

AEC DISTRIBUTION FOR PART 50 DOCKET MATERIAL
(TEMPORARY FORM)

CONTROL NO: 7532

FILE:

FROM: Carolina Power & Light Company Raleigh, N. C. 27602 E. E. Utley			DATE OF DOC 10-1-73	DATE REC'D 10-11-73	LTR X	MEMO	RPT	OTHER
TO: Mr. Giambusso			ORIG 3 signed	CC	OTHER	SENT AEC PDR X SENT LOCAL PDR X		
CLASS	UNCLASS	PROP INFO	INPUT	NO CYS REC'D 40		DOCKET NO: 50-261		
DESCRIPTION: Ltr trans the following:			ENCLOSURES: REPORT: Biweekly Rpt of Results of Incore Surveillance for the H. B. Robinson Unit No. 2, dtd 9-24-73. (40 cys rec'd)					
PLANT NAME: H. B. Robinson Unit No. 2								

ACKNOWLEDGED

Do Not Remove

FOR ACTION/INFORMATION

10-11-73 AB

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INTERNAL DISTRIBUTION

<u>REG FILE</u>	<u>TECH REVIEW</u>	<u>DENTON</u>	<u>LIC ASST</u>	<u>A/T IND</u>
✓ AEC PDR	HENDRIE	GRIMES		BRAITMAN
OGC, ROOM P-506A	SCHROEDER	GAMMILL	DIGGS (L)	SALTZMAN
✓ MUNTZING/STAFF	✓ MACCARY	✓ KASTNER	GEARIN (L)	
CASE	KNIGHT	BALLARD	GOULBOURNE (L)	<u>PLANS</u>
GIAMBUSO	PAWLICKI	SPANGLER	LEE (L)	MCDONALD
BOYD	SHAO		MAIGRET (L)	DUBE
MOORE (L)(BWR)	✓ STELLO	<u>ENVIRO</u>	SERVICE (L)	
DEYOUNG(L)(PWR)	HOUSTON	MULLER	SHEPPARD (E)	<u>INFO</u>
✓ SKOVHOLT (L)	NOVAK	DICKER	SMITH (L)	C. MILES
P. COLLINS	ROSS	KNIGHTON	✓ TEETS (L)	
	IPPOLITO	YOUNGBLOOD	WADE (E)	
<u>REG OPR</u>	✓ TEDESCO	REGAN	WILLIAMS (E)	
✓ FILE & REGION(2)	LONG	PROJECT LDR	WILSON (L)	
✓ MORRIS (2)	LAINAS			
✓ STEELE	BENAROYA	<u>HARLESS</u>		
	VOLLMER			

EXTERNAL DISTRIBUTION

✓ 1 - LOCAL PDR Hartville, S. C.	(1)(2)(10)-NATIONAL LAB'S	1-PDR-SAN/LA/NY
✓ 1 - DTIE(ABERNATHY)	1-R.Schoonmaker, OC, CT, D-323	1-GERALD LELLOUCHE
✓ 1 - NSIC(BUCHANAN)	1-W. PENNINGTON, Rm E-201 GT	BROOKHAVEN NAT. LAB
1 - ASLB(YORE/SAYRE/	1-CONSULTANT'S	1-AGMED(WALTER KOESTER
WOODARD/"H" ST.	NEWMARK/BLUME/AGBABIAN	RM-C-427-GT
✓ 16 - CYS ACRS HOLDING SENT TO LIC ASST.	1-GERALD ULRIKSON...ORNL	✓ 1-RD..MULLER..F-309 GT
S. TEETS ON 10-11-73		



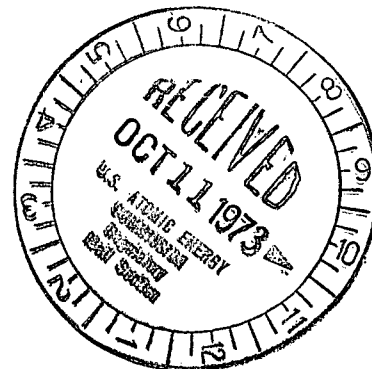
Carolina Power & Light Company

October 1, 1973

File: NG-3514

Serial: NG-73-444

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



Dear Mr. Giambusso:

50-261

H. B. ROBINSON UNIT NO. 2
LICENSE DPR-23

BIWEEKLY REPORT OF RESULTS OF INCORE SURVEILLANCE

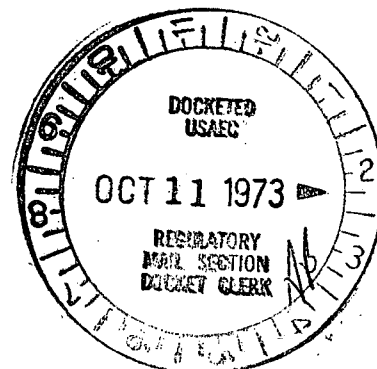
In accordance with the requirements of the "Interim Conditions for Operation, H. B. Robinson Unit No. 2," dated July 25, 1973, we hereby submit as an attachment the biweekly report of the results of incore surveillance for the period September 6 - 19, 1973.

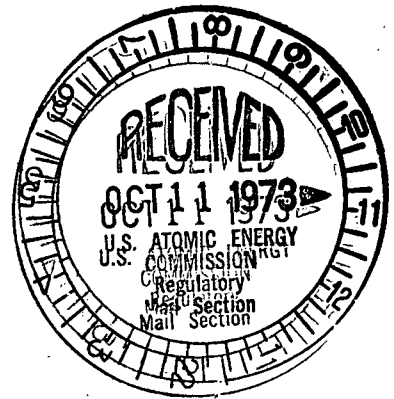
Yours very truly,

E. E. Utley
Vice-President
Bulk Power Supply

DBW:mvp
Attachment

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



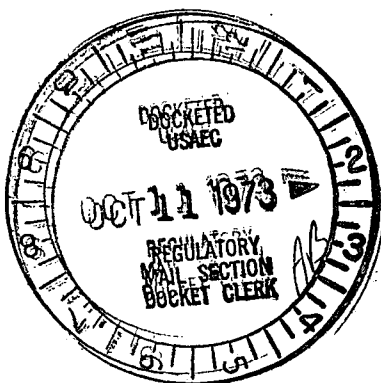
H. B. ROBINSON STEAM ELECTRIC PLANTUNIT NO. 2SEPTEMBER 24, 1973INCORE SURVEILLANCE DATA SUMMARY

Robinson File No. 2-A-7

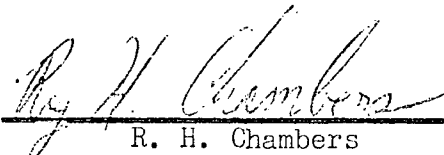
Surveillance was performed on F₂ S₂ at approximately one to two hour intervals. The data was then graphed and a copy is attached to this report.

During this period, there was one manual trip of the reactor, (September 9), following a false indication on the generator output due to a blown fuse. Also, during the period, there were two valve tests, (September 9 and 16), and four outages on the APDMS for maintenance, (September 12, 13, 14, and 18).

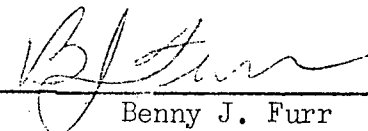
This surveillance period was started during a recovery from a thirty percent load rejection on September 5. The oscillation shown was started by the load rejection and amplified by the valve test and the trip. Also, due to burnup in the bottom of the core, the equilibrium value of F₂ S₂ tends to increase. The combination of the above has made full power operation increasing difficult.



