _____ Volts a-c at _____ p.f., starting at 25C with no initial load

2. Curves are plotted to _____ Test points so variations should be _____

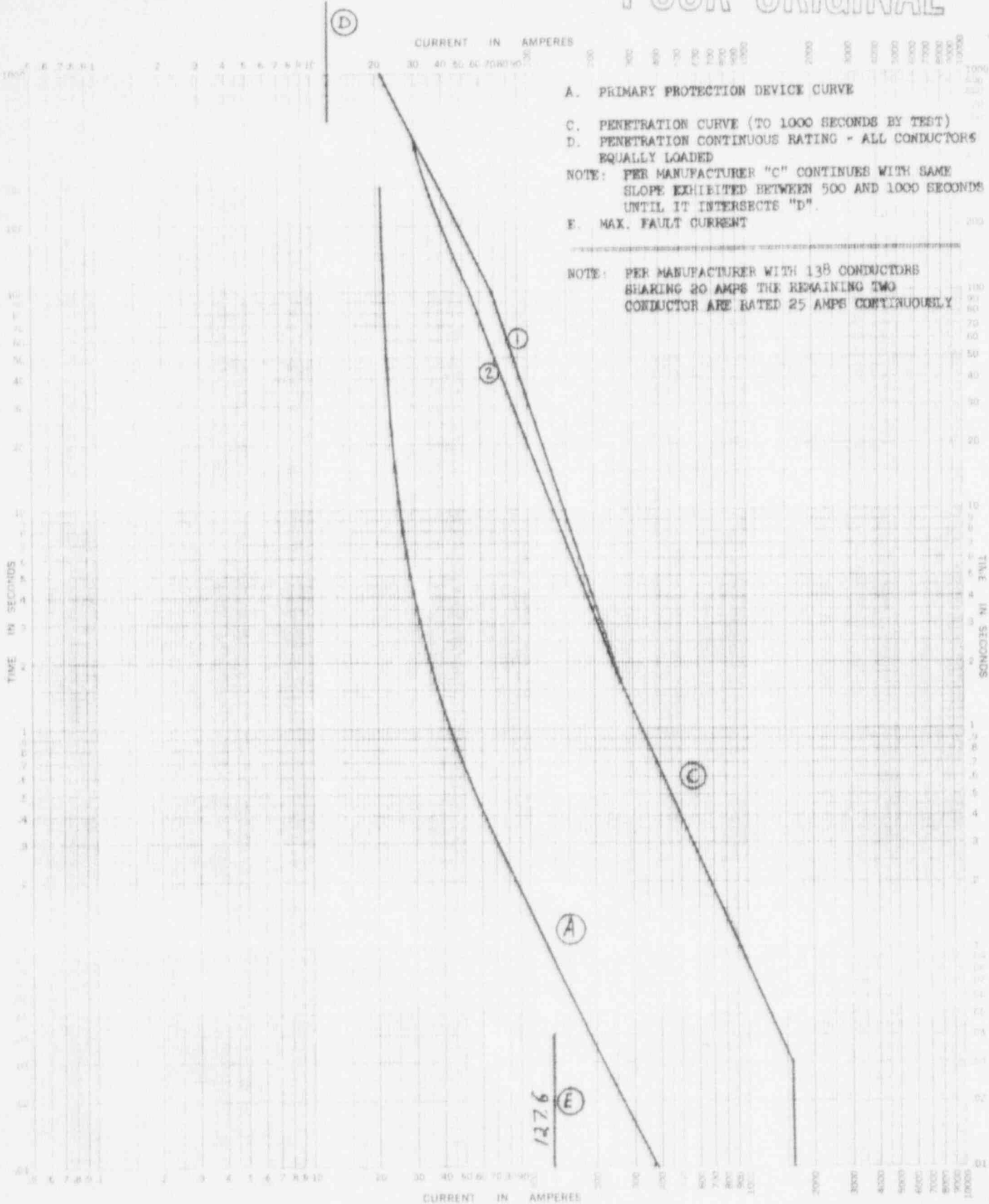
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Date 2/18/80 J40

#14 FEED THRU
 1) SINGLE SEAL
 2) TWO SEALS

POOR ORIGINAL

A BUSSMAN NON - 15A



A. PRIMARY PROTECTION DEVICE CURVE
 B. PENETRATION CURVE (TO 1000 SECONDS BY TEST)
 C. PENETRATION CURVE CONTINUOUS RATING - ALL CONDUCTORS EQUALLY LOADED
 NOTE: PER MANUFACTURER "C" CONTINUES WITH SAME SLOPE EXHIBITED BETWEEN 500 AND 1000 SECONDS UNTIL IT INTERSECTS "D".
 E. MAX. FAULT CURRENT

NOTE: PER MANUFACTURER WITH 135 CONDUCTORS SHARING 20 AMPS THE REMAINING TWO CONDUCTOR ARE RATED 25 AMPS CONTINUOUSLY

TIME-CURRENT CHARACTERISTIC CURVES

For _____ Fuse Links In _____ Dated _____

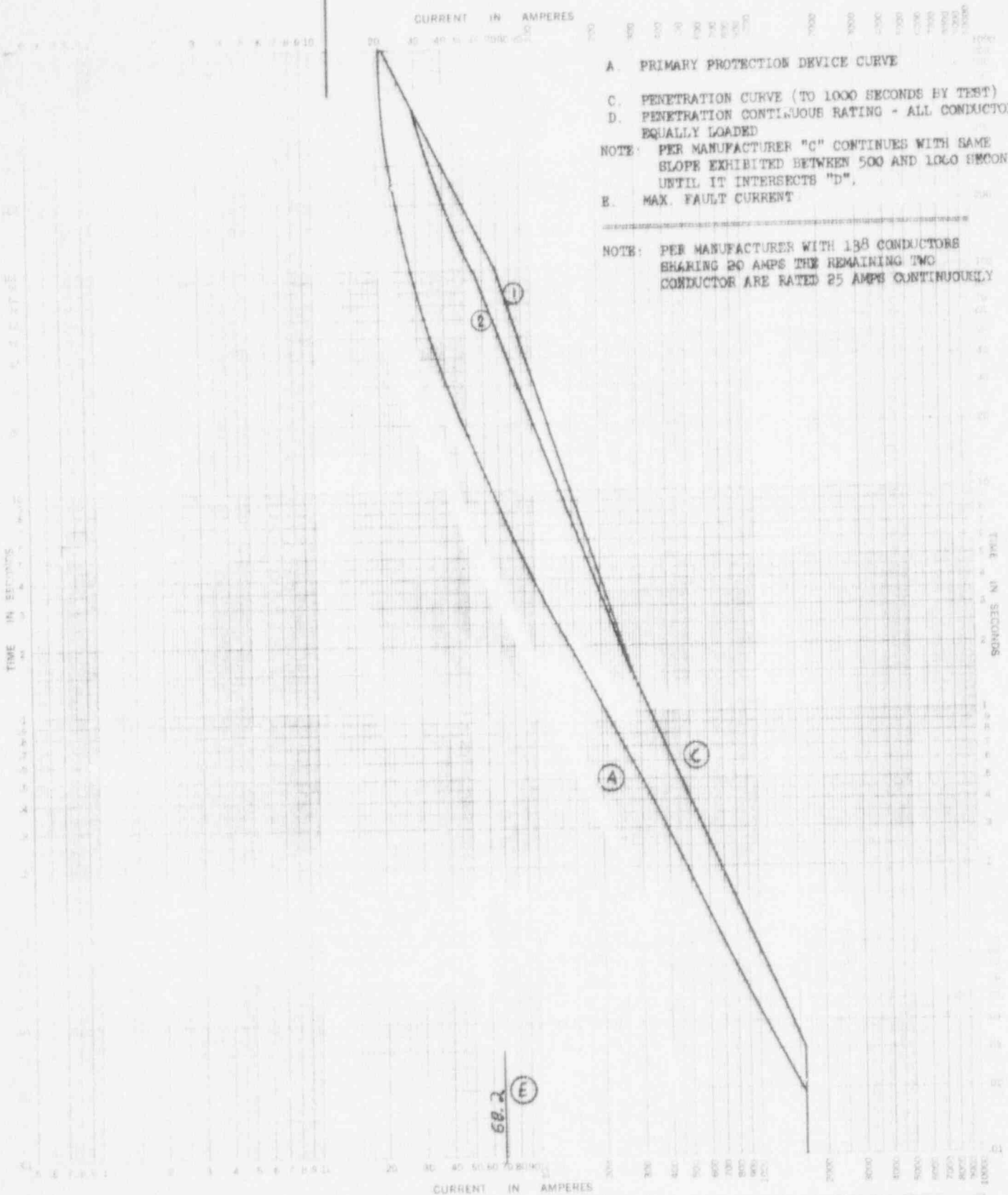
1. Tests made at _____ Volts ac at _____ p-f., starting at 25°C with no initial load

