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| Carolina Power & Light Co.<br>Raleigh, N.C. 27602<br>Mr. E.E. Utley | 9-12-73 | 9-19-73 | X | | | |

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DESCRIPTION:
Ltr trans the following.....

ENCLOSURES: For the Period 8-23-73 thru 9-5-73 BIWEEKLY OPERATING REPORT OR RESULTS OF INCORE SURVEILLANCE for the H.B. Robinson Unit #2, consisting of various Graphs and Tables.

(40 cys encl rec'd)

PLANT NAME: H.B. Robinson Unit #2

FOR ACTION/INFORMATION 9-19-73 JB

| | | | |
|---|---|---|---|
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| OGC, ROOM P-506A | SCHROEDER | GAMMILL | DIGGS (L) | SALTZMAN |
| ✓MUNTZING/STAFF | ✓MACCARY | ✓KASTNER | GEARIN (L) | |
| CASE | KNIGHT | BALLARD | GOULBOURNE (L) | PLANS |
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| BOYD | SHAO | | MAIGRET (L) | DUBE |
| MOORE (L)(BWR) | ✓STELLO | ENVIRO | SERVICE (L) | |
| DEYOUNG(L)(PWR) | HOUSTON | MULLER | SHEPPARD (E) | INFO |
| SKOVHOLT (L) | NOVAK | DICKER | SMITH (L) | C. MILES |
| P. COLLINS | ROSS | KNIGHTON | ✓TEETS (L) | |
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1-R.Schoonmaker,OC,GT,D-323
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1-AGMED(WALTER KOESTER RM-C-427-GT
✓1-RD..MULLER..F-309 GT

Regulatory File Cy.

CP&L

Carolina Power & Light Company

September 12, 1973

File: NG 3514

Serial: NG-73-384



Mr. A. Giambusso
Deputy Director for Reactor Projects
Directorate of Reactor Licensing
Office of Regulation
U. S. Atomic Energy Commission
Washington, D. C. 20545

50-261

Dear Mr. Giambusso:

H. B. ROBINSON UNIT NO. 2
LICENSE DPR-23
BIWEEKLY REPORT OF RESULTS OF INCORE SURVEILLANCE

In accordance with the requirements of the "Interim Conditions for Operation, H. B. Robinson Unit No. 2," dated July 25, 1973, we hereby submit as an attachment the biweekly report of the results of incore surveillance for the period August 23 - September 5, 1973.

Yours very truly,

E. E. Utley
Vice-President
Bulk Power Supply

DBW:mvp

Attachment

cc: Messrs. C. D. Barham
N. B. Bessac
B. J. Furr
D. V. Menscer
D. B. Waters



7010

336 Fayetteville Street • P. O. Box 1551 • Raleigh, N. C. 27602

H. B. ROBINSON STEAM ELECTRIC PLANT

UNIT NO. 2

SEPTEMBER 6, 1973

INCORE SURVEILLANCE DATA SUMMARY

Robinson File No. 2-A-7

Surveillance of the $F_z$ $S_z$ was performed at one to two hour intervals from August 23 through September 5. There were four interruptions during this period, August 24, 25-26, 28, and 30. During the period from August 25 through 26 the plant was at zero power and surveillance was not required. There were three maintenance outages, two of which were used to repair the APDMS and one was used to replace detectors in the moveable detector system.

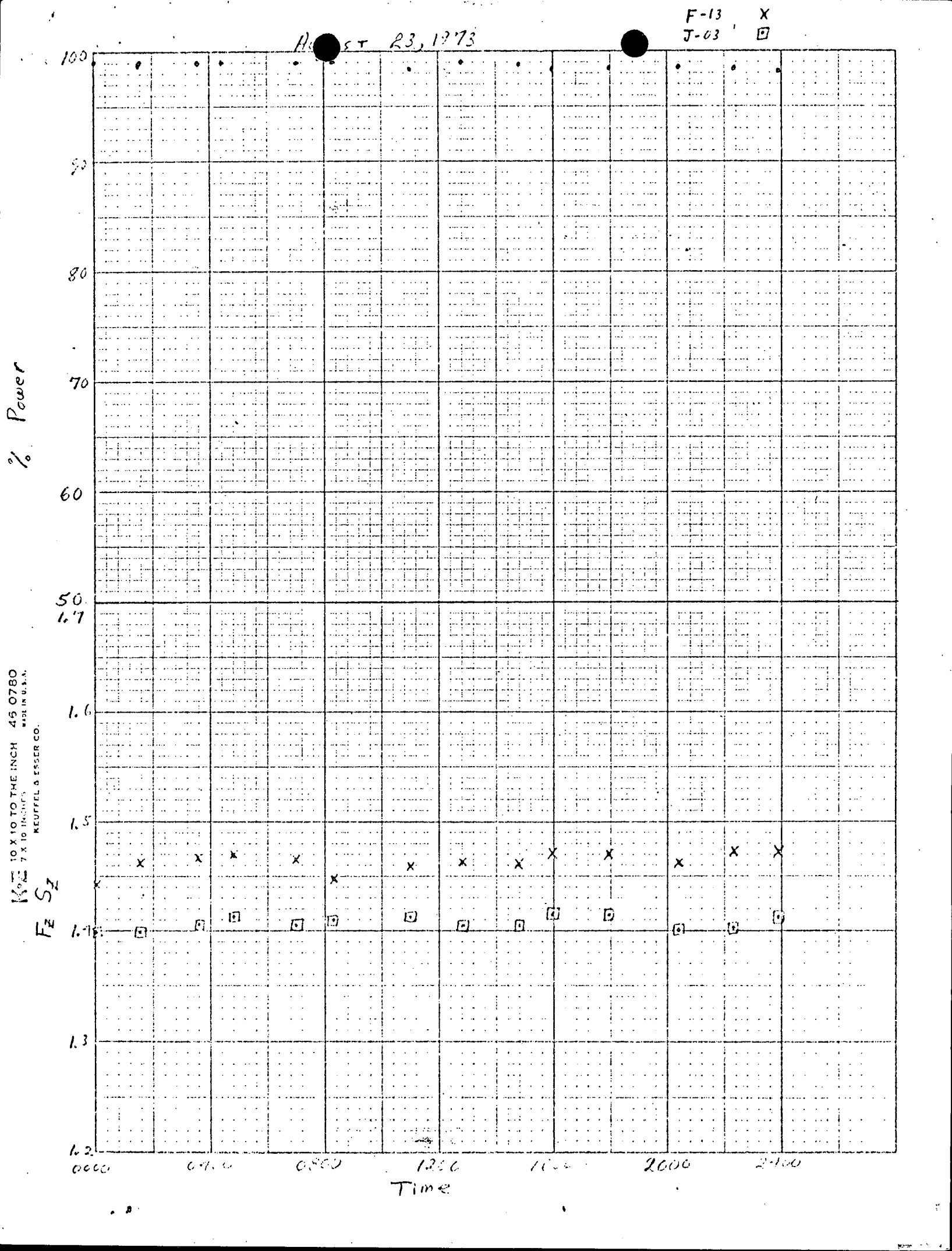
Problems arose during this reporting period when it was decided that another thimble should be used in place of J-3 because of its proximity to a rodded assembly. At about the same time, detector "B" began to show symptoms of failure. The APDMS was changed to use thimbles N-10 and D-5 while the detector was being replaced. N-10 will be used to replace J-3 and D-5 was only a temporary replacement for F-13. Both N-10 and D-5 were more conservative than their predecessors.