Compiled By:


R. H. Chambers

Approved By:


Benny J. Furr

Attachment

LEGEND: POWER

F-13

N-10

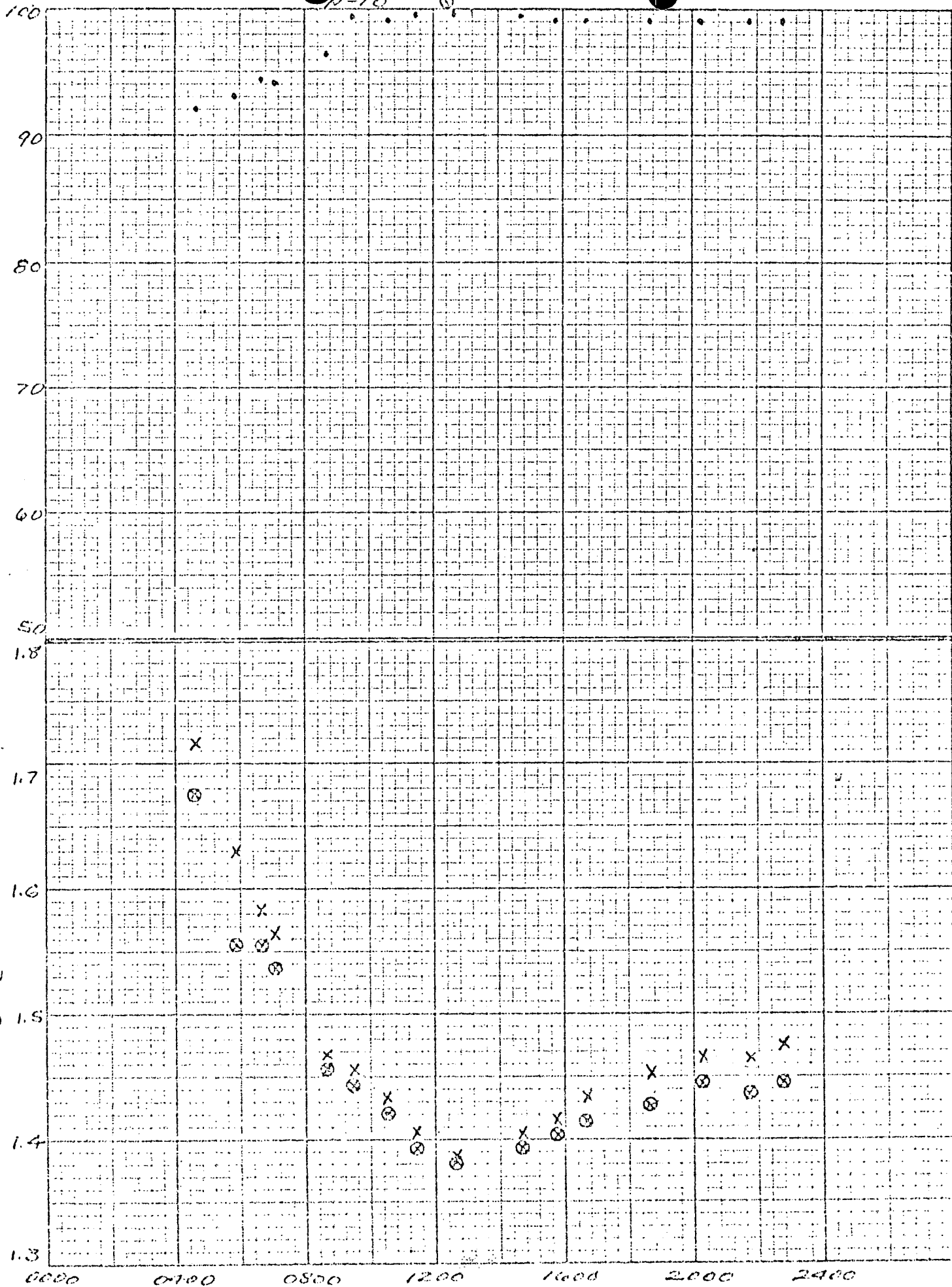
x

o

% POWER

W. 10 X 10 TO THE INCH 45 0720
 10.1 7.16 0.000
 KLEIN & PART CO.

F₂ 52



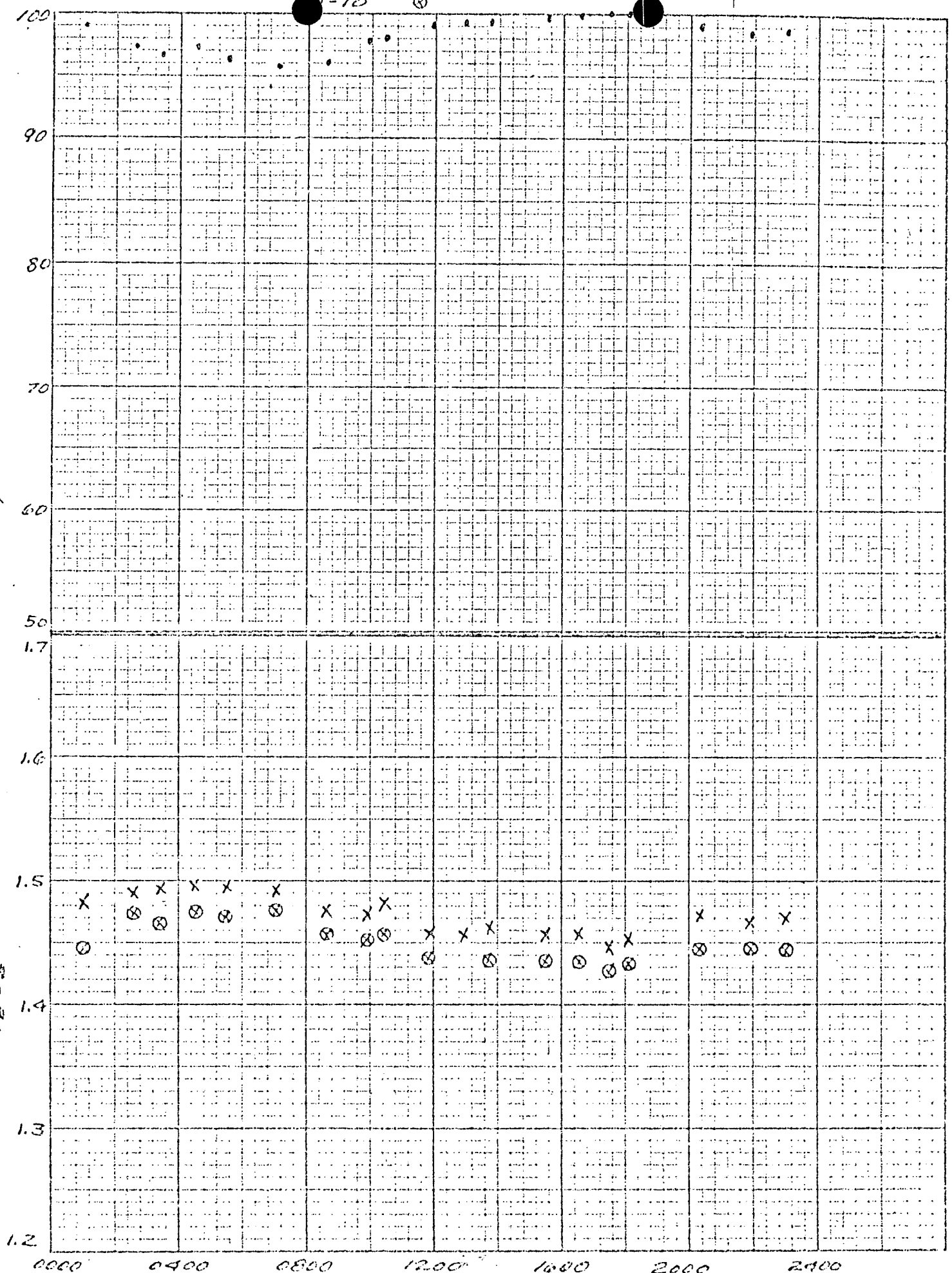
Sept. 6, 1973

F-13 X
N-10 ⊗

90 POWER

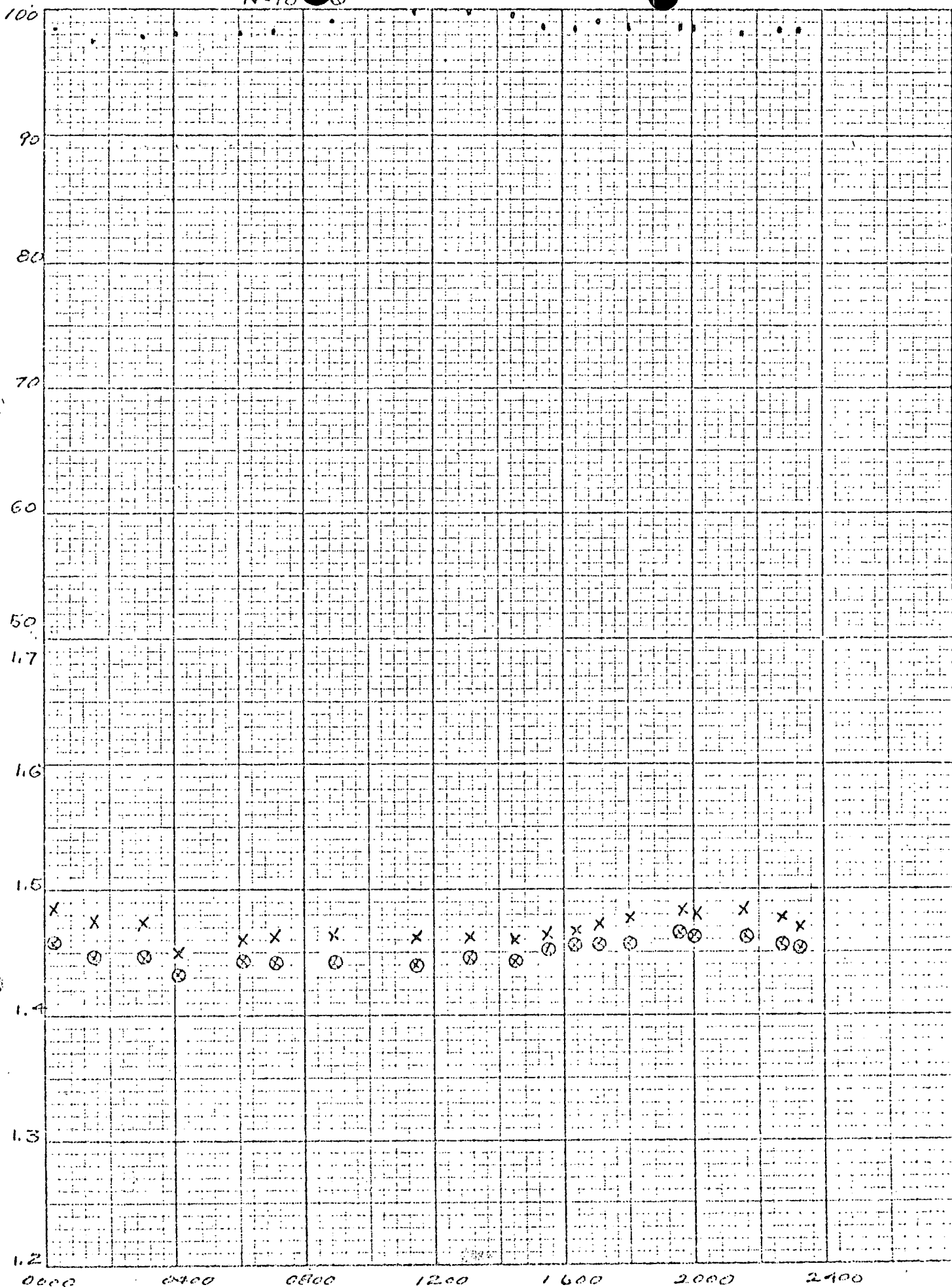
14 IN. TO X TO THE INCH 45 0760
1/2 IN. TO X TO THE INCH 45 0760
1/4 IN. TO X TO THE INCH 45 0760
REDFIELD A TOWER CO.