2. Curves are plotted to _____ Test points or variations should be _____

No. 12050-BK(C)-1B-3
 Date 2/19/80 JHO

#14 FEED THRU
 1) SINGLE SEAL
 2) TWO SEALS

POOR ORIGINAL



- A. PRIMARY PROTECTION DEVICE CURVE
 - C. PENETRATION CURVE (TO 1000 SECONDS BY TEST)
 - D. PENETRATION CONTINUOUS RATING - ALL CONDUCTORS EQUALLY LOADED
- NOTE: PER MANUFACTURER "C" CONTINUES WITH SAME SLOPE EXHIBITED BETWEEN 500 AND 1000 SECONDS UNTIL IT INTERSECTS "D".
- E. MAX. FAULT CURRENT

NOTE: PER MANUFACTURER WITH 138 CONDUCTORS SHARING 20 AMPS THE REMAINING TWO CONDUCTOR ARE RATED 25 AMPS CONTINUOUSLY

TIME-CURRENT CHARACTERISTIC CURVES

For BASIS FOR DATA Standards

1. Tests made at _____ Volts a-c at _____ p.f. starting at 25C with no initial load

2. Curves are plotted to _____ Test points so variations should be _____

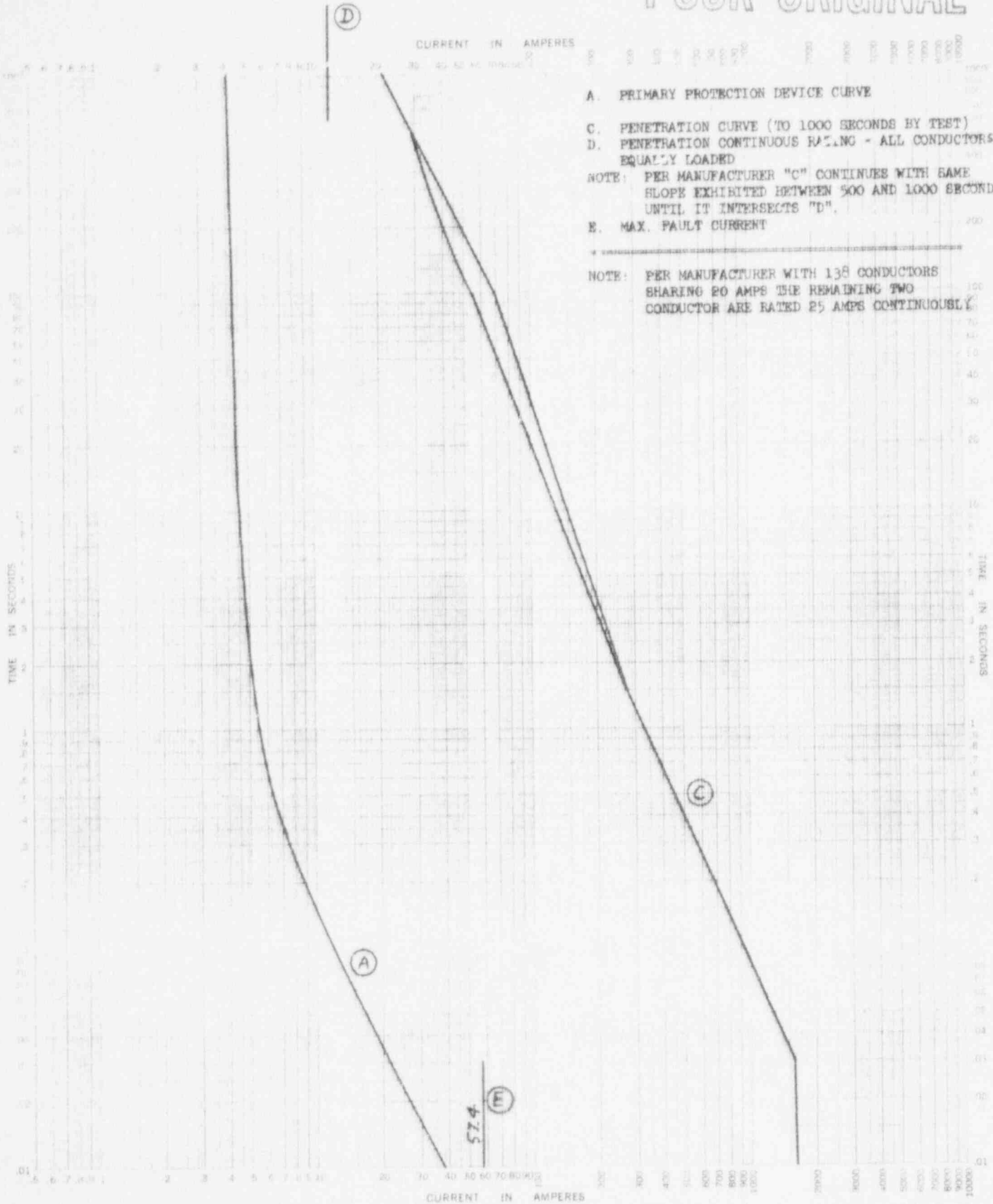
Fuse Links in _____ Dated _____

No. 12050-SK(C)-IB-4

Date 2/18/80 JMO

#14 FEED THRU
 1) SINGLE SEAL
 2) TWO SEALS

POOR ORIGINAL



- A. PRIMARY PROTECTION DEVICE CURVE
- C. PENETRATION CURVE (TO 1000 SECONDS BY TEST)
- D. PENETRATION CONTINUOUS RATING - ALL CONDUCTORS EQUALLY LOADED
- NOTE: PER MANUFACTURER "C" CONTINUES WITH SAME SLOPE EXHIBITED BETWEEN 500 AND 1000 SECONDS UNTIL IT INTERSECTS "D".
- E. MAX. FAULT CURRENT

NOTE: PER MANUFACTURER WITH 138 CONDUCTORS SHARING 20 AMPS THE REMAINING TWO CONDUCTOR ARE RATED 25 AMPS CONTINUOUSLY.