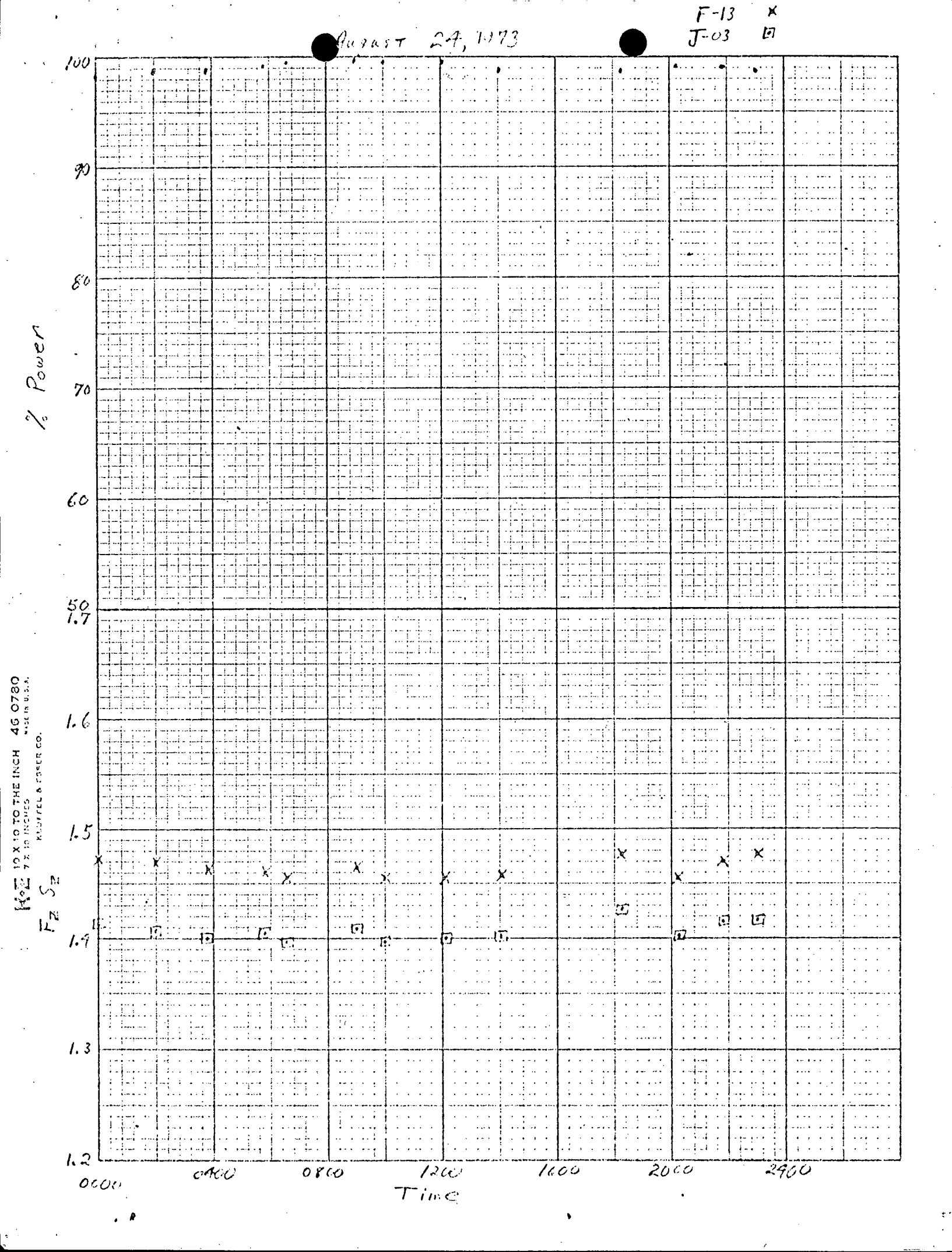
There was a valve test on September 2 which is shown on the attached graphs. On September 5 the plant suffered an approximate 40% load rejection due to a faulty relay in the rod position indicator system. Data was taken during the load rejection and is also shown on the attached graphs.

Compiled By: R. H. Chambers

Approved By: Benny J. Furr

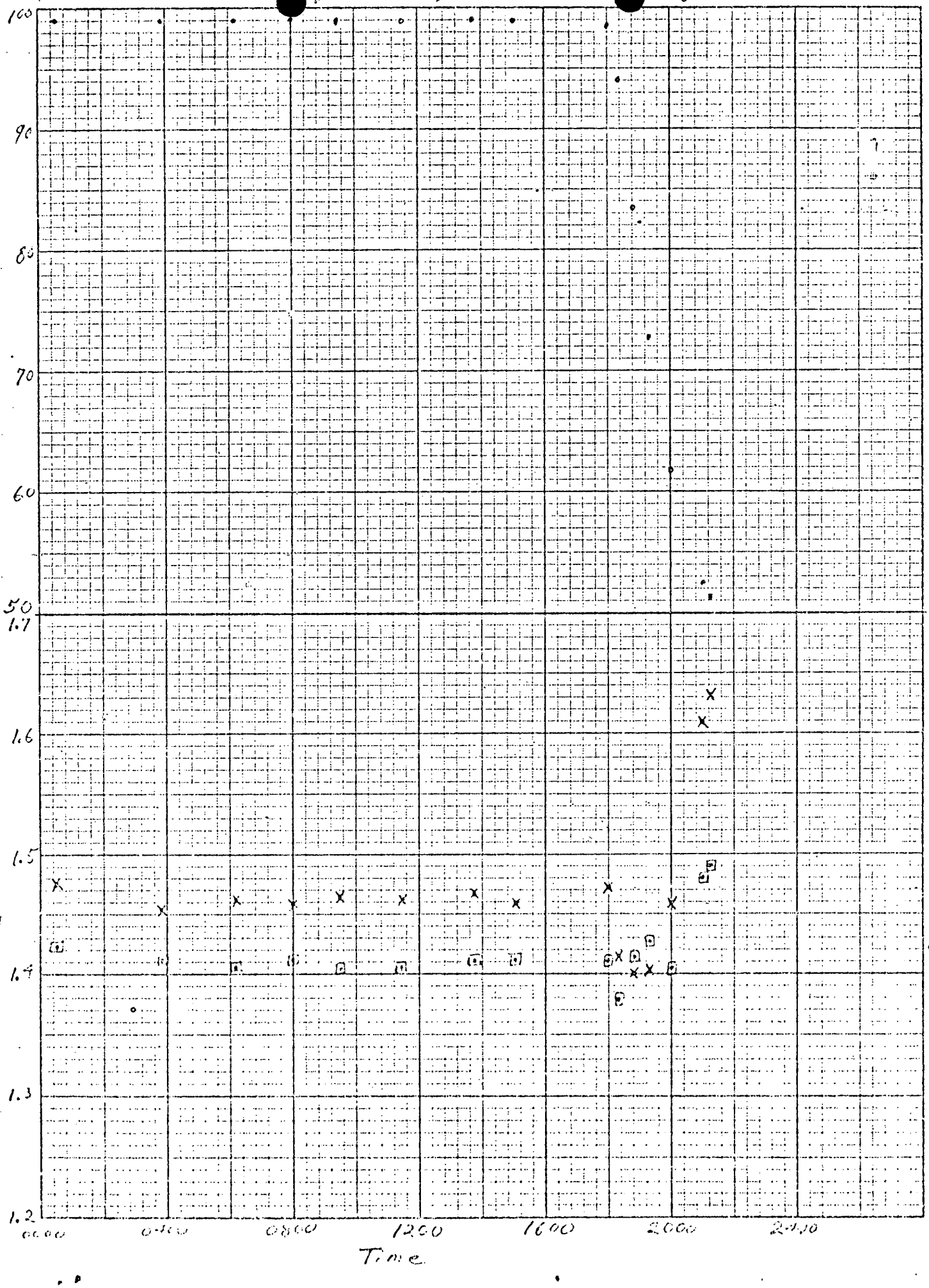
Attachments


F-13 X
J-03 ⊡
August 23, 1973
100
90
80
70
60
50
% Power
1.7
1.6
1.5
1.4
1.3
1.2
$K_E$ $S_Z$
$F_Z$
0000
0800
1200
2000
Time
10 X 10 TO THE INCH 46 0780
7 X 10 INCHES
KEUFFEL & ESSER CO.
MADE IN U.S.A.


August 24, 1973
F-13 ×
J-03 ⊡
% Power
100
90
80
70
60
50
1.7
1.6
1.5
1.4
1.3
1.2
0000
0400
0800
1200
1600
2000
2400
Time
KEUFFEL & ESSER CO.
MADE IN U.S.A.