F₂ 50



SEPT. 7, 1973

POWER
R-13
N-10



W
L

SEPT. 8, 1973

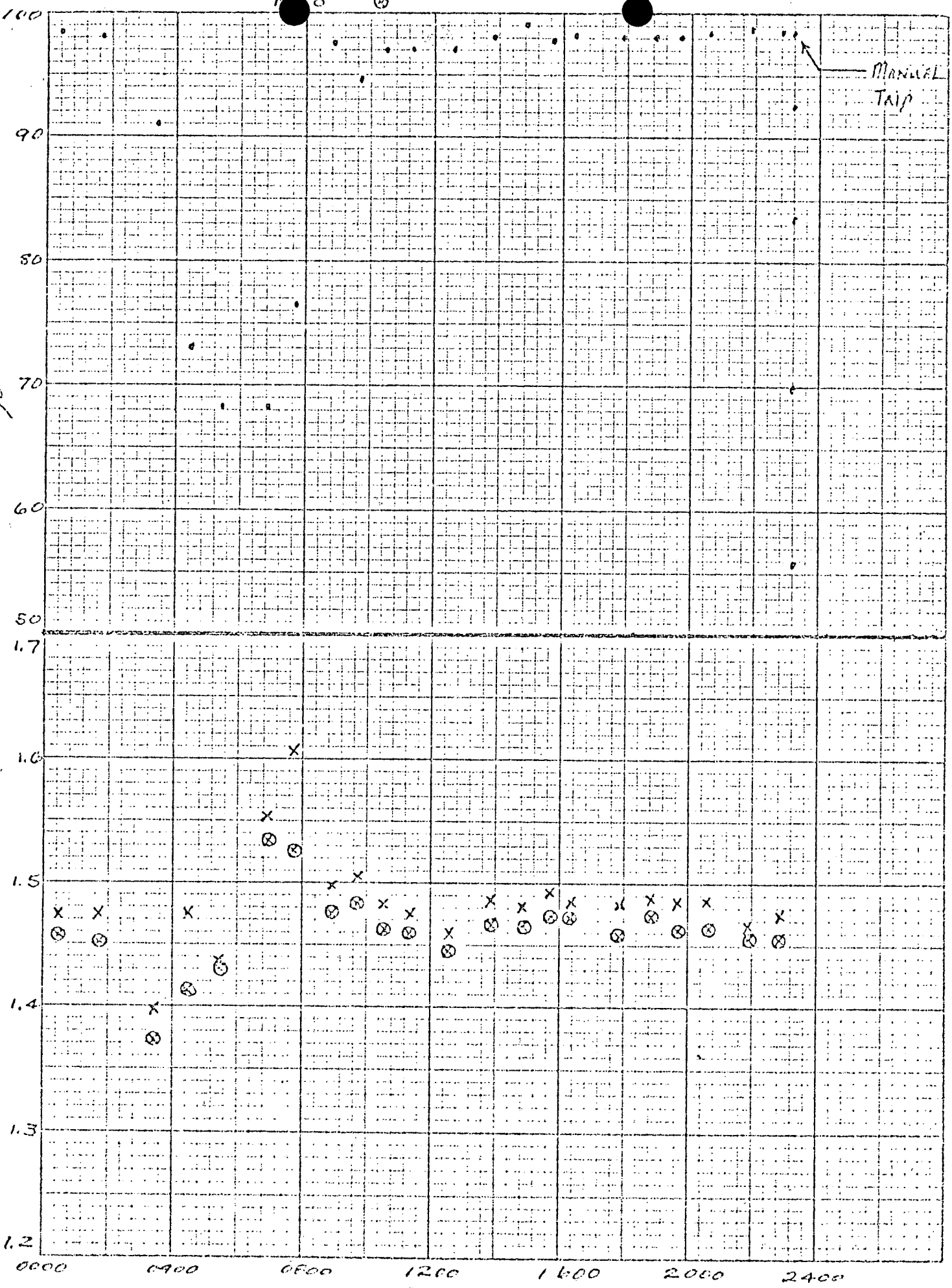
F-13
1000

% POWER

MANUAL
TAIP

10010 TO THE INCH 45 0780
MADE IN U.S.A.
KEUFFEL & ESSER CO.

F₂-520



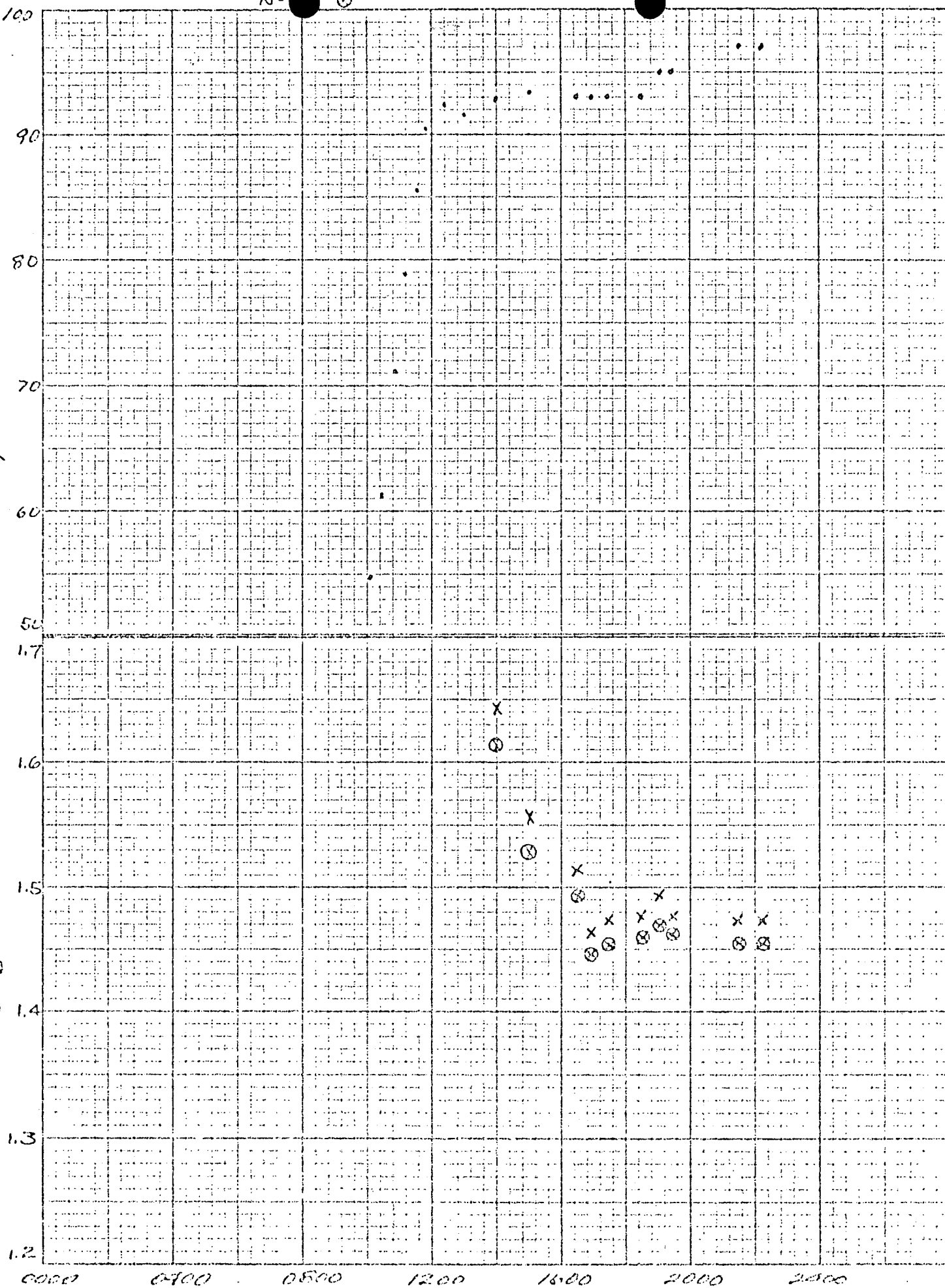
SEPT. 9, 1973

F-18 X
N-18 O

% POWER

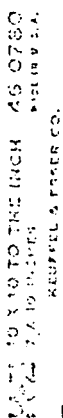