TIME-CURRENT CHARACTERISTIC CURVES

For _____ Fuse Links in _____

Basis for Data Standards _____ Dated _____

1. Tests made at _____ Volts a-c at _____ p-f, starting at 25C with no initial load

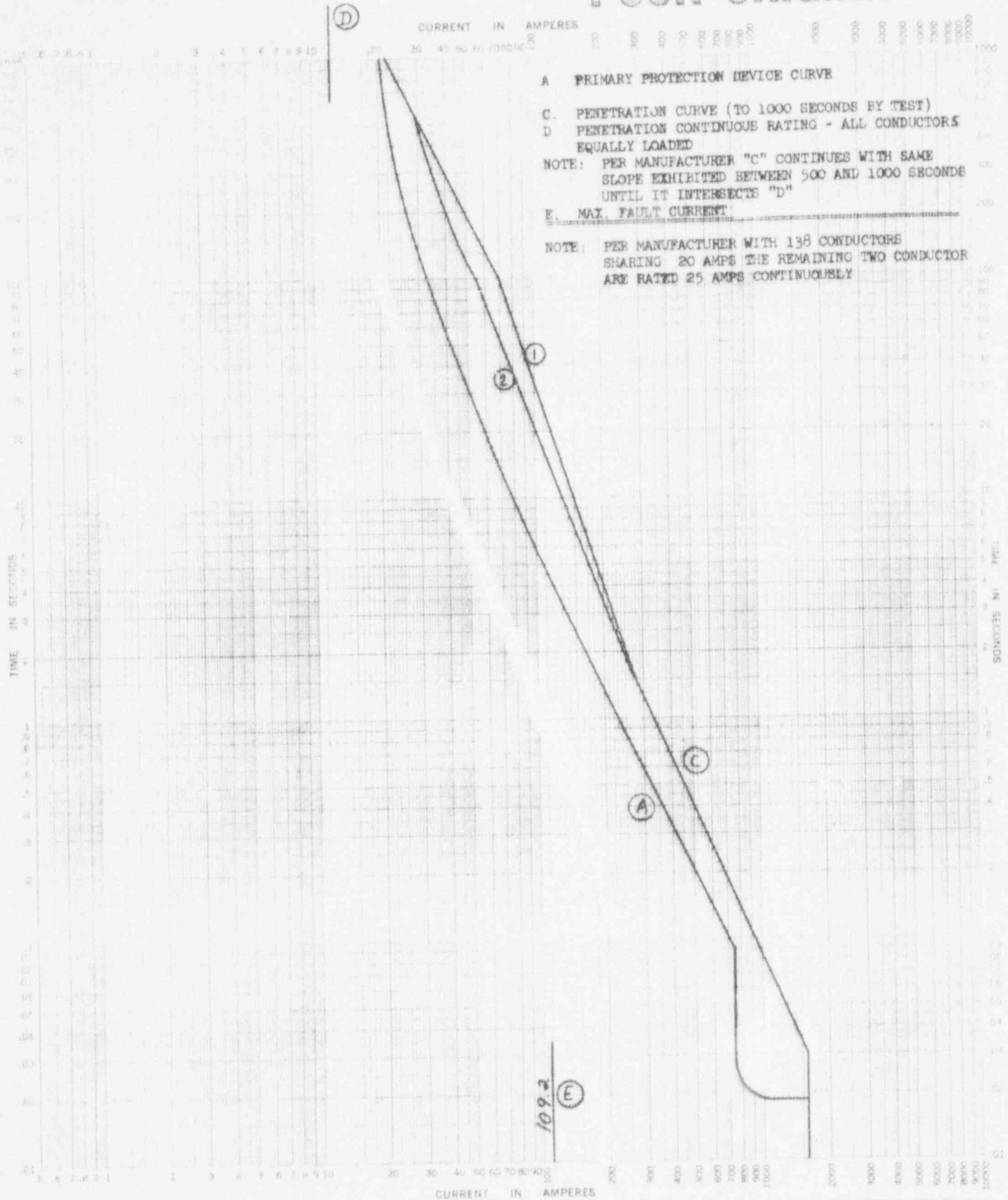
2. Curves are plotted to _____ Test points so variations should be _____

No. 12050-SK(C)-IB-5
 Date 2/19/80 uro

#14 FEED THRU
 1) SINGLE SEAL
 2) TWO SEALS

A GE THED-15A

POOR ORIGINAL



A PRIMARY PROTECTION DEVICE CURVE
 B PENETRATION CURVE (TO 1000 SECONDS BY TEST)
 C PENETRATION CONTINUOUS RATING - ALL CONDUCTORS EQUALLY LOADED
 D PENETRATION CONTINUOUS RATING - 138 CONDUCTORS SHARING 20 AMPS THE REMAINING TWO CONDUCTOR ARE RATED 25 AMPS CONTINUOUSLY
 E MAX. FAULT CURRENT

