

The Light company

Houston Lighting & Power P.O. Box 1700 Houston, Texas 77001 (713) 228-9211

October 29, 1985
ST-HL-AE-1487
File No.: G9.17

Mr. George W. Knighton, Chief
Licensing Branch No. 3
Division of Licensing
U. S. Nuclear Regulatory Commission
Washington, DC 20555

South Texas Project
Units 1 and 2
Docket Nos. STN 50-498, STN 50-499
Responses to DSER/FSAR Items Regarding Question 430.16N

Dear Mr. Knighton:

The attachments enclosed provide STP's response to Draft Safety Evaluation Report (DSER) or Final Safety Analysis Report (FSAR) items.

The item numbers listed below correspond to those assigned on STP's internal list of items for completion which includes open and confirmatory DSER items, STP FSAR open items and open NRC questions. This list was given to your Mr. N. Prasad Kadambi on October 8, 1985 by our Mr. M. E. Powell.

The attachments include mark-ups of FSAR pages which will be incorporated in a future FSAR amendment unless otherwise noted below.

The items which are attached to this letter are:

<u>Attachment</u>	<u>Item No.*</u>	<u>Subject</u>
1	Q430.016N-1	Breaker coordination drawings Note: These drawings will not be incorporated into the FSAR.

* Legend

D - DSER Open Item
F - FSAR Open Item

C - DSER Confirmatory Item
Q - FSAR Question Response Item

L1/DSER/aaz

8511040283 851029
PDR ADOCK 05000498
E PDR

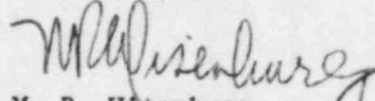
*1000
1/1
Asenture
Card
Original
Submitted
To: Reg Files*

Houston Lighting & Power Company

ST-HL-AE-1487
File No.: G9.17
Page 2

If you should have any questions concerning this matter, please contact Mr. Powell at (713) 993-1328.

Very truly yours,

A handwritten signature in dark ink, appearing to read "M. R. Wisenburg". The signature is fluid and cursive, with the first letters of the first and last names being capitalized and prominent.

M. R. Wisenburg
Manager, Nuclear Licensing

CAA/bl

Attachments: See above

L1/DSER/aaz

cc:

Hugh L. Thompson, Jr., Director
Division of Licensing
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Robert D. Martin
Regional Administrator, Region IV
Nuclear Regulatory Commission
611 Ryan Plaza Drive, Suite 1000
Arlington, TX 76011

*N. Prasad Kadambi, Project Manager
U.S. Nuclear Regulatory Commission
7920 Norfolk Avenue
Bethesda, MD 20814

Claude E. Johnson
Senior Resident Inspector/STP
c/o U.S. Nuclear Regulatory
Commission
P.O. Box 910
Bay City, TX 77414

M.D. Schwarz, Jr., Esquire
Baker & Botts
One Shell Plaza
Houston, TX 77002

J.R. Newman, Esquire
Newman & Holtzinger, P.C.
1615 L Street, N.W.
Washington, DC 20036

Director, Office of Inspection
and Enforcement
U.S. Nuclear Regulatory Commission
Washington, DC 20555

E.R. Brooks/R.L. Range
Central Power & Light Company
P.O. Box 2121
Corpus Christi, TX 78403

H.L. Peterson/G. Pokorny
City of Austin
P.O. Box 1088
Austin, TX 78767

J.B. Poston/A. vonRosenberg
City Public Service Board
P.O. Box 1771
San Antonio, TX 78296

Brian E. Berwick, Esquire
Assistant Attorney General for
the State of Texas
P.O. Box 12548, Capitol Station
Austin, TX 78711

Lanny A. Sinkin
3022 Porter Street, N.W. #304
Washington, DC 20008

Oreste R. Pirfo, Esquire
Hearing Attorney
Office of the Executive Legal Director
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Charles Bechhoefer, Esquire
Chairman, Atomic Safety &
Licensing Board
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Dr. James C. Lamb. III
313 Woodhaven Road
Chapel Hill, NC 27514

Judge Frederick J. Shon
Atomic Safety and Licensing Board
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Mr. Ray Goldstein, Esquire
1001 Vaughn Building
807 Brazos
Austin, TX 78701

Citizens for Equitable Utilities, Inc.
c/o Ms. Peggy Buchorn
Route 1, Box 1584
Brazoria, TX 77422

*Docketing & Service Section
Office of the Secretary
U.S. Nuclear Regulatory Commission
Washington, DC 20555
(3 Copies)

*Advisory Committee on Reactor Safeguards
U.S. Nuclear Regulatory Commission
1717 H Street
Washington, DC 20555

Revised 9/25/85

Note: All copies above without drawings except as Noted (*).