August 25, 1973

F-13 X
JOS ⊡



August 26, 1973

F-13 X
J-03 ⊡

100
90
80
70
60
50

% Power

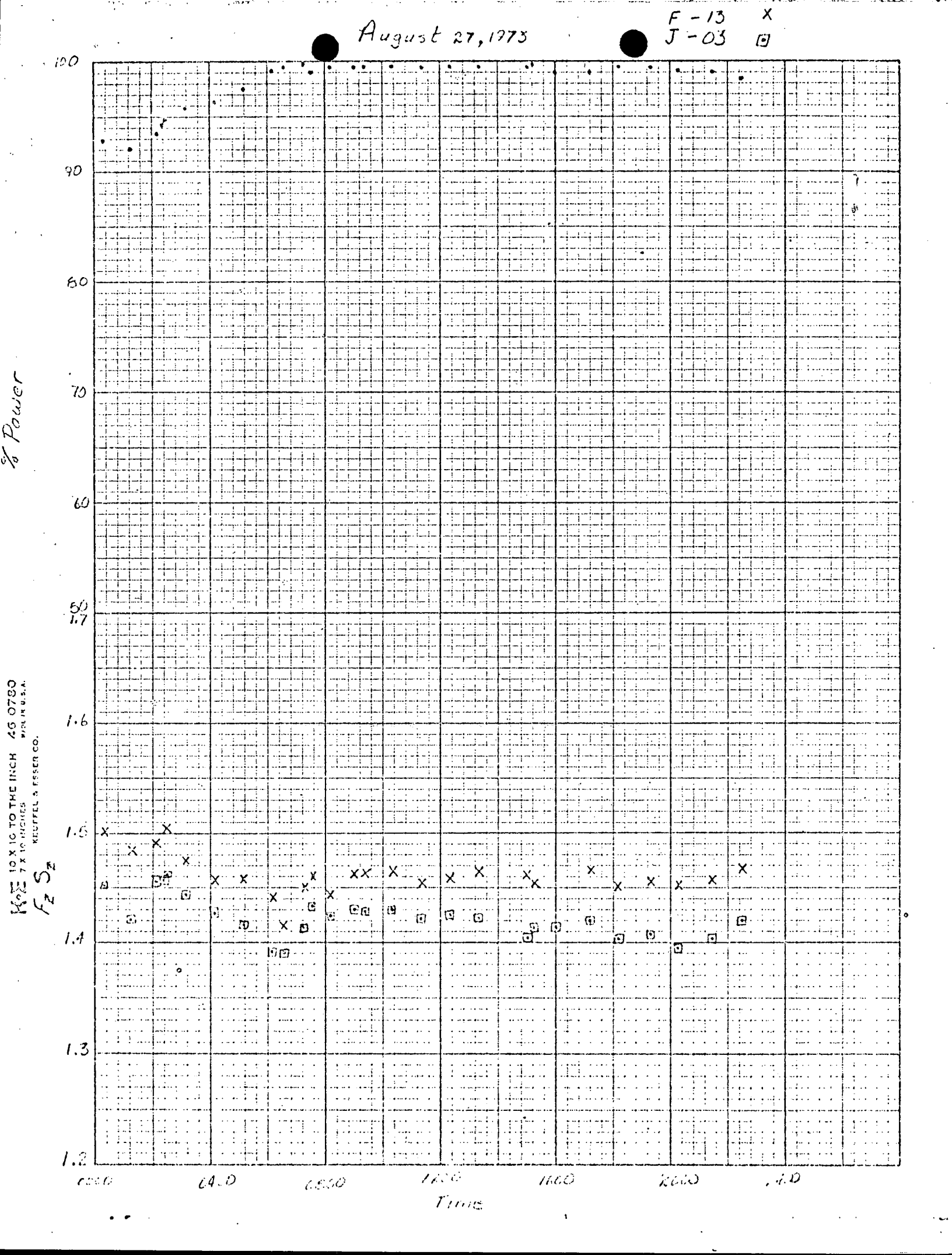
(1.952)
(1.9[illegible])
(1.[illegible])