TIME-CURRENT CHARACTERISTIC CURVES

For Fuse Links in _____ Dated _____

BASIS FOR DATA Standards _____

1. Tests made at _____ Volts a-c at _____ p-f, starting at 25C with no initial load.

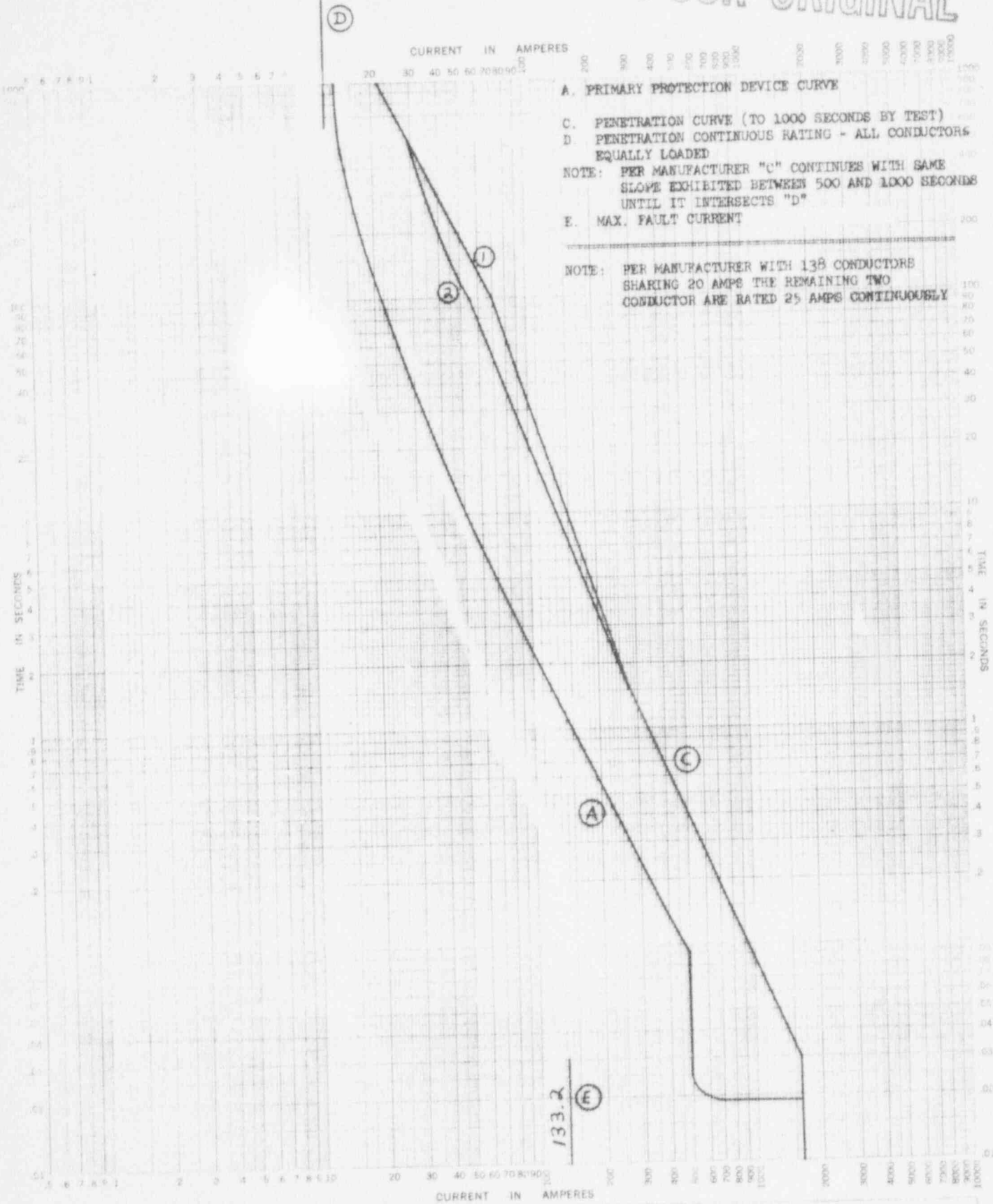
2. Curves are plotted to _____ Test points so variations should be _____

No. 12050-SK(C)-1B-6
 Date 2/12/80 MTO

A GE TEB-10A

#14 FEED THRU
1) SINGLE SEAL
2) TWO SEALS

POOR ORIGINAL



TIME-CURRENT CHARACTERISTIC CURVES
Fuse Links, In

For _____ Dated _____
BASIS FOR DATA Standards

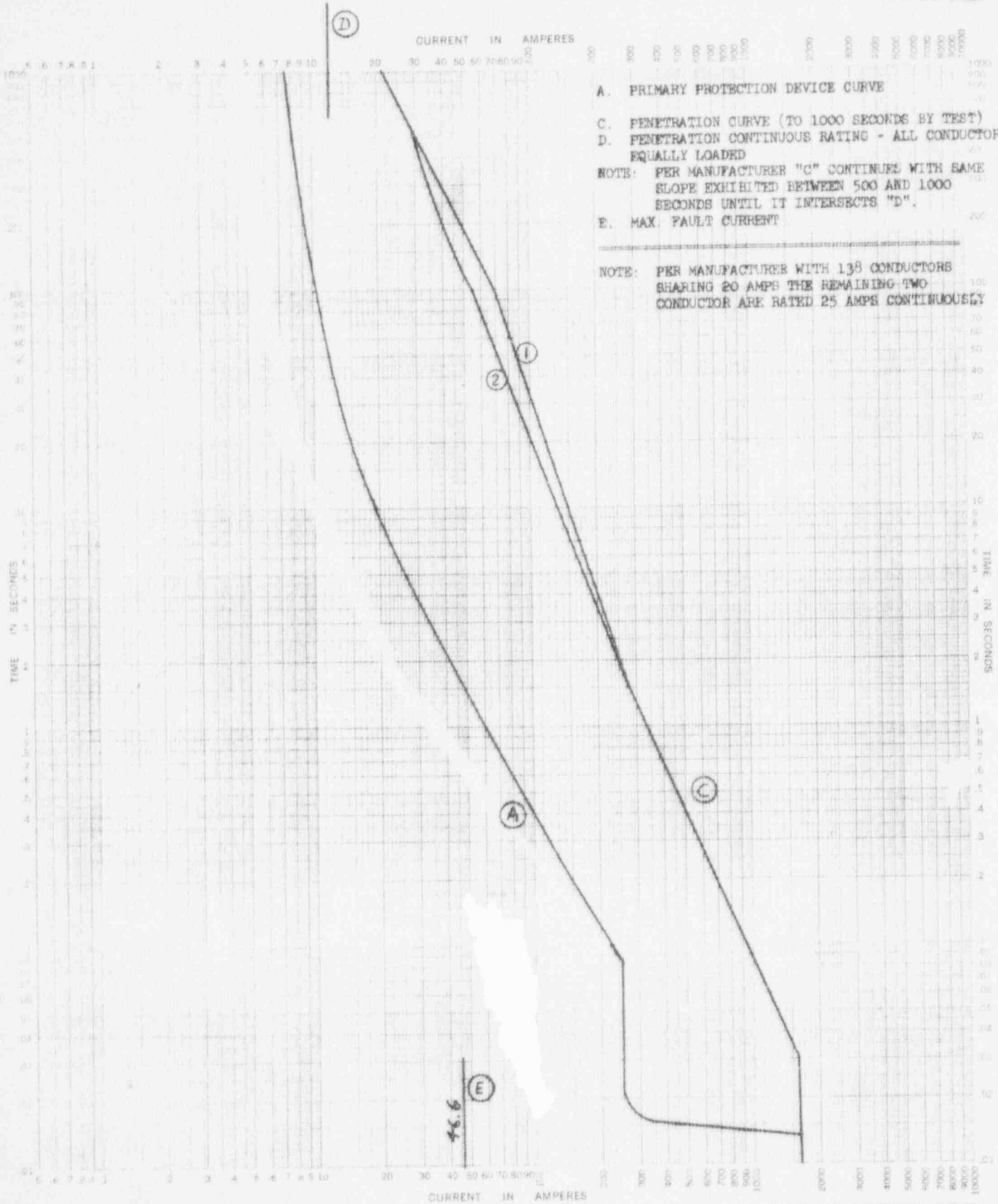
1. Tests made at _____ Volts a-c at _____ p-f. starting at 25C with no initial load
2. Curves are plotted to _____ Test points so variations should be _____

No. 12050-SK(C)-IB-7
Date 2/19/80 JMO

#14 FEED THRU
 1) SINGLE SEAL
 2) TWO SEALS

POOR ORIGINAL

A W QUIK LAG BRK 5A



- A. PRIMARY PROTECTION DEVICE CURVE
- C. PENETRATION CURVE (TO 1000 SECONDS BY TEST)
- D. PENETRATION CONTINUOUS RATING - ALL CONDUCTORS EQUALLY LOADED
- NOTE: PER MANUFACTURER "C" CONTINUES WITH SAME SLOPE EXHIBITED BETWEEN 500 AND 1000 SECONDS UNTIL IT INTERSECTS "D".
- E. MAX. FAULT CURRENT