L1/DSER/aaz

STP FSAR
FSAR CR# 749

Question 430.16N

In section 8.3.1 you discuss the onsite distribution system. Your discussion provides insufficient detail for evaluation. Specifically address breaker coordination and the interrupting capacities of switchgear, load centers, motor control centers, and distribution panels under maximum short circuit conditions. Provide this information including supporting drawings and amend your FSAR accordingly.

Response

Interrupting capacities of 13.8 kV and 4.16 kV switchgear are provided in Sections 8.3.1.1.1 and 8.3.1.1.4.1, respectively. Interrupting capacities of 480 V switchgear are selected appropriately, based on the fault current contribution from loads and the source at a bus. Criteria for breaker coordination for onsite power system is discussed in Section 8.3.1.1.4.6. The 13.8 kV and the 4.16 kV detailed design documents are presently available for review. The 480 V detailed design documents will be available after the third quarter of 1985.

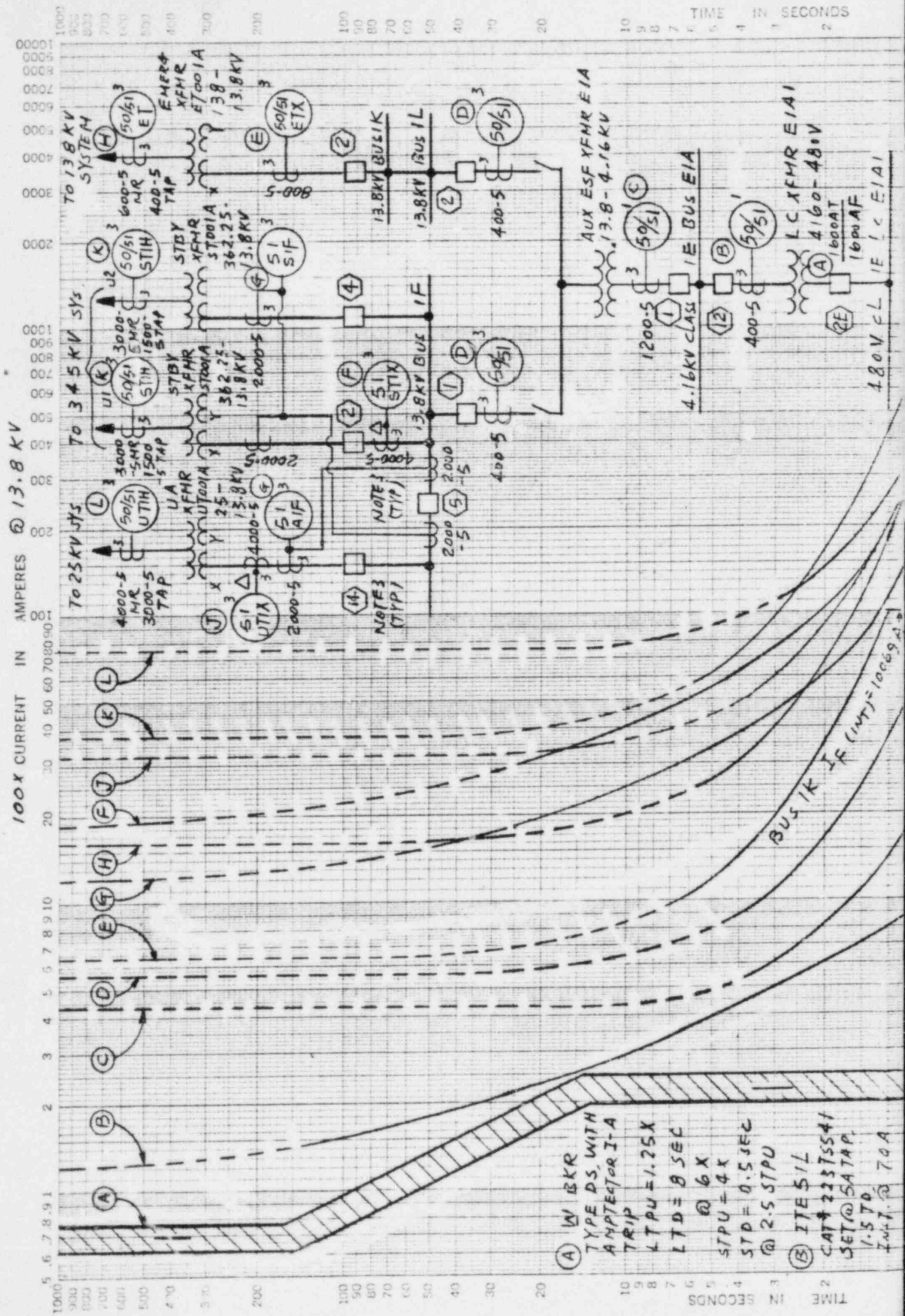
Maximum short circuit conditions have been calculated conservatively, by assuming the ultimate system contribution of 30 GVA (the system contribution with the two STP units on line, and with the eight transmission circuits will be 19.41 GVA) and maximum load fault current contribution (motors ≥ 50 HP and with standby diesel generator during testing). The calculations will be updated with final data.