1.9
1.8
1.7
1.6
1.5
1.4

Tz

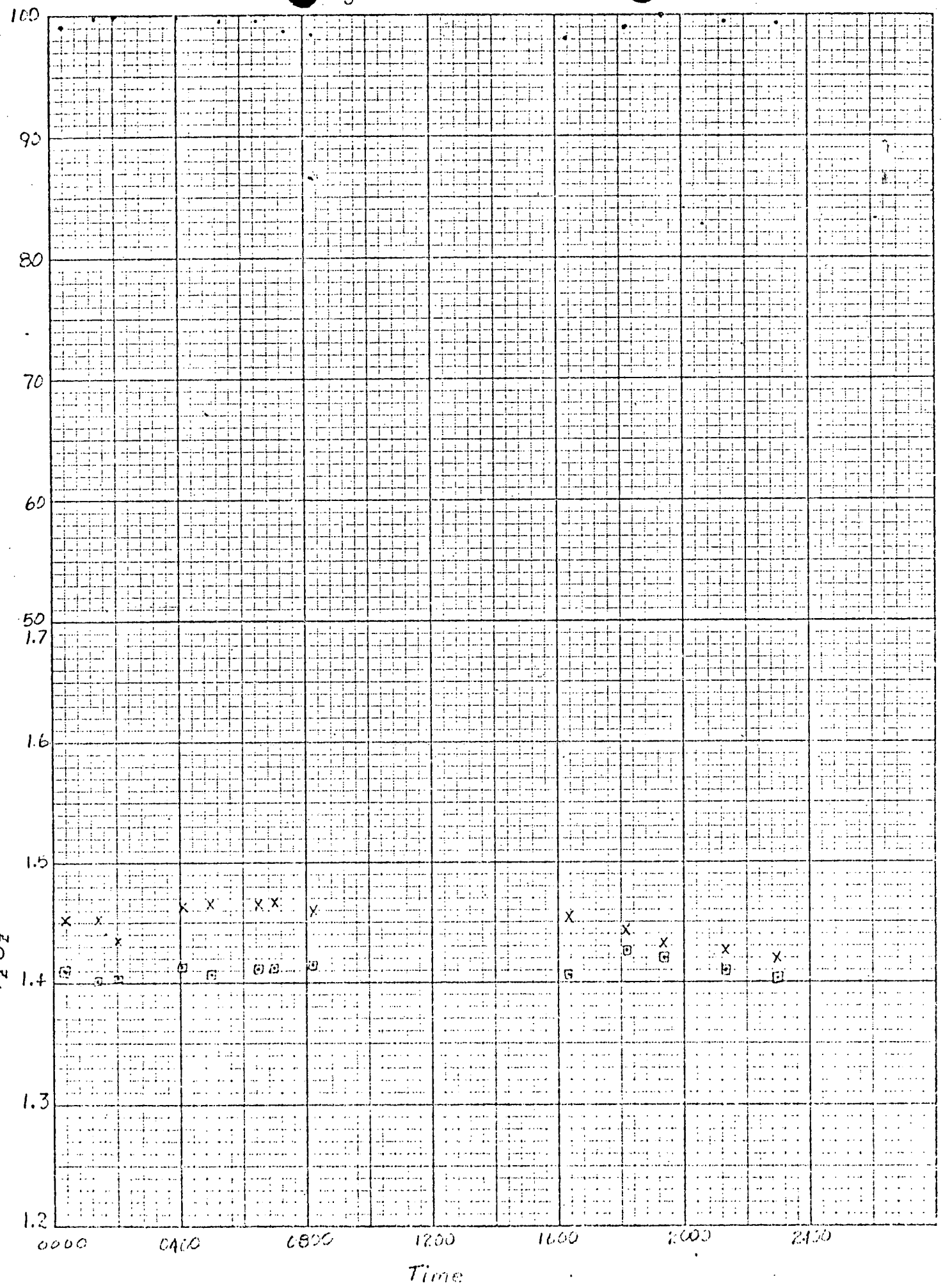
0000 0900 1200 1800 2000 2400

Time

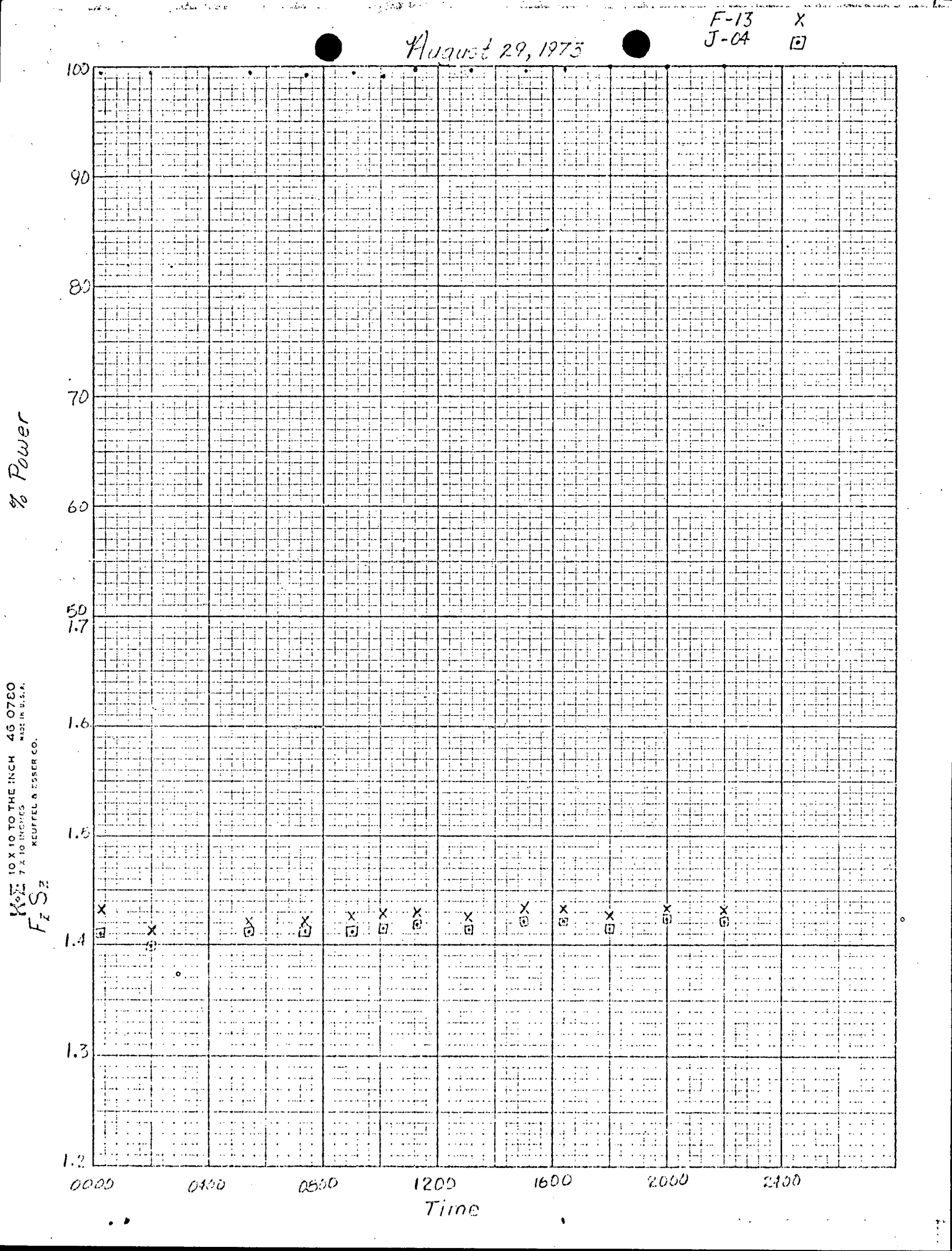

August 27, 1973
F - 13 X
J - 03 ⊡
100
90
80
70
60
50
% Power
1.7
1.6
1.5
1.4
1.3
1.2
$K_z$
$F_z S_z$
Time