NOTE: PER MANUFACTURER WITH 138 CONDUCTORS SHARING 20 AMPS THE REMAINING TWO CONDUCTOR ARE RATED 25 AMPS CONTINUOUSLY

TIME-CURRENT CHARACTERISTIC CURVES

For Basis for Data Standards

1. Tests made at _____ Volts a-c at _____ p.f. starting at 25C with no initial load

2. Curves are plotted to _____ Test points so variations should be _____

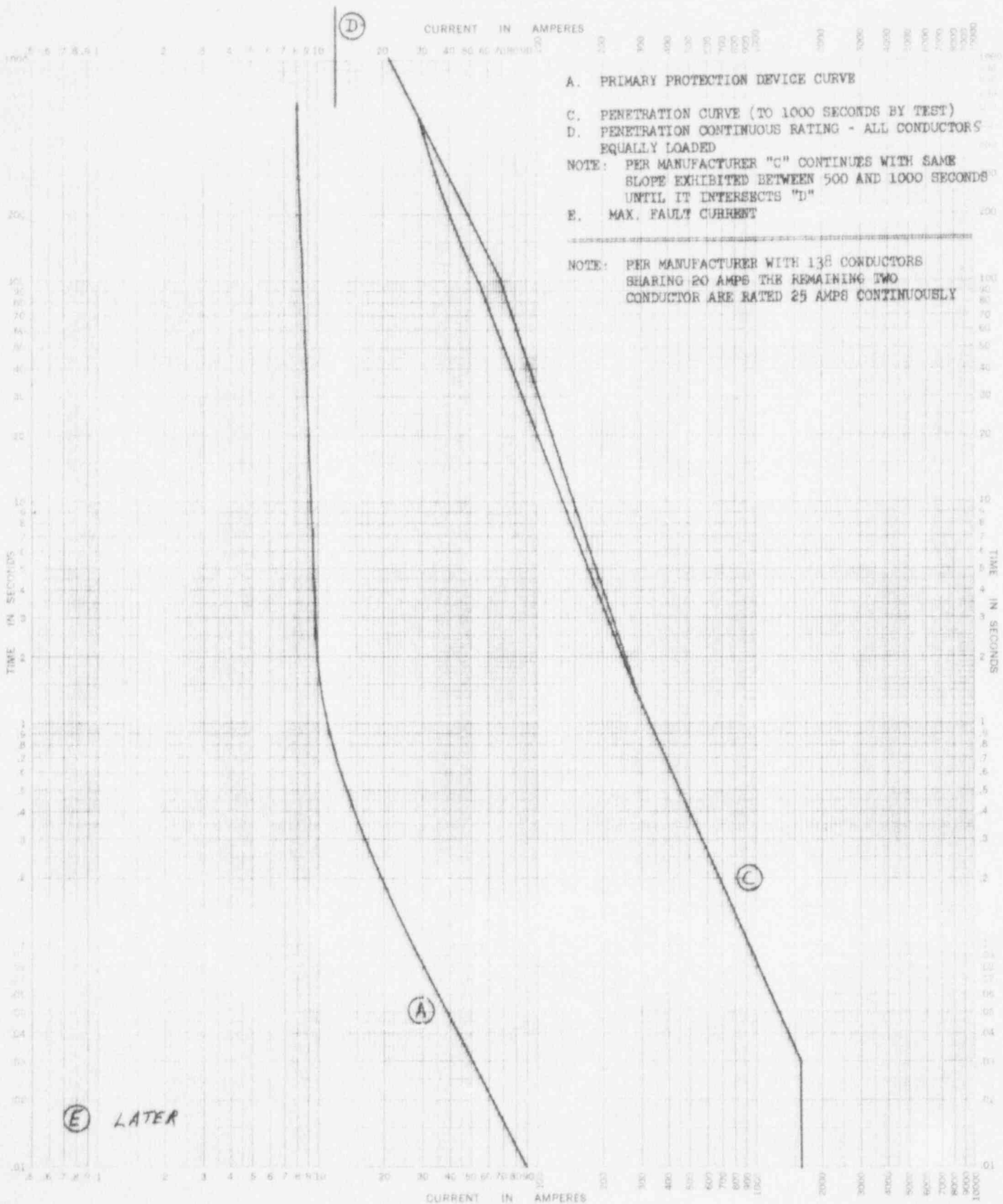
No. 12050-SK(C)-IB-B

Date 2/19/80 J490

#14 FEED THRU
 1) SINGLE SEAL
 2) TWO SEALS

POOR ORIGINAL

A BUSSMAN ABC 6A



- A. PRIMARY PROTECTION DEVICE CURVE
- C. PENETRATION CURVE (TO 1000 SECONDS BY TEST)
- D. PENETRATION CONTINUOUS RATING - ALL CONDUCTORS EQUALLY LOADED
- NOTE: PER MANUFACTURER "C" CONTINUES WITH SAME SLOPE EXHIBITED BETWEEN 500 AND 1000 SECONDS UNTIL IT INTERSECTS "D"
- E. MAX. FAULT CURRENT

NOTE: PER MANUFACTURER WITH 138 CONDUCTORS BEARING 20 AMPS THE REMAINING TWO CONDUCTOR ARE RATED 25 AMPS CONTINUOUSLY

TIME-CURRENT CHARACTERISTIC CURVES

For _____ Fuse Links In _____

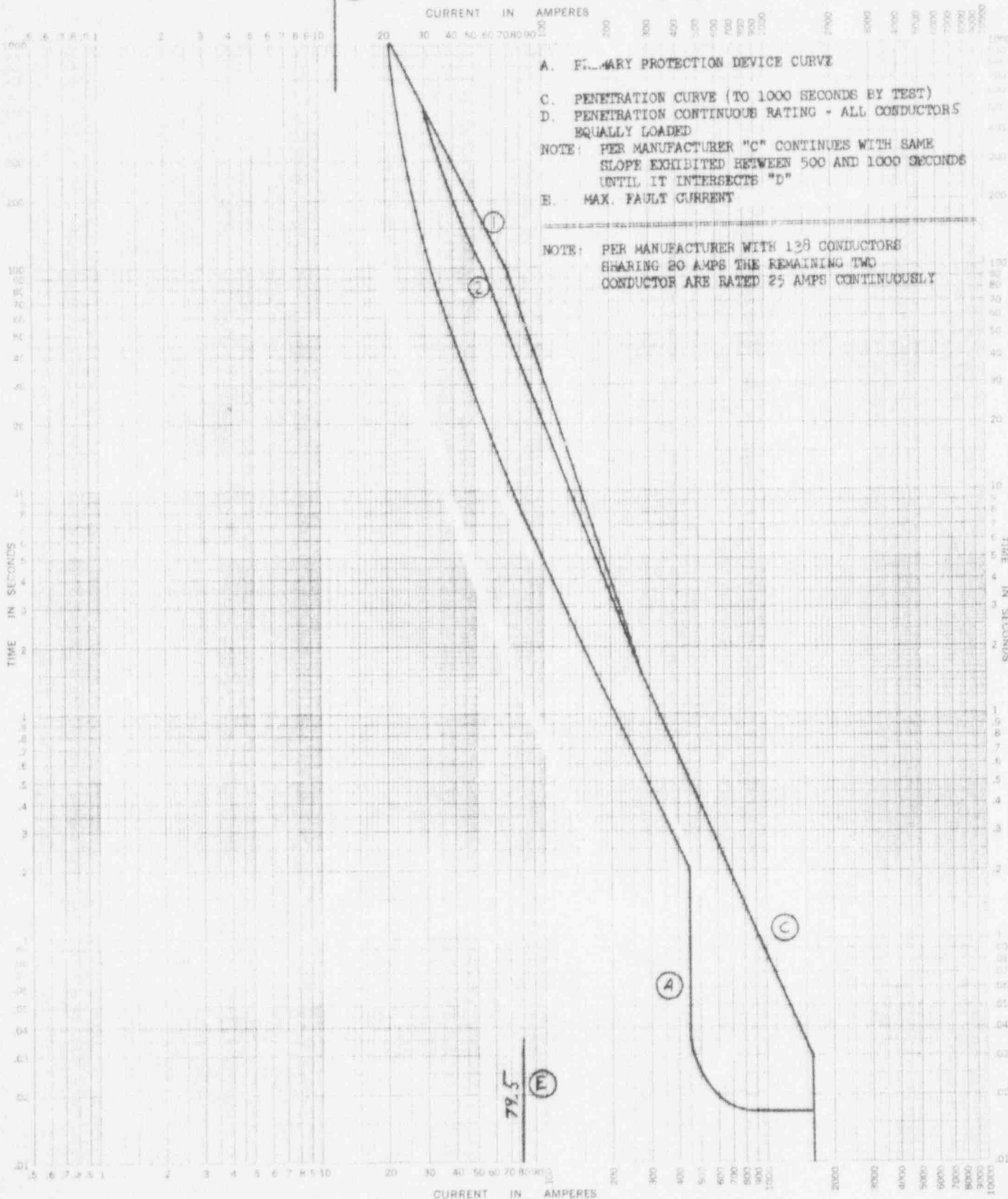
BASIS FOR DATA Standards _____ Dated _____