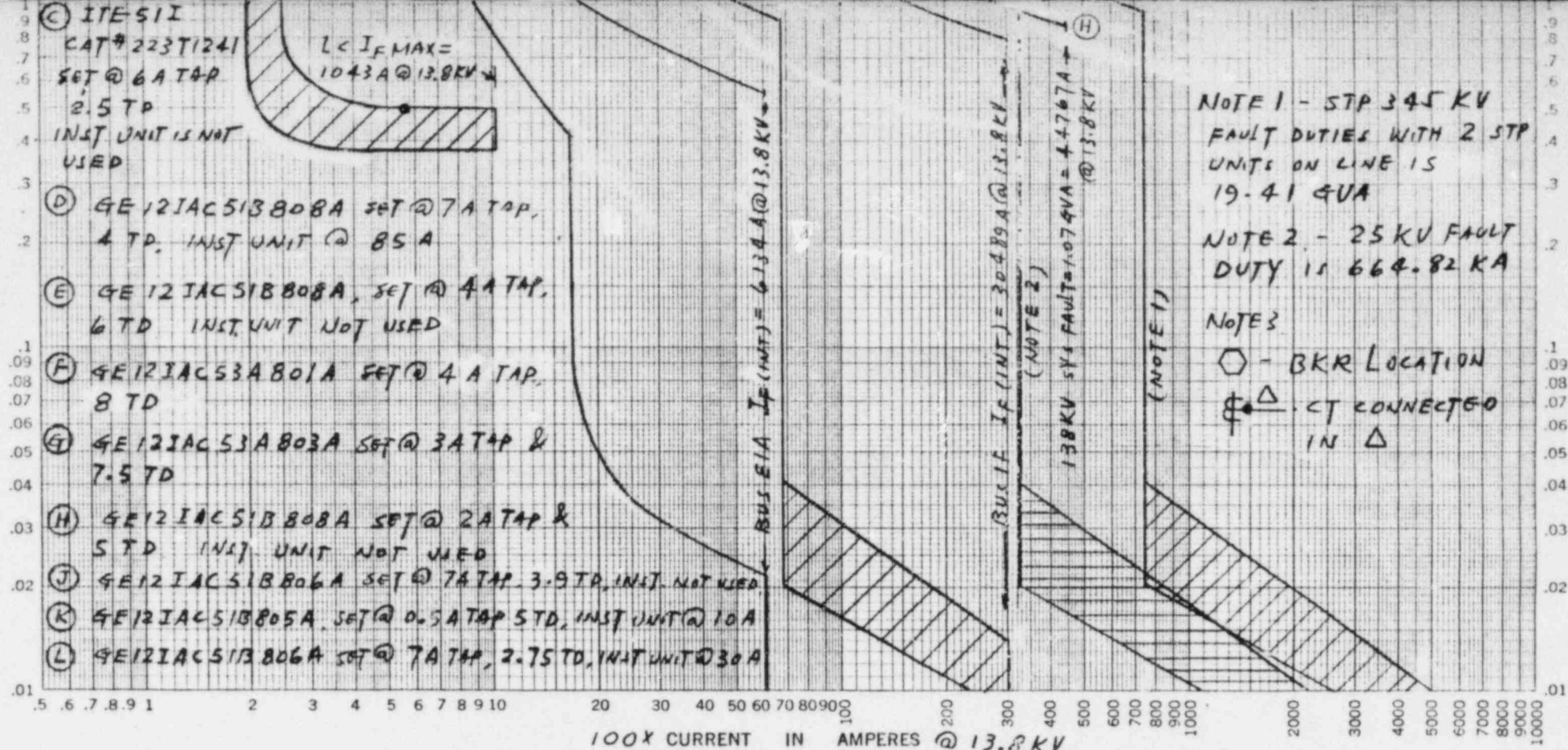
The present calculations indicate that the interrupting capacities of the equipment identified below is not exceeded under worst-case short circuit conditions, with the exception of two out of four 13.8 kV switchgear which yield a negligible, yet negative interrupting capacity margin of 0.2 percent. The present calculations are acceptable