August 28, 1973

F-13 X
J-03 ⊡

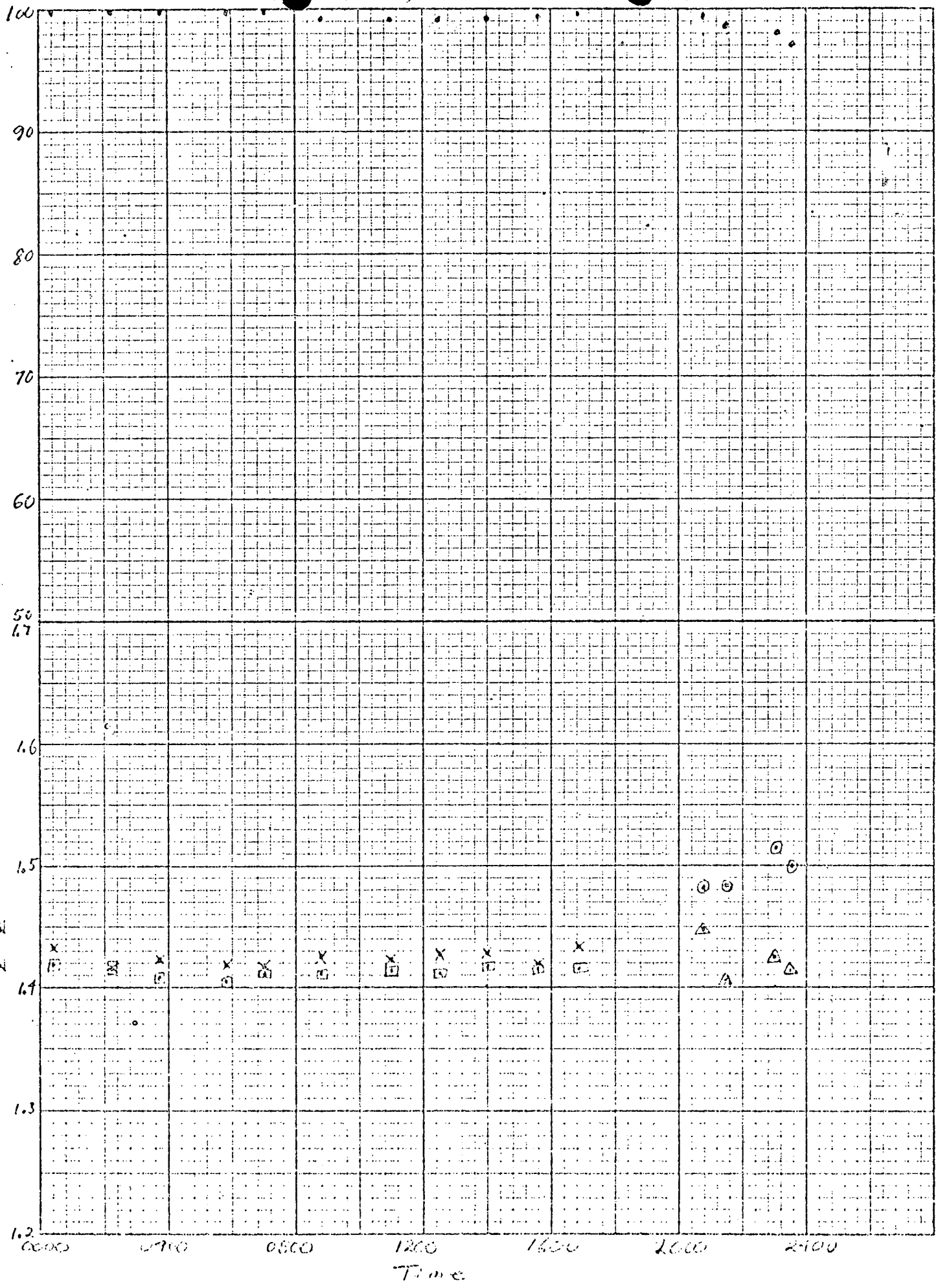


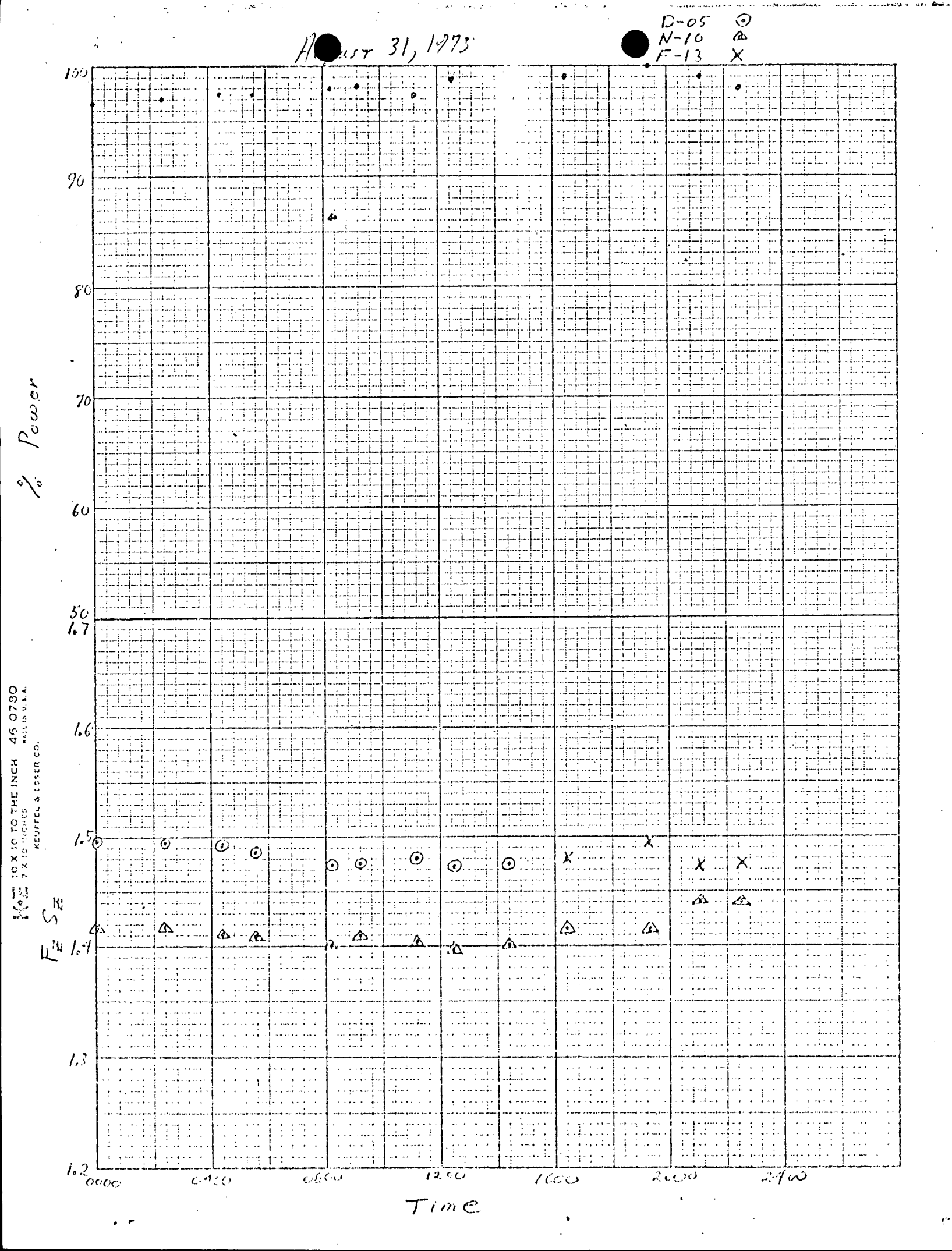

KEUFFEL & ESSER CO. MADE IN U.S.A. 10 X 10 TO THE INCH 7 X 10 INCHES 46 0780

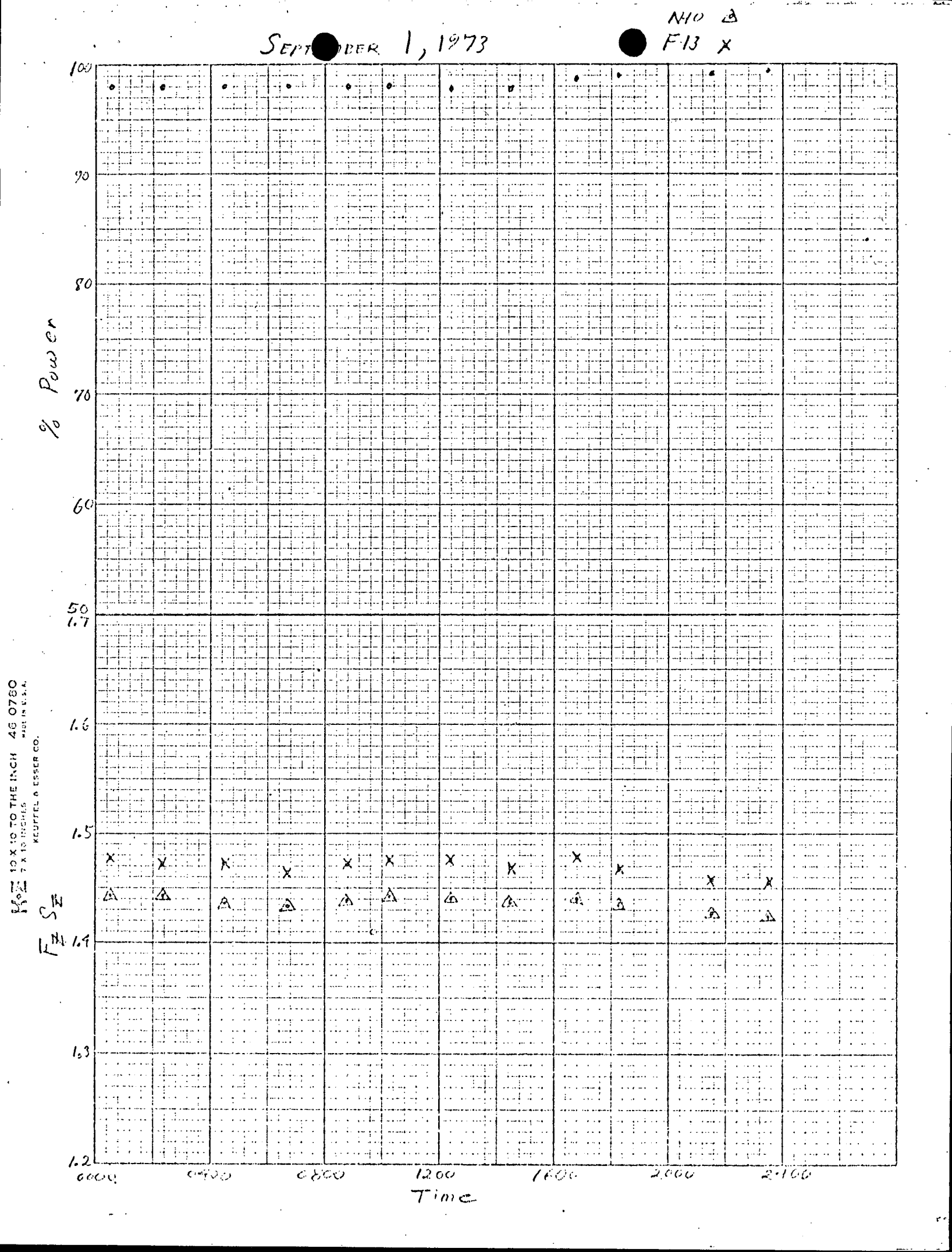

August 29, 1975
F-13 X
J-04 ⊡
100
90
80
70
60
50
% Power
1.7
1.6
1.5
1.4
1.3
1.2
$K_E$ $F_z$ $S_z$
0000
0400
0800
1200
1600
2000
2400
Time
KEUFFEL & ESSER CO.
MADE IN U.S.A.
10 X 10 TO THE INCH 46 0720
7 X 10 INCHES