1. Tests made at _____ Volts a-c at _____ p.f. starting at 25C with no initial load

2. Curves are plotted to _____ Test points so variations should be _____

No. 12050-6K(C)-IB-9
 Date 2/19/80 J40

POOR ORIGINAL



- A. PRIMARY PROTECTION DEVICE CURVE
- B. PENETRATION CURVE (TO 1000 SECONDS BY TEST)
- C. PENETRATION CONTINUOUS RATING - ALL CONDUCTORS EQUALLY LOADED
- D. PENETRATION CONTINUOUS RATING - ALL CONDUCTORS EQUALLY LOADED
- E. MAX. FAULT CURRENT

NOTE: PER MANUFACTURER "C" CONTINUES WITH SAME SLOPE EXHIBITED BETWEEN 500 AND 1000 SECONDS UNTIL IT INTERSECTS "D"

NOTE: PER MANUFACTURER WITH 138 CONDUCTORS SHARING 80 AMPS THE REMAINING TWO CONDUCTOR ARE RATED 25 AMPS CONTINUOUSLY

TIME-CURRENT CHARACTERISTIC CURVES

For Fuse Links. In

BASIS FOR DATA Standards. Dated

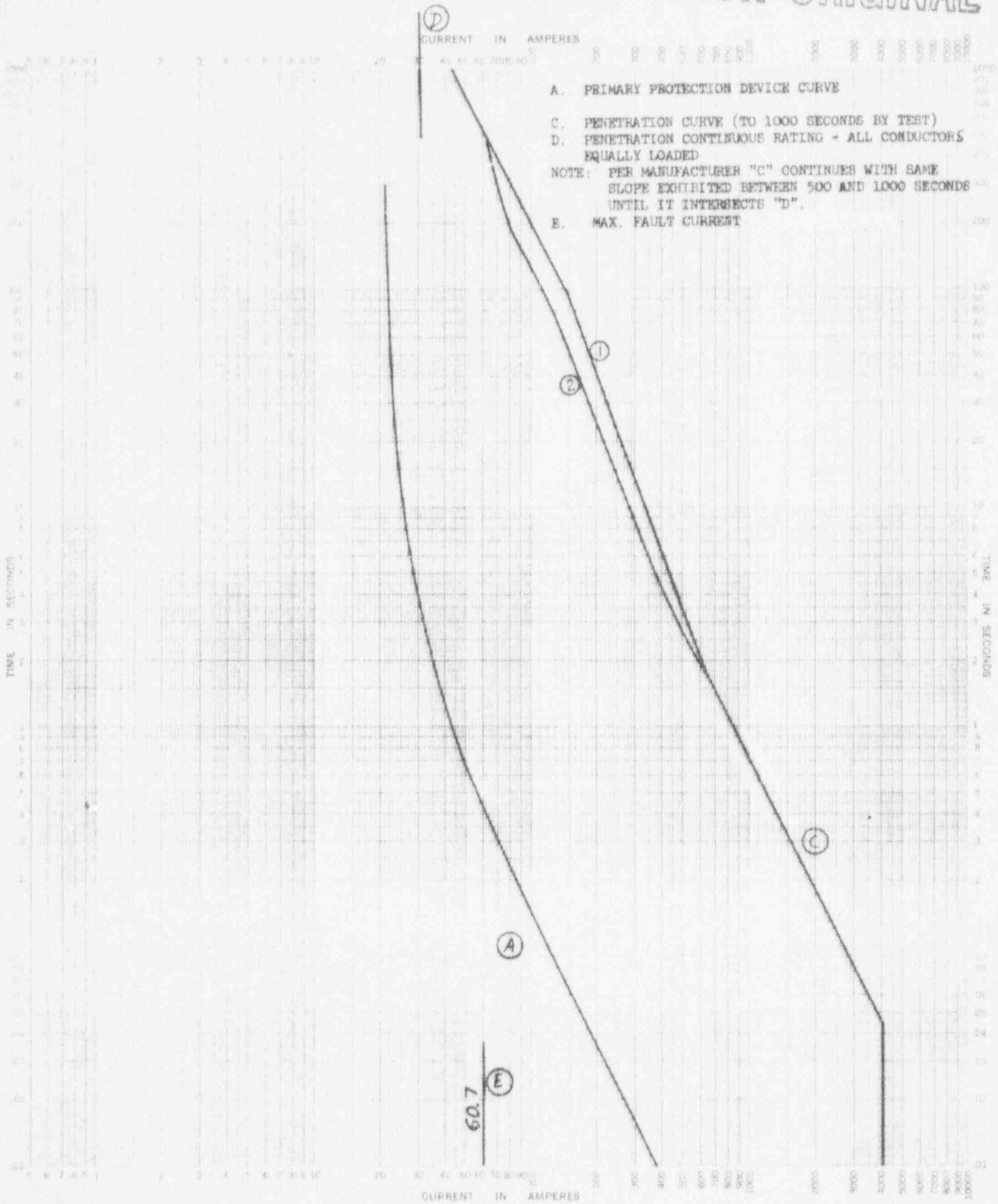
1. Tests made at _____ Volts a-c at _____ p-l. starting at 25C with no initial load

2. Curves are plotted to _____ Test points so variations should be _____

No. 12050-SK(C)-1B-10

Date 2/13/80 J40

POOR ORIGINAL



A. PRIMARY PROTECTION DEVICE CURVE
C. PENETRATION CURVE (TO 1000 SECONDS BY TEST)
D. PENETRATION CONTINUOUS RATING - ALL CONDUCTORS EQUALLY LOADED
NOTE: PER MANUFACTURER "C" CONTINUES WITH SAME SLOPE EXHIBITED BETWEEN 500 AND 1000 SECONDS UNTIL IT INTERSECTS "D".
E. MAX. FAULT CURRENT