1.5 IN. 10 X 10 TO THE INCH 45 0720
1.5 IN. 10 X 10 TO THE INCH 45 0720
PUNFIELD THERMO CO.

Fa-5a



SEPT 10, 1973

F-13 X
10 C



7-5-54

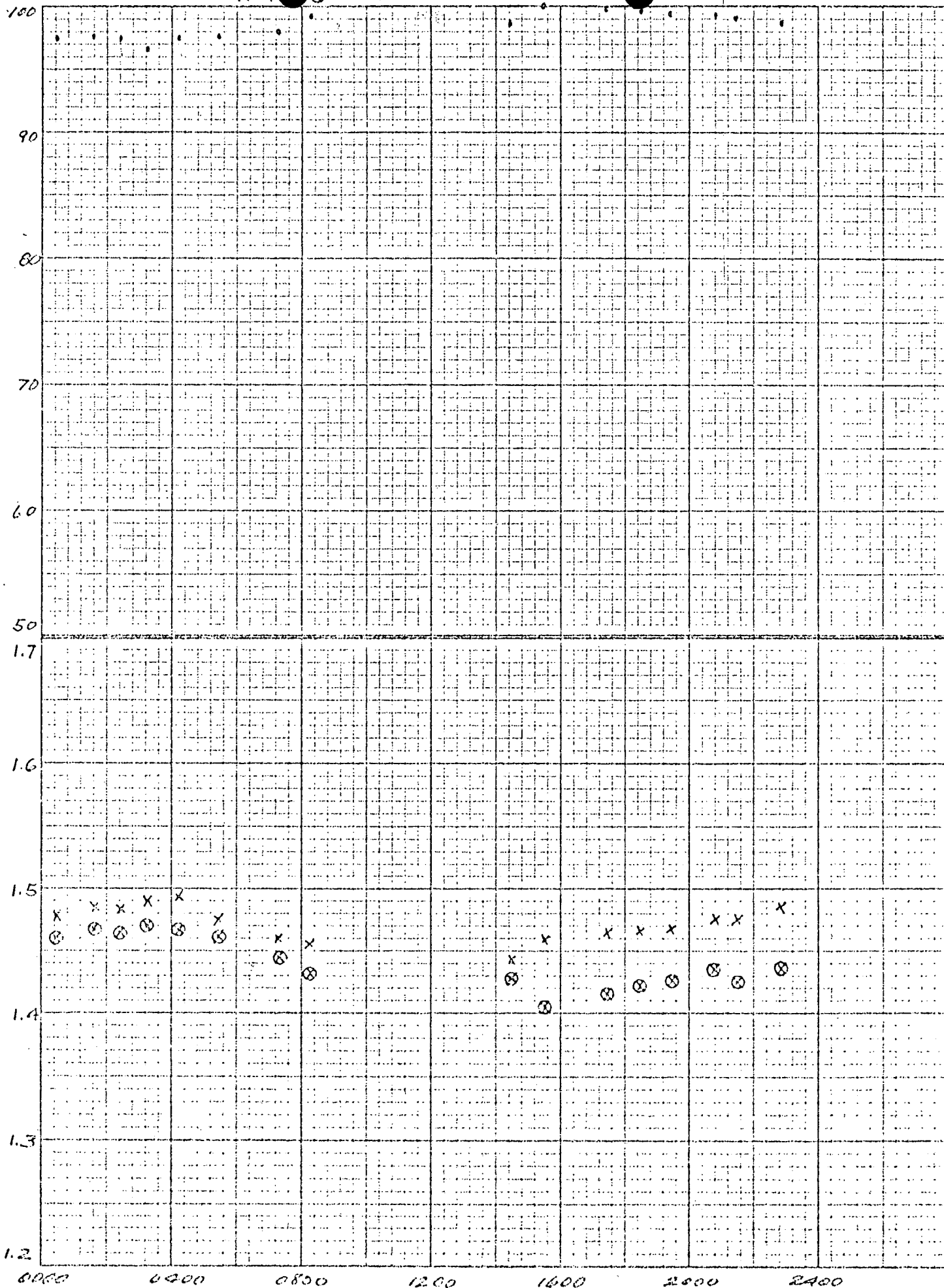
SEPT. 11, 1973

LEGEND: POWER:
 F-12 X
 N-1 O

TO POWER

SCALE 10X TO THE INCH 46 0780
 1/4" = 10 INCHES
 NEWELL & FISHER CO.