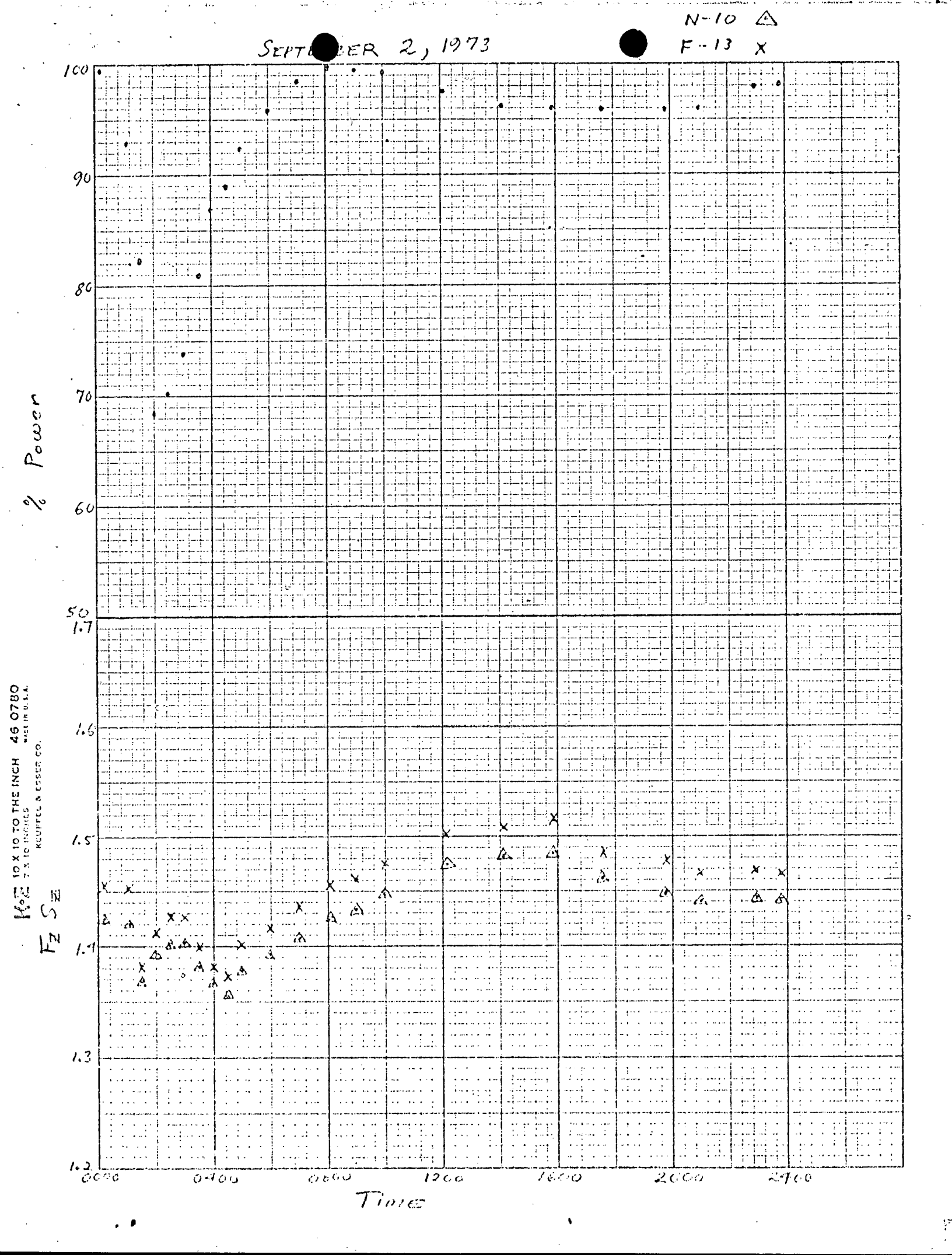
August 30, 1973

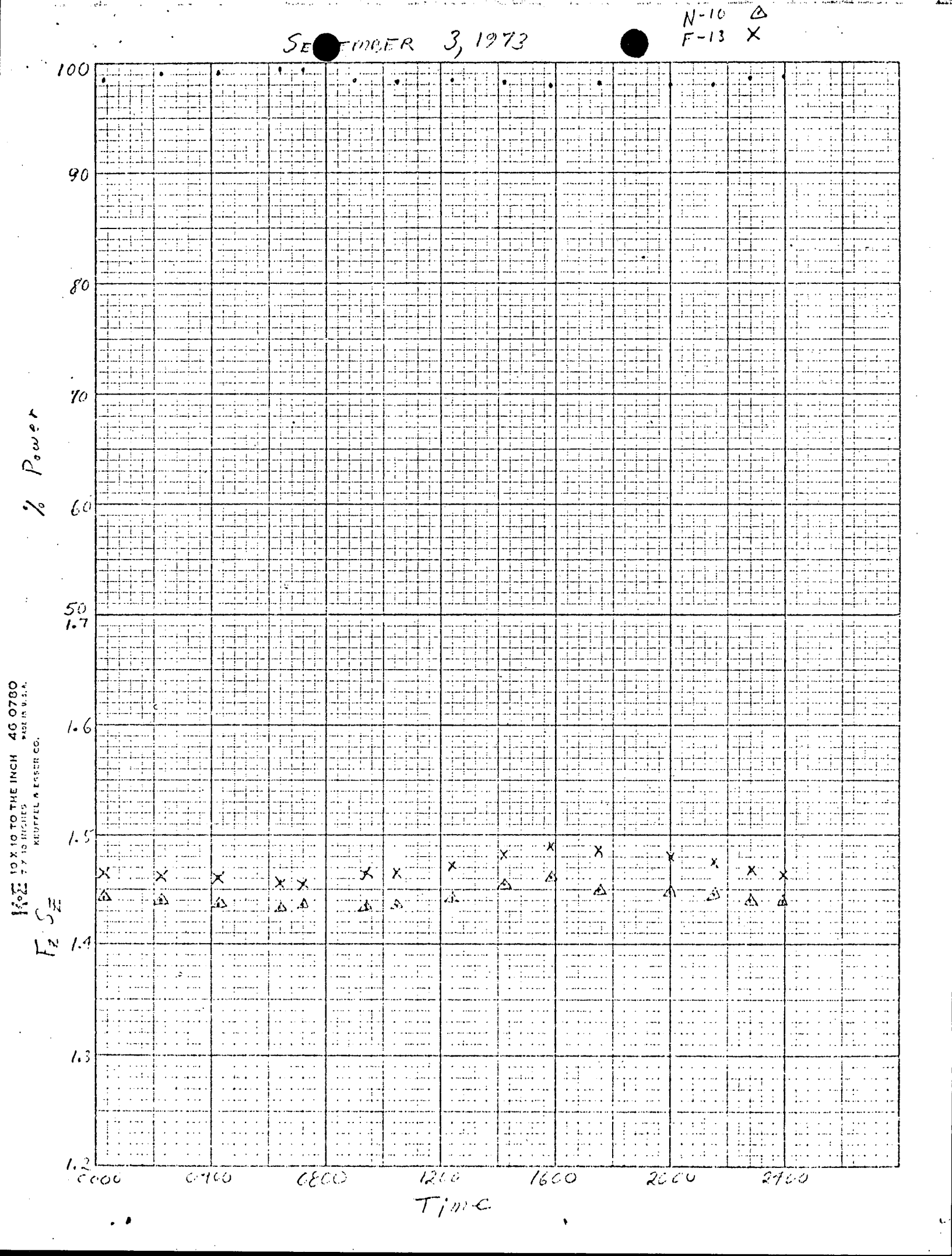
F-13 X D-05 ⊙
J-03 ⊡ N-10 △




August 31, 1973
D-05
N-10
F-13
% Power
100
90
80
70
60
50
1.7
1.6
1.5
1.4
1.3
1.2
FSN
0000
0420
0840
1200
1600
2000
2400
Time
KEUFFEL & ESSER CO.
MADE IN U.S.A.
46 0780

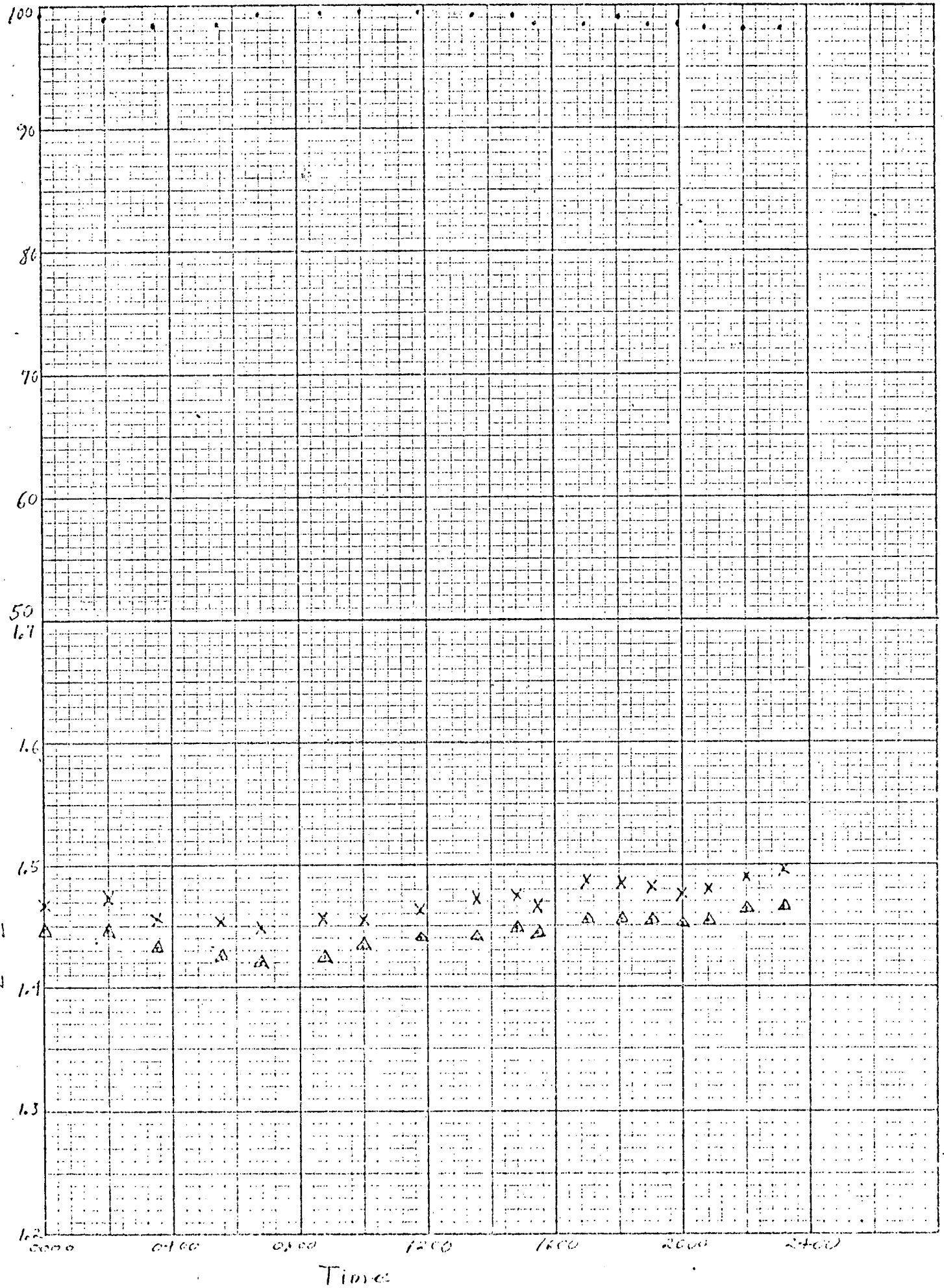

NH0 Δ
SEPTEMBER 1, 1973
F13 X
100
90
80
70
60
50
% Power
1.7
1.6
1.5
1.4
1.3
1.2
FN
0000
0400
0800
1200
1600
2000
2400
Time
KEUFFEL & ESSER CO.
MADE IN U.S.A.