	Rated Interrupting Capacity (Amp, rms, symm.)
1. 13.8 kV Switchgear ...	28000 (@ 15 kV)
2. 4.16 kV Switchgear ...	30300 (@ 4.76 kV)
3. 480V Loadcenter ...	30000
4. 480V MCC ...	25000
5. 120/208V Dist. Pnl. ...	7500

considering the conservatism in the present calculations as discussed above.

The drawings with breaker coordination curves are being submitted by separate cover letter (see ST-HL-AE-1387 dated 10/24/85).





ONSITE DISTRIBUTION SYSTEM CRITICAL PATH COORDINATION - PHASE TIME CURRENT (SH. 1 OF 2)

For SOUTH TEXAS PROJECT - JOB # 14926

BASIS FOR DATA Standards SEE TABULATION BELOW

TIME-CURRENT CHARACTERISTIC CURVES

Fuse Links. In

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. CURVE # SW01
Date 9-16-85

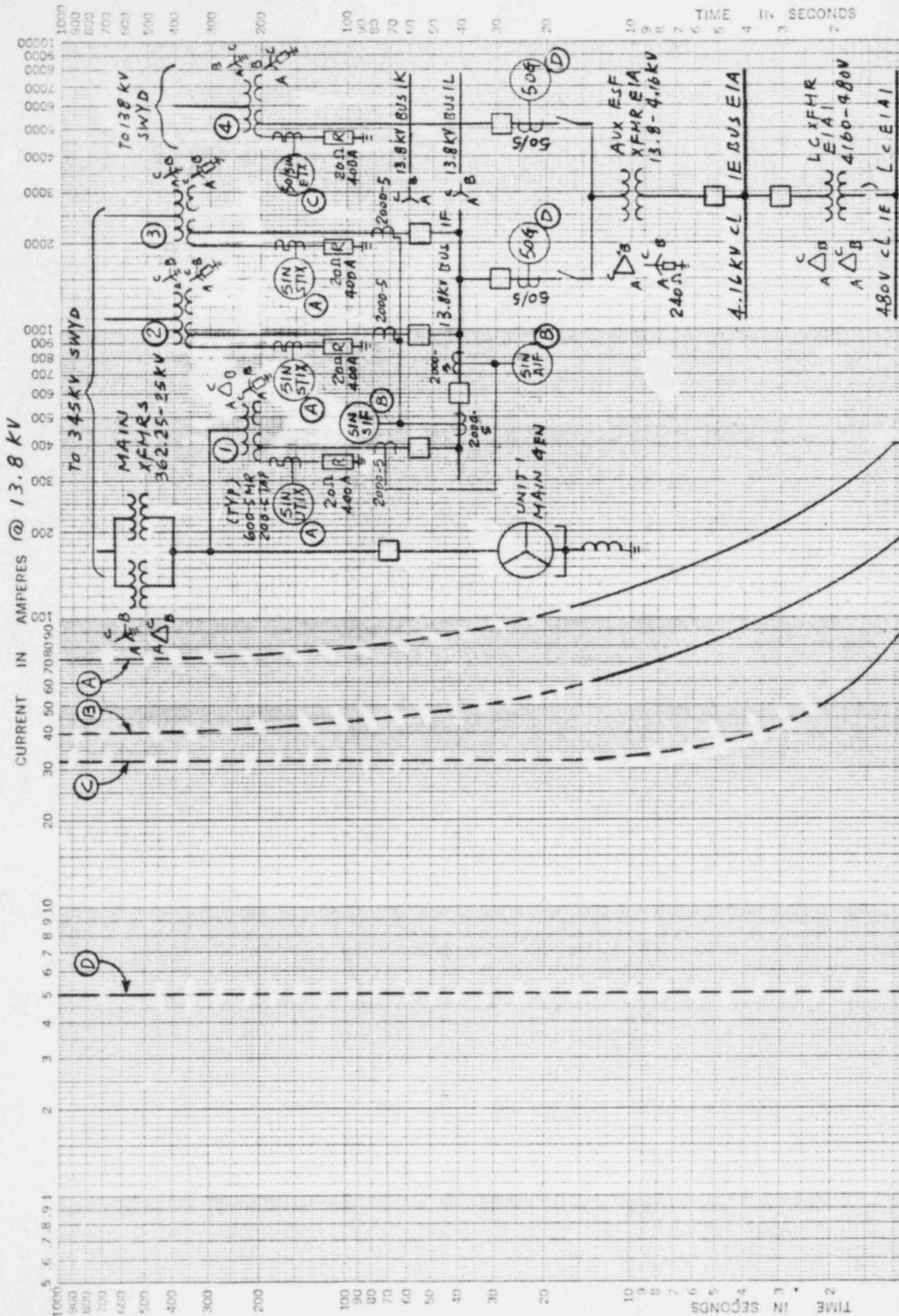
K-E TIME-CURRENT CHARACTERISTIC 48 5258
KEUFFEL & ESSER CO. MADE IN USA

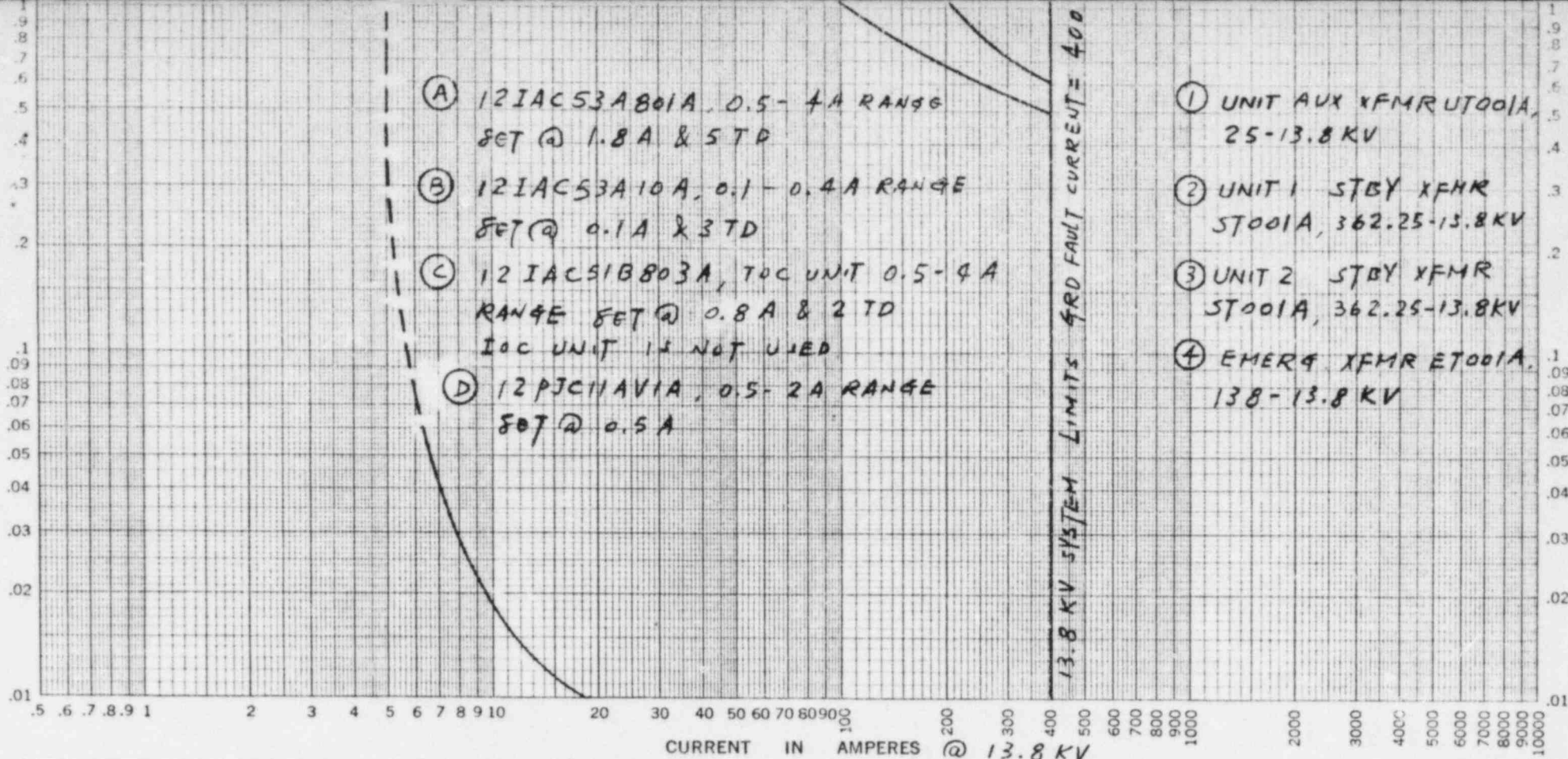
TI
APERTURE
CARD

Also Available On
Aperture Card

CURVE #	PLOTTED ON TIME-CURRENT CHART		
	MFR	CURVE #	DATED
(A)	W	705501	11/78
(B)	ITE	TCC 605805 & TCC 605807	3/9/73 9/19/71
(C)	↓	TCC 605801 & TCC 605802	10/12/71 8/29/72
(D) (E) (H) (J) (K) (L)	GE	GES-7001B	5/77
(F) (G)	↓	GES-7002B	↓

8511040283-01





ONSITE DISTRIBUTION SYSTEM CRITICAL PATH COORDINATION - GROUND TIME CURRENT TIME-CURRENT CHARACTERISTIC CURVES

For SOUTH TEXAS PROJECT - JOB #14926

BASIS FOR DATA Standards SEE TABULATION BELOW

Fuse Links. In

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. CURVE # SW03

Date 9-16-85

K&E TIME-CURRENT CHARACTERISTIC
KEUFFEL & ESSER CO. MADE IN U.S.A.