F252



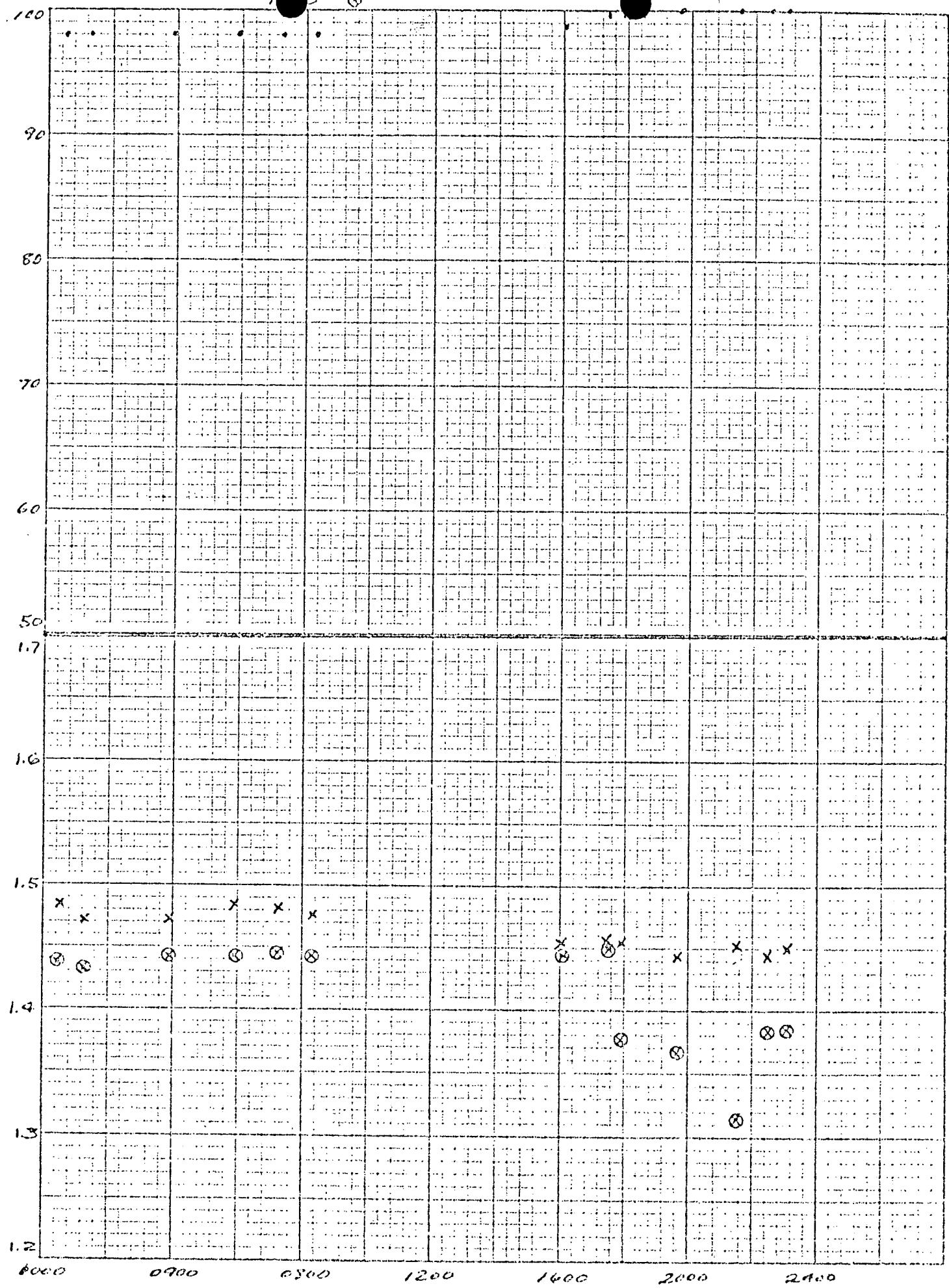
SEPT. 12, 1973

RECEIVED FROM F-13

% POWER

NOT TO SCALE 40 0750
 100 71 00 0000
 REEFEL & TERRY CO.