N-10 △
SEPTEMBER 2, 1973
F-13 X
100
90
80
70
60
50
% Power
1.7
1.6
1.5
1.4
1.3
1.2
Fuel
0000
0400
0800
1200
1600
2000
2400
Time
46 0780
10 X 10 TO THE INCH
7 X 10 INCHES
KEUFFEL & ESSER CO.

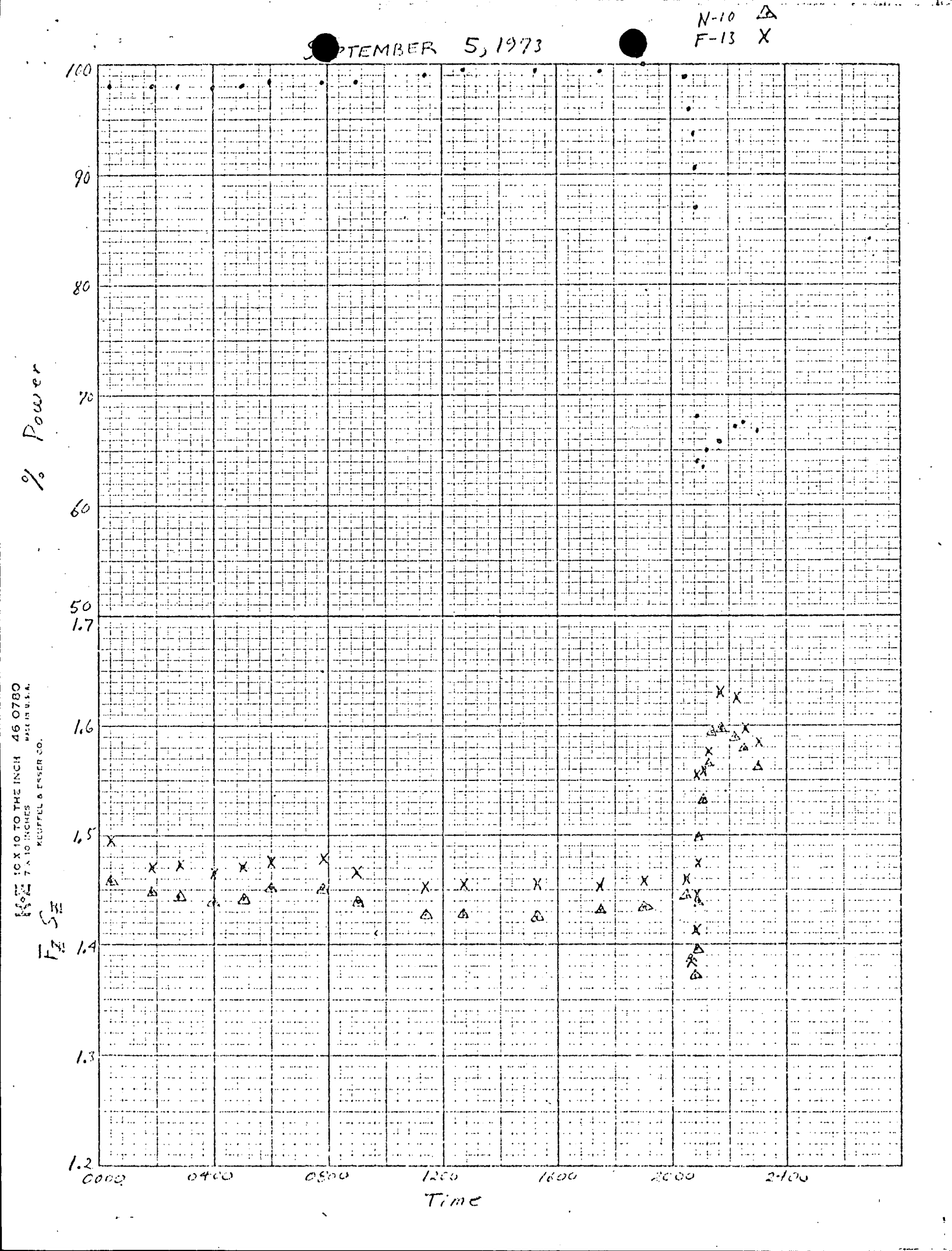

SEPTEMBER 3, 1973
N-10 △
F-13 X
100
90
80
70
60
50
% Power
1.7
1.6
1.5
1.4
1.3
1.2
Fuel Flow
0600
0900
1200
1600
2000
2400
Time
KEUFFEL & ESSER CO.
MADE IN U.S.A.

SEPTEMBER 4, 1973

N-10 △
F-13 X




KEUFFEL & ESSER CO. MADE IN U.S.A. 10 X 10 TO THE INCH 45 0780 7 X 10 INCHES


N-10 △
F-13 X
SEPTEMBER 5, 1973
100
90
80
70
60
50
% Power
1.7
1.6
1.5
1.4
1.3
1.2
LINE SIZE
0000
0400
0800
1200
1600
2000
2400
Time
KEUFFEL & ESSER CO. MADE IN U.S.A. 7 X 10 INCHES 10 X 10 TO THE INCH 46 0780

55 0.536 0.693
56
57 0.396 0.487
57

AVG AXIAL CONDITIONS HBR2 CYCLE 2 MAP 115 TAKEN 8-23-73 100 PCT POWER1000EFPH ARO PDQ 0-181

AVERAGE SOURCE PER FOOT = 0.143025E-17 AVERAGE KW/FT = 0.557545E 01 AVERAGE KW/SOURCE = 0.389824E 19

POWER LEVEL EDITED AT = 2142.80 MEGAWATTS THERMAL

| POINT | KW/FT | NORMALIZED KW/FT | MAX KW/FT | POINT | KW/FT | NORMALIZED KW/FT | MAX KW/FT |
|---|---|---|---|---|---|---|---|
| 1 | 3.171488 | 0.568903 | 0.725351 | 30 | 6.139717 | 1.101206 | 1.284005 |
| 2 | 2.512650 | 0.450664 | 0.573469 | 31 | 6.190343 | 1.110286 | 1.287930 |
| 3 | 2.901287 | 0.520369 | 0.661388 | 32 | 6.230489 | 1.117487 | 1.290697 |
| 4 | 3.506115 | 0.628849 | 0.797381 | 33 | 6.249564 | 1.120908 | 1.289043 |
| 5 | 3.933015 | 0.705417 | 0.893058 | 34 | 6.251463 | 1.121248 | 1.284950 |
| 6 | 4.012660 | 0.719702 | 0.909343 | 35 | 6.233133 | 1.117961 | 1.272239 |
| 7 | 4.523597 | 0.811881 | 1.023376 | 36 | 6.119658 | 1.097609 | 1.244687 |
| 8 | 4.997507 | 0.896342 | 1.127598 | 37 | 5.724848 | 1.026796 | 1.156172 |
| 9 | 5.270337 | 0.945276 | 1.184052 | 38 | 5.825010 | 1.044761 | 1.172221 |
| 10 | 5.446757 | 0.976919 | 1.222906 | 39 | 6.172969 | 1.107170 | 1.235600 |
| 11 | 5.580482 | 1.000903 | 1.250628 | 40 | 6.294355 | 1.128942 | 1.253124 |
| 12 | 5.673280 | 1.017547 | 1.266845 | 41 | 6.355983 | 1.139995 | 1.256272 |
| 13 | 5.741928 | 1.029680 | 1.276803 | 42 | 6.405277 | 1.148836 | 1.263719 |
| 14 | 5.790734 | 1.038419 | 1.282959 | 43 | 6.438169 | 1.154736 | 1.260970 |
| 15 | 5.759918 | 1.033086 | 1.273277 | 44 | 6.453958 | 1.157567 | 1.259432 |
| 16 | 5.680989 | 0.983058 | 1.209161 | 45 | 6.439651 | 1.155002 | 1.249711 |
| 17 | 5.399632 | 0.968466 | 1.186854 | 46 | 6.361638 | 1.141009 | 1.225443 |
| 18 | 5.743175 | 1.030980 | 1.257794 | 47 | 6.065101 | 1.087823 | 1.163426 |
| 19 | 5.909284 | 1.059875 | 1.289867 | 48 | 5.835725 | 1.046682 | 1.112622 |
| 20 | 5.974221 | 1.071523 | 1.300828 | 49 | 6.157897 | 1.104466 | 1.166868 |
| 21 | 6.010196 | 1.077975 | 1.304349 | 50 | 6.290653 | 1.128278 | 1.186947 |
| 22 | 6.037583 | 1.082888 | 1.304879 | 51 | 6.234228 | 1.118157 | 1.169592 |
| 23 | 6.051889 | 1.085453 | 1.302543 | 52 | 6.082891 | 1.091014 | 1.134108 |
| 24 | 6.052785 | 1.085614 | 1.298393 | 53 | 5.816878 | 1.043303 | 1.077731 |
| 25 | 6.025899 | 1.080791 | 1.286141 | 54 | 5.400556 | 0.968632 | 0.995754 |
| 26 | 5.944508 | 1.066258 | 1.243233 | 55 | 4.818719 | 0.864275 | 0.881560 |
| 27 | 5.503464 | 0.987089 | 1.164764 | 56 | 3.973039 | 0.712596 | 0.723284 |
| 28 | 5.821263 | 1.044098 | 1.227847 | 57 | 2.949960 | 0.529098 | 0.571426 |
| 29 | 6.059658 | 1.086846 | 1.271608 | | | | |