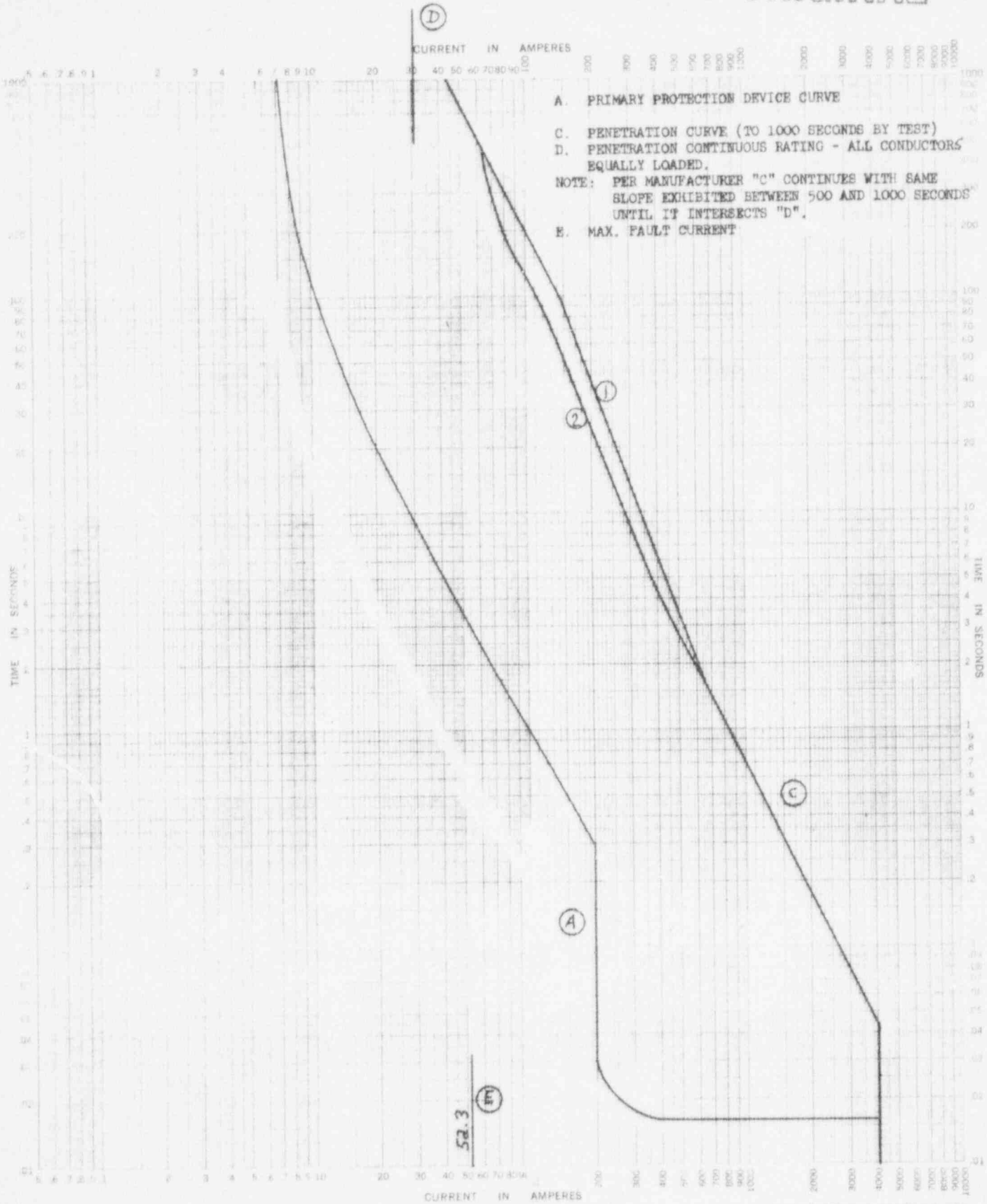
TIME-CURRENT CHARACTERISTIC CURVES
Fuse Links In
Dated _____
Volts a-c at _____ p.f. starting at 25C with no initial load
Test points so variations should be.