F2 50

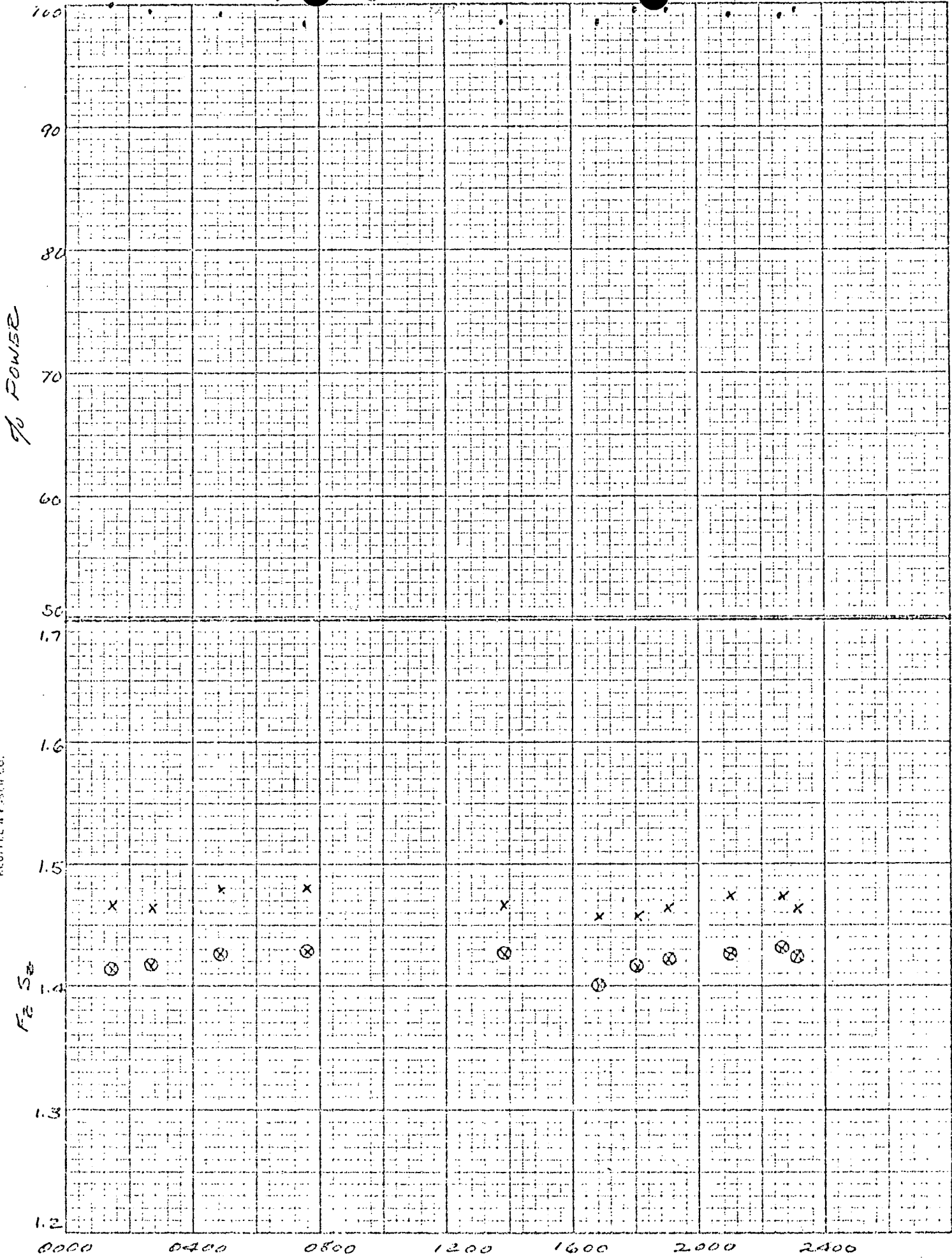


SEPT. 15, 1973

LEGEND: POWER -

F-1 x

N-1 ⊗

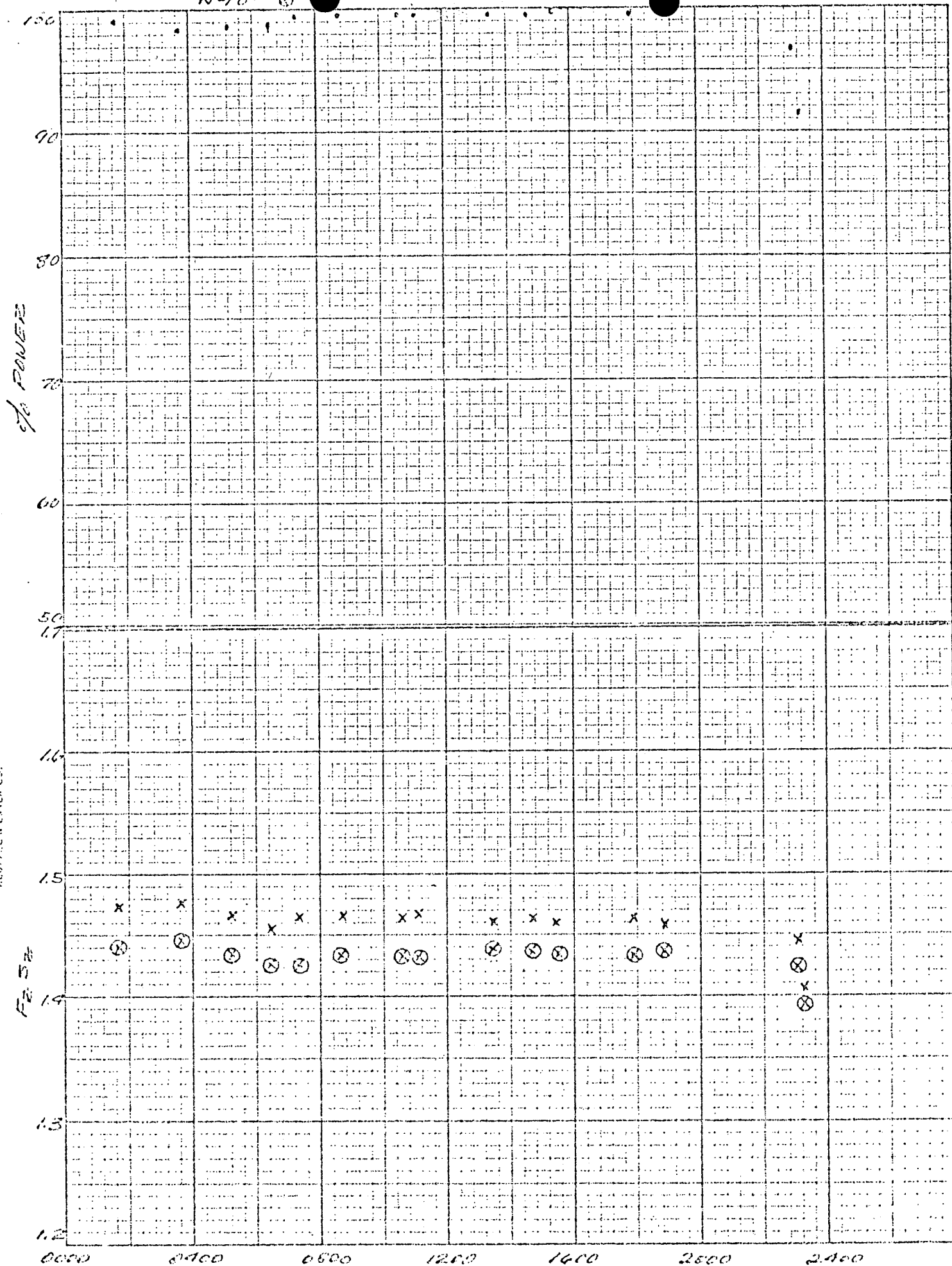


10 X 10 TO THE INCH 45 0780
 10 X 10 INCH
 NEUFEL & PETER CO.

SEPT. 17, 1973

LEGEND: POWER:
 E-13 X
 N-10 O

10 X 10 TO THE INCH 46 0730
 MADE IN U.S.A.
 KEUFFEL & ESSER CO.

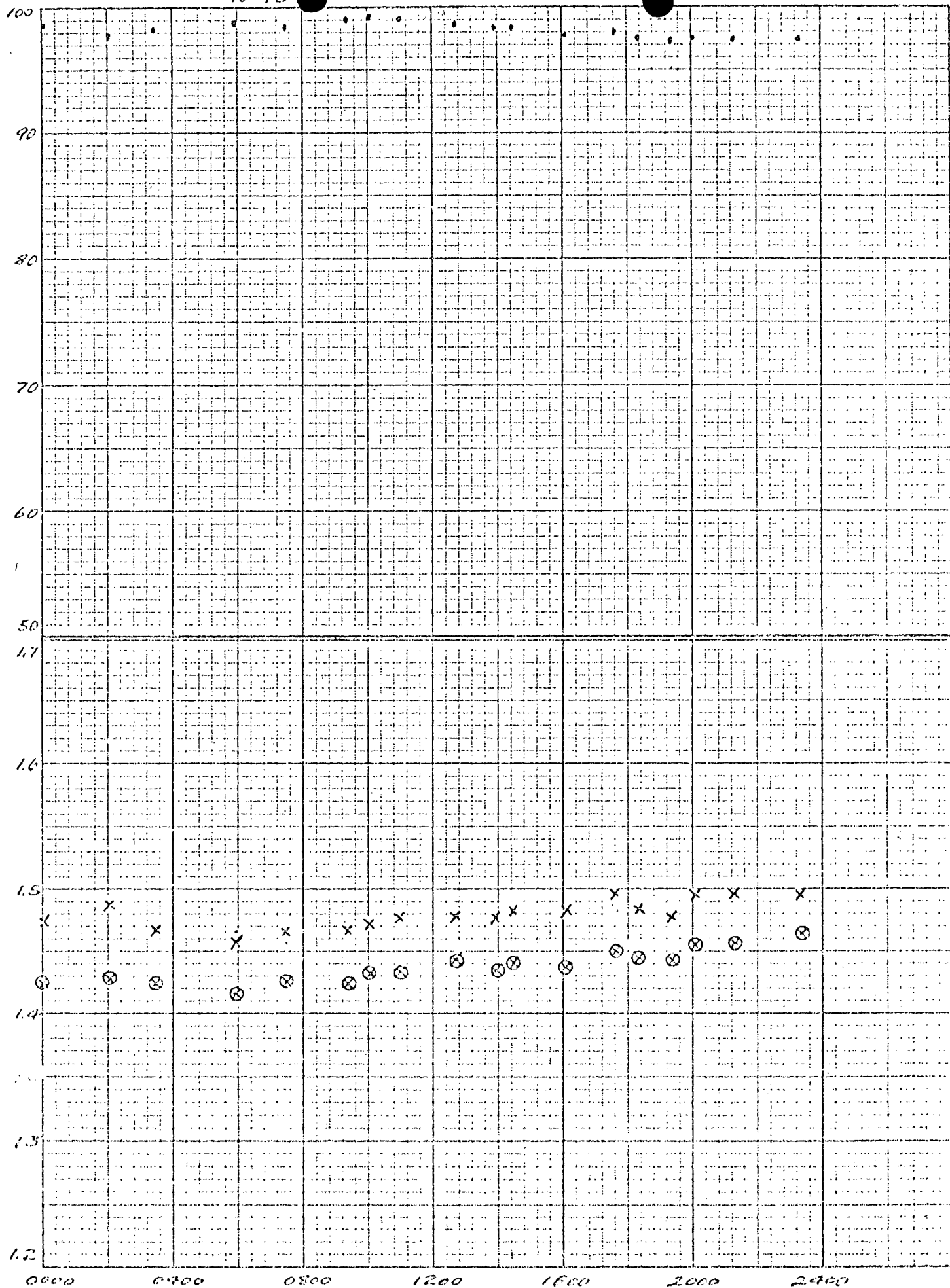


SEPT. 15, 1973

LEGEND: POWER
 F-13
 N-10

PER POWER

1/2 52
 MADE TO ORDER TO THE INCH 45 0780
 7 1/2 INCHES
 NEWELL & FESER CO.