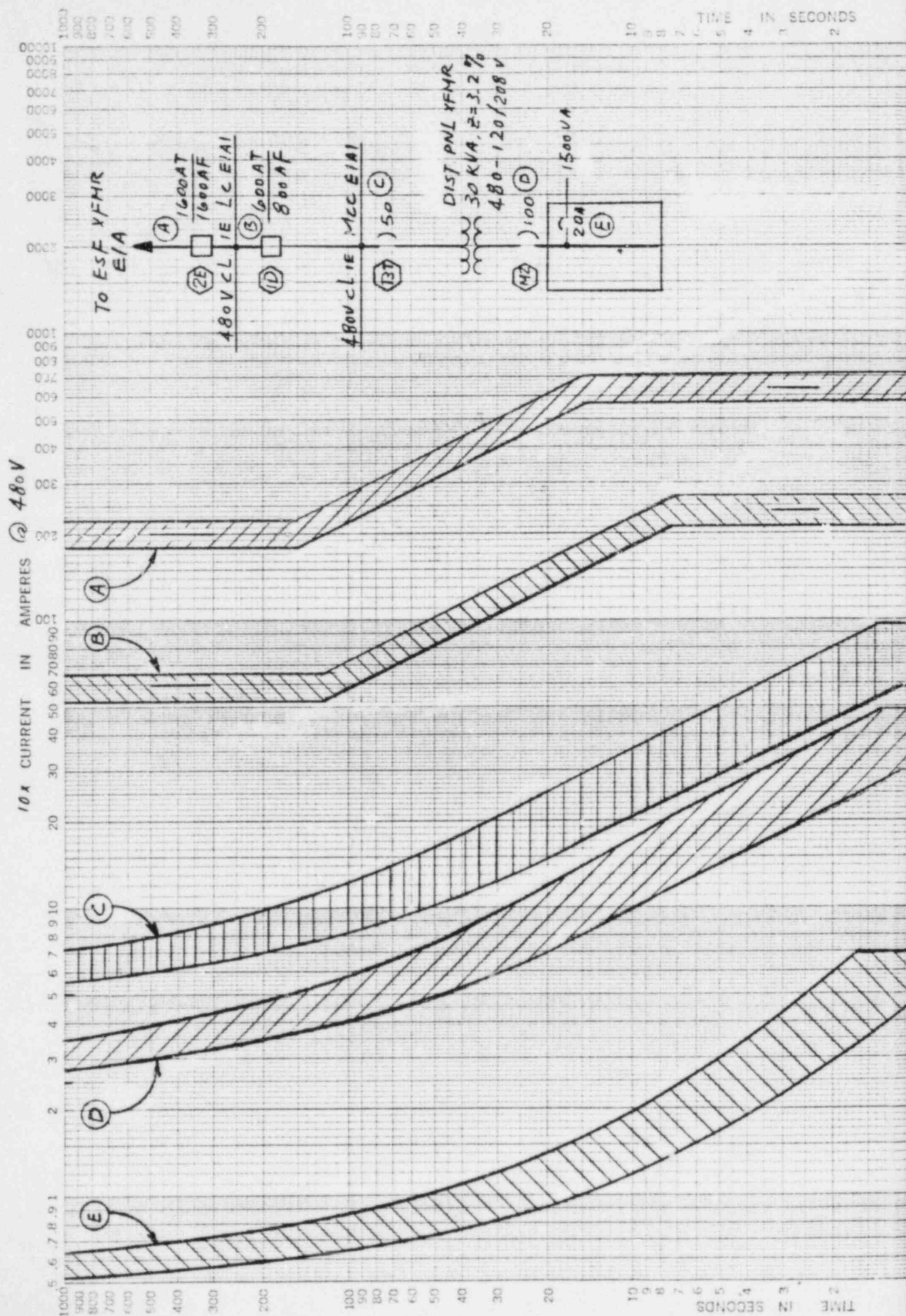
48 5258

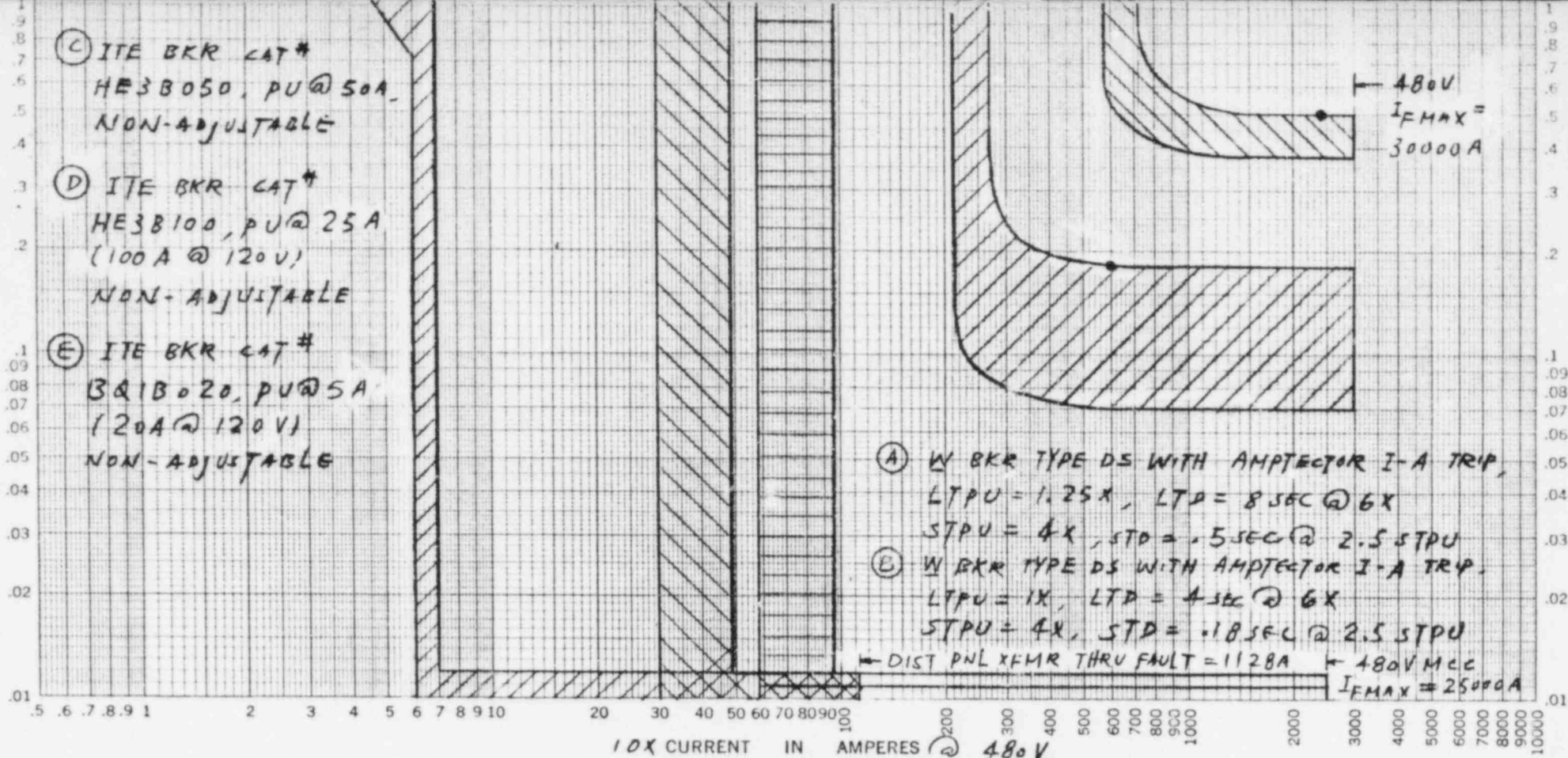
CURVE #	PLOTED ON TIME-CURRENT CHARACTERISTIC		
	MFR	CURVE NO.	DATED
(A), (B)	GE	GES-7002B	MAY, 77
(C)		GES-7001B	
(D)		GEI-31044H FIG 1	APRIL '80

TI
APERTURE
CARD

Also Available On
Aperture Card

851104028302





ONSITE DISTRIBUTION SYSTEM CRITICAL PATH COORDINATION - PHASE TIME CURRENT (SH 2 OF 2)

For SOUTH TEXAS PROJECT - JOB #14926

TIME-CURRENT CHARACTERISTIC CURVES

BASIS FOR DATA Standards SEE TABULATION BELOW

Fuse Links. In

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. CURVE # SW02

Date 9-16-85

K-E TIME-CURRENT CHARACTERISTIC
KEUFFEL & ESSER CO. MADE IN USA

48 5258

CURVE #	PLOTED ON TIME-CURRENT CHART		
	MFR	CURVE NO	DATED
(A), (B)	W	705501	NOV. 78
(C), (D)	ITE	TD-4999 R3, SH 2 OF 2	DEC. 8, 76
(E)	↓	TD-4943 R1, SH 1 OF 1	↓

TI
APERTURE
CARD

Also Available On
 Aperture Card

851104028303