No. 12050-BK(C)-1C-1
Date 2/13/80 JCTO

A GE TQB-5A

#10 FEED THRU
1) SINGLE SEAL
2) TWO SEALS

POOR ORIGINAL

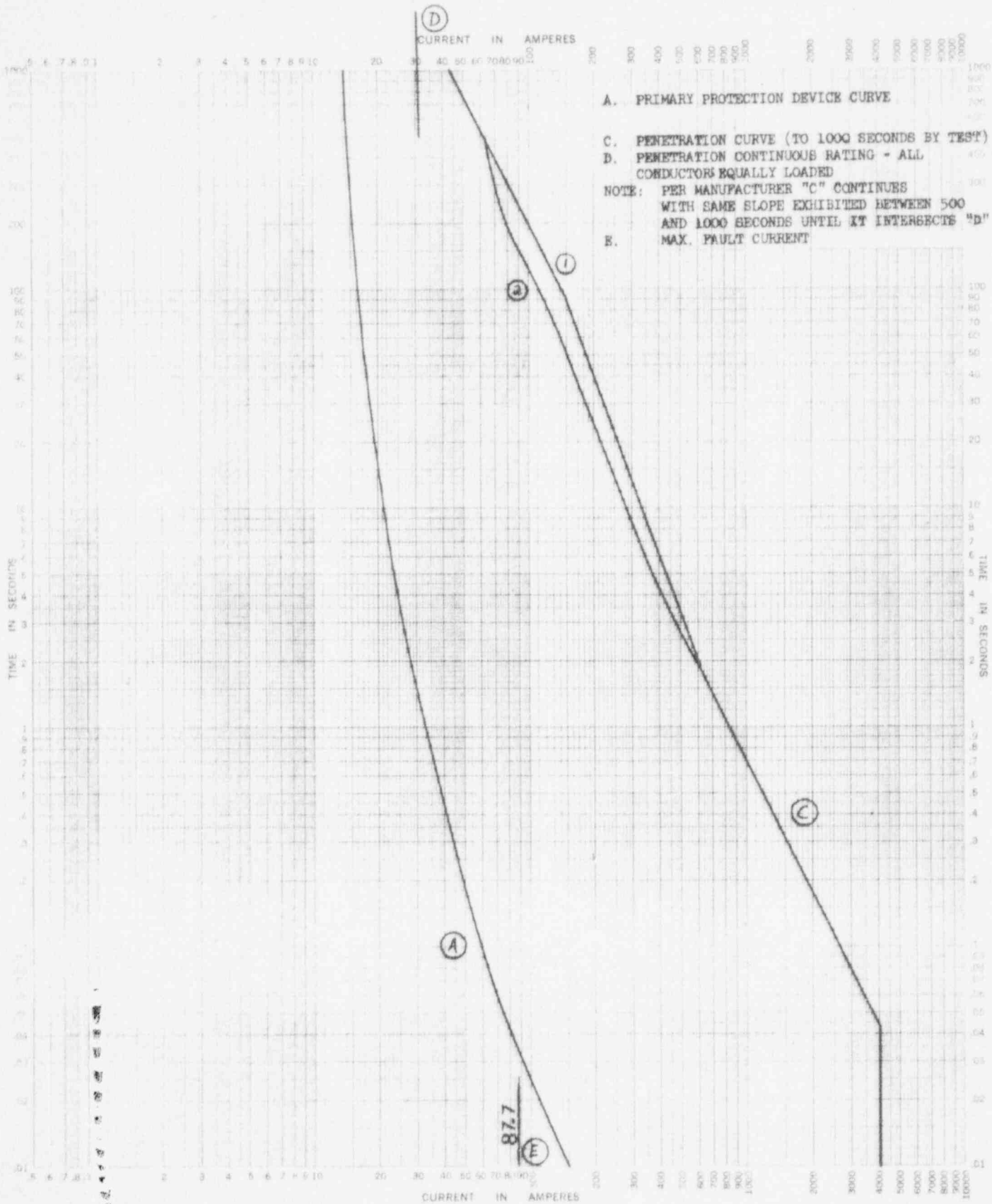


A. PRIMARY PROTECTION DEVICE CURVE
 C. PENETRATION CURVE (TO 1000 SECONDS BY TEST)
 D. PENETRATION CONTINUOUS RATING - ALL CONDUCTORS EQUALLY LOADED.
 NOTE: PER MANUFACTURER "C" CONTINUES WITH SAME SLOPE EXHIBITED BETWEEN 500 AND 1000 SECONDS UNTIL IT INTERSECTS "D".
 E. MAX. FAULT CURRENT

52.3

TIME-CURRENT CHARACTERISTIC CURVES
 Fuse links in _____
 Dated _____
 For BASIS FOR DATA Standards _____
 1. Tests made at _____ Volts a-c at _____ p.f. starting at 25C with no initial load
 2. Curves are plotted to _____ Test points so variations should be _____
 No. 12050-SK(C)-IC-2
 Date 2/13/80 J40

POOR ORIGINAL



A. PRIMARY PROTECTION DEVICE CURVE

C. PENETRATION CURVE (TO 1000 SECONDS BY TEST)
D. PENETRATION CONTINUOUS RATING - ALL CONDUCTORS EQUALLY LOADED

NOTE: PER MANUFACTURER "C" CONTINUES WITH SAME SLOPE EXHIBITED BETWEEN 500 AND 1000 SECONDS UNTIL IT INTERSECTS "D"
E. MAX. FAULT CURRENT

TIME-CURRENT CHARACTERISTIC CURVES

For Fuse Links In

Basis for IATA Standards Dated

1. Tests made at Volts a-c at p.f., starting at 25°C with no initial load

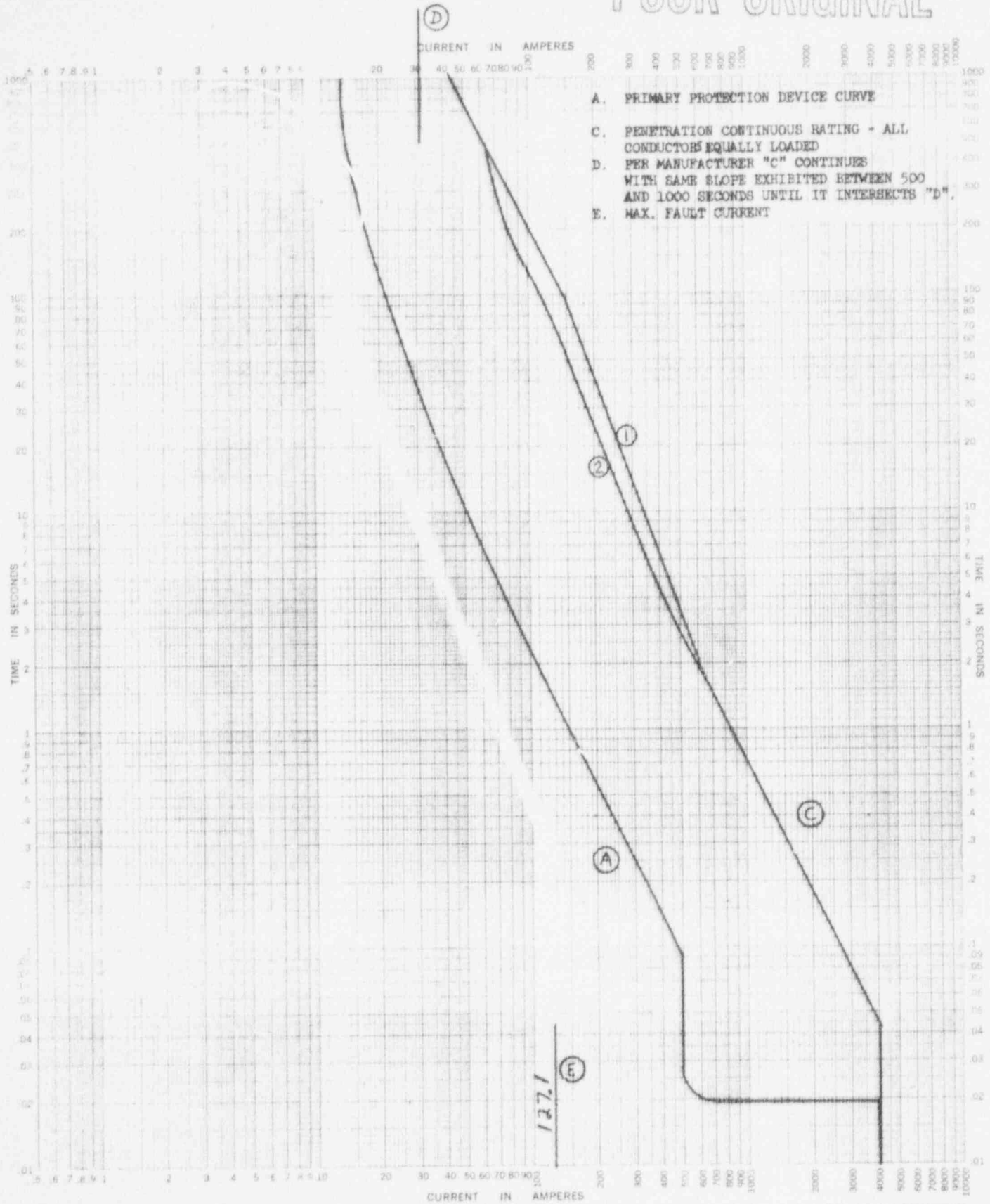
2. Curves plotted to Test points so variations should be

No. 12050-BK(C)-IC-3

Date 2/13/80 J40

#10 FEED THRU
 1) SINGLE SEAL
 2) TWO SEALS

POOR ORIGINAL



- A. PRIMARY PROTECTION DEVICE CURVE
- C. PENETRATION CONTINUOUS RATING + ALL CONDUCTORS EQUALLY LOADED
- D. PER MANUFACTURER "C" CONTINUES WITH SAME SLOPE EXHIBITED BETWEEN 500 AND 1000 SECONDS UNTIL IT INTERSECTS "D".
- E. MAX. FAULT CURRENT

TIME-CURRENT CHARACTERISTIC CURVES

For _____ Fuse Links In _____

BASIS FOR DATA Standards _____ Dated _____

1. Tests made at _____ Volts a-c at _____ p-f, starting at 25C with no initial load

2. Curves are plotted to _____ Test points so variations should be _____

No. 12050-5K(C)-1C-4

Date 2/13/80 J40