PEAK ROD ENTHALPY RISE  H6R2 CYCLE 2 MAP 115 TAKEN 8-23-73 100 PCT POWER1000EFPH ARO PDQ D-181

| | R | P | N | M | L | K | J | H | G | F | E | D | C | B | A | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | 1.150. | 1.293. | 1.150. | | | | | | | 1 |
| 2 | | | | | 1.214. | 1.381. | 1.485. | 1.095. | 1.485. | 1.381. | 1.214. | | | | | 2 |
| 3 | | | | 1.129. | 1.426. | 1.060. | 1.002. | 1.177. | 1.002. | 1.060. | 1.426. | 1.129. | | | | 3 |
| 4 | | | 1.218. | 1.095. | 1.032. | 1.264. | 0.969. | 1.145. | 0.969. | 1.264. | 1.032. | 1.095. | 1.218. | | | 4 |
| 5 | | 1.191. | 1.437. | 1.061. | 1.238. | 1.071. | 1.141. | 0.982. | 1.141. | 1.071. | 1.238. | 1.061. | 1.437. | 1.191. | | 5 |
| 6 | | 1.277. | 1.061. | 1.321. | 1.083. | 1.291. | 1.219. | 1.210. | 1.219. | 1.291. | 1.083. | 1.321. | 1.061. | 1.277. | | 6 |
| 7 | 1.150. | 1.479. | 1.035. | 1.045. | 1.098. | 1.193. | 1.186. | 0.944. | 1.186. | 1.193. | 1.098. | 1.045. | 1.035. | 1.479. | 1.150. | 7 |
| 8 | 1.258. | 1.104. | 1.302. | 1.162. | 0.953. | 1.185. | 0.929. | 0.973. | 0.929. | 1.185. | 0.953. | 1.162. | 1.302. | 1.104. | 1.258. | 8 |
| 9 | 1.150. | 1.479. | 1.035. | 1.045. | 1.098. | 1.193. | 1.186. | 0.944. | 1.186. | 1.193. | 1.098. | 1.045. | 1.035. | 1.479. | 1.150. | 9 |
| 10 | | 1.277. | 1.061. | 1.321. | 1.083. | 1.291. | 1.219. | 1.210. | 1.219. | 1.291. | 1.083. | 1.321. | 1.061. | 1.277. | | 10 |
| 11 | | 1.191. | 1.437. | 1.061. | 1.238. | 1.071. | 1.141. | 0.982. | 1.141. | 1.071. | 1.238. | 1.061. | 1.437. | 1.191. | | 11 |
| 12 | | | 1.218. | 1.095. | 1.032. | 1.264. | 0.969. | 1.145. | 0.969. | 1.264. | 1.032. | 1.095. | 1.218. | | | 12 |
| 13 | | | | 1.129. | 1.426. | 1.060. | 1.002. | 1.177. | 1.002. | 1.060. | 1.426. | 1.129. | | | | 13 |
| 14 | | | | | 1.214. | 1.381. | 1.485. | 1.095. | 1.485. | 1.381. | 1.214. | | | | | 14 |
| 15 | | | | | | | 1.150. | 1.293. | 1.150. | | | | | | | 15 |
| | R | P | N | M | L | K | J | H | G | F | E | D | C | B | A | |

H8R2 CYCLE 2 MAP 115 TAKEN 8-23-73 100 PCT POWER1000EFPH ARO PDQ D-181

SUMMARY OF KEY PERFORMANCE PARAMETERS

MAXIMUM PEAK KW/FT OF 10.10 OCCURRED IN ASSEMBLY 6 LOCATED AT J 2
PEAK KW/FT IN REGION 1 OF 6.98 OCCURRED IN ASSEMBLY 79 AT LOCATION H 8
PEAK KW/FT IN REGION 2 OF 7.53 OCCURRED IN ASSEMBLY 73 AT LOCATION P 8
PEAK KW/FT IN REGION 3 OF 8.84 OCCURRED IN ASSEMBLY 74 AT LOCATION N 8
PEAK KW/FT IN REGION 4 OF 10.10 OCCURRED IN ASSEMBLY 6 AT LOCATION J 2

MAXIMUM AXIAL PEAKING FACTOR OF 1.25 OCCURRED IN ASSEMBLY 79 LOCATED AT H 8
MAXIMUM AXIAL PEAKINGFACTOR IN REGION 1 OF 1.25 OCCURRED IN ASSEMBLY 79 LOCATED AT H 8
MAXIMUM AXIAL PEAKINGFACTOR IN REGION 2 OF 1.19 OCCURRED IN ASSEMBLY 151 LOCATED AT H14
MAXIMUM AXIAL PEAKINGFACTOR IN REGION 3 OF 1.24 OCCURRED IN ASSEMBLY 83 LOCATED AT D 8
MAXIMUM AXIAL PEAKINGFACTOR IN REGION 4 OF 1.24 OCCURRED IN ASSEMBLY 156 LOCATED AT H15

MAXIMUM RADIAL PEAKING FACTOR OF 1.29 OCCURRED IN ASSEMBLY 6 LOCATED AT J 2
MAXIMUM RADIAL PEAKING FACTOR IN REGION 1 OF 0.90 OCCURRED IN ASSEMBLY 79 LOCATED AT H 8
MAXIMUM RADIAL PEAKING FACTOR IN REGION 2 OF 1.01 OCCURRED IN ASSEMBLY 111 LOCATED AT E10
MAXIMUM RADIAL PEAKING FACTOR IN REGION 3 OF 1.19 OCCURRED IN ASSEMBLY 110 LOCATED AT F10
MAXIMUM RADIAL PEAKING FACTOR IN REGION 4 OF 1.29 OCCURRED IN ASSEMBLY 152 LOCATED AT G14

AVERAGE AXIAL OFFSET (PERCENT) -6.69

MAXIMUM GROSS PEAKING (FQN) FACTOR OF 1.76 OCCURRED IN ASSEMBLY 6 LOCATED AT J 2
MAXIMUM GROSS PEAKING FACTOR IN REGION 1 OF 1.22 OCCURRED IN ASSEMBLY 79 LOCATED AT H 8
MAXIMUM GROSS PEAKING FACTOR IN REGION 2 OF 1.31 OCCURRED IN ASSEMBLY 85 LOCATED AT B 8
MAXIMUM GROSS PEAKING FACTOR IN REGION 3 OF 1.54 OCCURRED IN ASSEMBLY 84 LOCATED AT C 8
MAXIMUM GROSS PEAKING FACTOR IN REGION 4 OF 1.76 OCCURRED IN ASSEMBLY 152 LOCATED AT G14

CENTER ASSEMBLY AVERAGE POWER FRACTION 0.887
REGION 2 AVERAGE POWER FRACTION 0.942
REGION 3 AVERAGE POWER FRACTION 1.088
REGION 4 AVERAGE POWER FRACTION 0.952

END OF INCORE RUN IBM VERSION 1 08-01-73