LEGEND: POWER

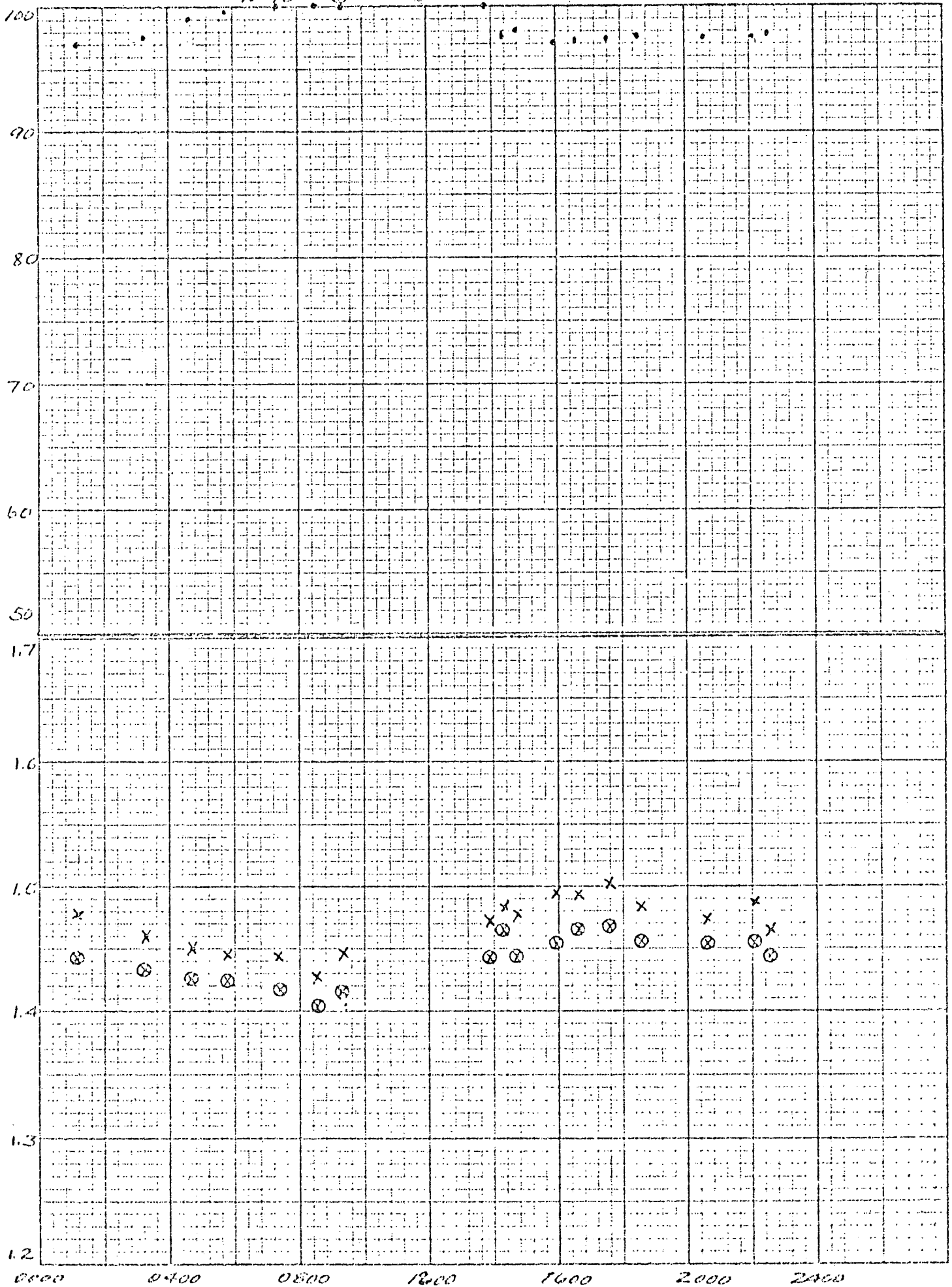
F-15 X

N-10 O

% POWER

WEE 10X10 TO THE INCH 46 0700
7X10 INCH 46 0700
REDFEL & SONS CO.

F252



SEP 18, 1975

LEGEND: POWER

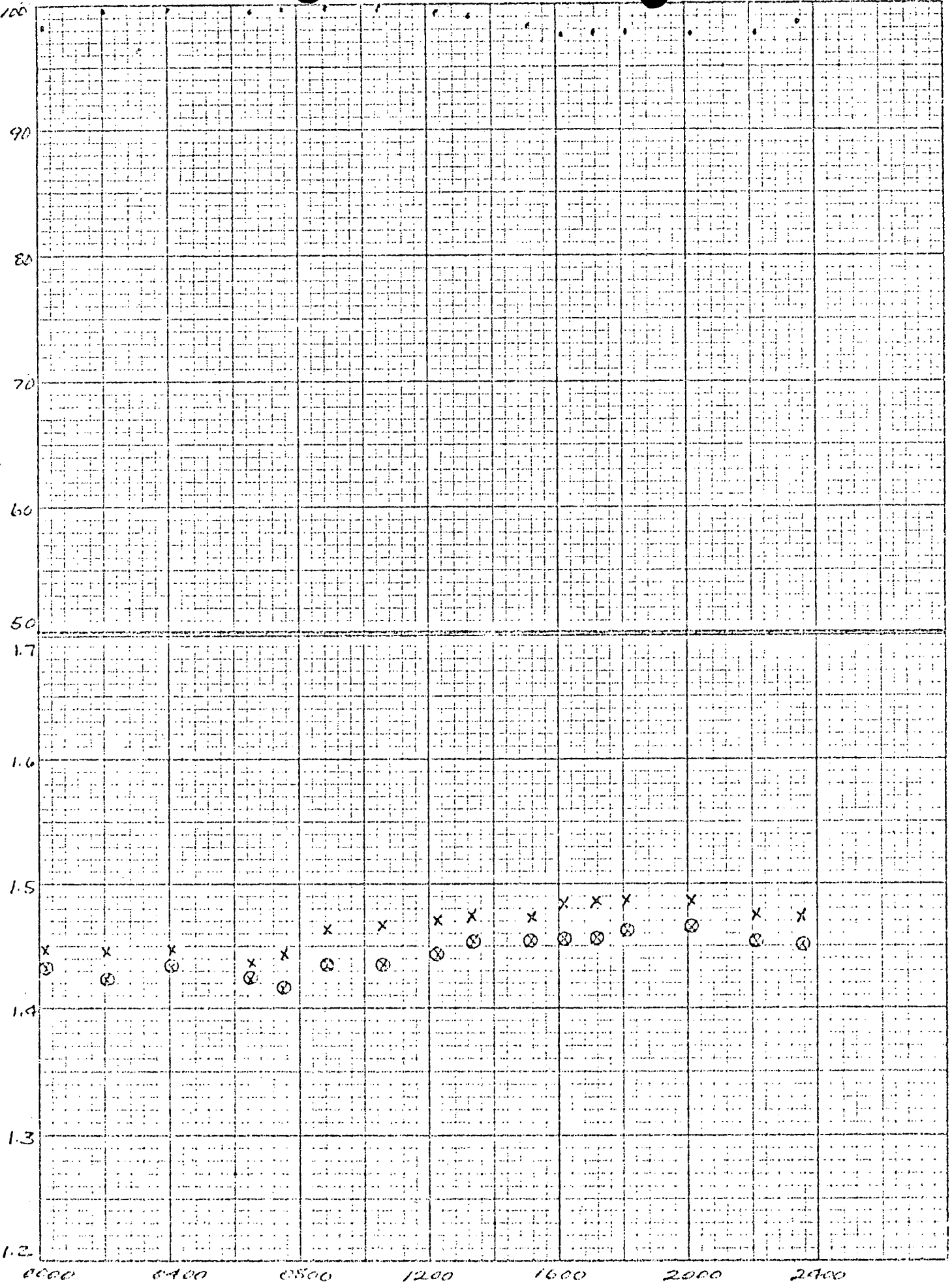
F-17 X

N-17 O

90 POWER

WIDE 10 X 10 TO THE INCH 40 0700
 7 X 10 INCHES
 KEUFFEL & ESSER CO.

F3 52



SEPT. 19, 1973

AVG AXIAL CONDITIONS

HRR2 CYCLE 2 MAP 116 1000EFPH LOCAL 3///EFPH THIMBLE DATA

VERAGE SOURCE PER FOOT = 0.141610E-17 AVERAGE KW/FT = 0.557545E 01 AVERAGE KW/SOURCE = 0.393717E 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	3.226301	0.578662	0.737794	30	6.032323	1.081944	1.261545
2	2.496861	0.447832	0.569865	31	6.089539	1.092206	1.266958
3	2.910460	0.522014	0.663480	32	6.136068	1.100552	1.271136
4	3.515164	0.630472	0.799439	33	6.165366	1.105806	1.271676
5	3.934762	0.705730	0.893454	34	6.180041	1.108438	1.270270
6	4.048670	0.726161	0.917503	35	6.175016	1.107537	1.260376
7	4.538969	0.814100	1.026172	36	6.078441	1.090216	1.236304
8	5.012462	0.899024	1.130972	37	5.655196	1.014303	1.142104
9	5.296700	0.950005	1.189975	38	5.797993	1.039915	1.166784
10	5.491015	0.984857	1.232842	39	6.135981	1.100535	1.228196
11	5.644451	1.012376	1.264962	40	6.253421	1.121599	1.244974
12	5.654852	1.014241	1.262730	41	6.331134	1.135538	1.251362
13	5.635213	1.010719	1.253291	42	6.384897	1.145181	1.259698
14	5.669851	1.016932	1.258349	43	6.428984	1.153089	1.259171
15	5.653217	1.013948	1.249690	44	6.450397	1.156929	1.258738
16	5.386593	0.966128	1.188336	45	6.442924	1.155588	1.250345
17	5.274780	0.946073	1.159411	46	6.393556	1.146734	1.231591
18	5.605401	1.005372	1.226553	47	6.092010	1.092649	1.168588
19	5.770152	1.034922	1.259499	48	5.830819	1.045803	1.111688
20	5.842762	1.047945	1.272204	49	6.170760	1.106773	1.169305
21	5.882965	1.055156	1.276737	50	6.320752	1.133676	1.192625
22	5.911442	1.060263	1.277616	51	6.285757	1.127399	1.179258
23	5.930289	1.063643	1.276371	52	6.157680	1.104427	1.148051
24	5.931298	1.063825	1.272333	53	5.915401	1.060973	1.095984
25	5.912045	1.060371	1.261841	54	5.535559	0.992846	1.020645
26	5.725989	1.027000	1.218022	55	4.980487	0.893289	0.911155
27	5.444881	0.976582	1.152366	56	4.166569	0.747307	0.758516
28	5.712638	1.024606	1.204935	57	3.109183	0.557656	0.602269
29	5.941602	1.065673	1.246836				

[illegible]

SUMMARY OF KEY PERFORMANCE PARAMETERS

MAXIMUM PEAK KW/FT OF 10.00 OCCURRED IN ASSEMBLY 58 LOCATED AT P 7
PEAK KW/FT IN REGION 1 OF 7.01 OCCURRED IN ASSEMBLY 79 AT LOCATION H 8
PEAK KW/FT IN REGION 2 OF 7.55 OCCURRED IN ASSEMBLY 73 AT LOCATION P 8
PEAK KW/FT IN REGION 3 OF 8.68 OCCURRED IN ASSEMBLY 74 AT LOCATION N 8
PEAK KW/FT IN REGION 4 OF 10.00 OCCURRED IN ASSEMBLY 58 AT LOCATION P 7

MAXIMUM AXIAL PEAKING FACTOR OF 1.26 OCCURRED IN ASSEMBLY 79 LOCATED AT H 8
MAXIMUM AXIAL PEAKING FACTOR IN REGION 1 OF 1.26 OCCURRED IN ASSEMBLY 79 LOCATED AT H 8
MAXIMUM AXIAL PEAKING FACTOR IN REGION 2 OF 1.19 OCCURRED IN ASSEMBLY 151 LOCATED AT H14
MAXIMUM AXIAL PEAKING FACTOR IN REGION 3 OF 1.24 OCCURRED IN ASSEMBLY 133 LOCATED AT H12
MAXIMUM AXIAL PEAKING FACTOR IN REGION 4 OF 1.23 OCCURRED IN ASSEMBLY 156 LOCATED AT H15

MAXIMUM RADIAL PEAKING FACTOR OF 1.27 OCCURRED IN ASSEMBLY 58 LOCATED AT P 7
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 1.00 OCCURRED IN ASSEMBLY 123 LOCATED AT F11
MAXIMUM RADIAL PEAKING FACTOR IN REGION 3 OF 1.16 OCCURRED IN ASSEMBLY 110 LOCATED AT F10
MAXIMUM RADIAL PEAKING FACTOR IN REGION 4 OF 1.27 OCCURRED IN ASSEMBLY 100 LOCATED AT B 9

AVERAGE AXIAL OFFSET (PERCENT) -7.28

MAXIMUM GROSS PEAKING (FQN) FACTOR OF 1.74 OCCURRED IN ASSEMBLY 58 LOCATED AT P 7
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 1.32 OCCURRED IN ASSEMBLY 85 LOCATED AT B 8
MAXIMUM GROSS PEAKING FACTOR IN REGION 3 OF 1.51 OCCURRED IN ASSEMBLY 84 LOCATED AT C 8
MAXIMUM GROSS PEAKING FACTOR IN REGION 4 OF 1.74 OCCURRED IN ASSEMBLY 100 LOCATED AT B 9

CENTER ASSEMBLY AVERAGE POWER FRACTION 0.886
REGION 2 AVERAGE POWER FRACTION 0.939
REGION 3 AVERAGE POWER FRACTION 1.076
REGION 4 AVERAGE POWER FRACTION 0.951

AVG AXIAL CONDITIONS

H3R2 CYC2 MAP117 1KLOCAL 3KTHIMBLE 9-14-73 POS 181

AVERAGE SOURCE PER FOOT = 0.148603E-17 AVERAGE KW/FT = 0.557545E 01 AVERAGE KW/SOURCE = 0.375192E 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	3.190475	0.572237	0.729602	30	5.945730	1.066413	1.243437
2	2.565415	0.460127	0.585512	31	5.999640	1.076082	1.248255
3	2.925596	0.524729	0.666930	32	6.041116	1.083521	1.251466
4	3.529766	0.631513	0.800758	33	6.073634	1.089354	1.252756
5	3.917130	0.702568	0.889451	34	6.087903	1.091912	1.251331
6	4.011242	0.719448	0.909022	35	6.075970	1.090490	1.240977
7	4.474411	0.802521	1.011577	36	6.005829	1.077192	1.221536
8	4.952914	0.868326	1.117513	37	5.625167	1.008918	1.136041
9	5.211153	0.934661	1.170755	38	5.621686	1.008293	1.131304
10	5.389721	0.966589	1.210100	39	5.992953	1.074883	1.199568
11	5.524789	0.990914	1.238146	40	6.143351	1.101857	1.223061
12	5.534414	0.992641	1.235837	41	6.210644	1.113927	1.227546
13	5.514073	0.989889	1.227462	42	6.263070	1.123320	1.235662
14	5.559593	0.997175	1.233902	43	6.302471	1.130397	1.234392
15	5.550317	0.995493	1.226944	44	6.330938	1.135503	1.235426
16	5.316705	0.953593	1.172918	45	6.329097	1.135173	1.228256
17	5.152899	0.924213	1.132622	46	6.284455	1.127166	1.210575
18	5.503789	0.987148	1.204319	47	6.057375	1.086437	1.161944
19	5.690912	1.020704	1.242202	48	5.736554	1.028895	1.093715
20	5.754201	1.032061	1.252921	49	5.976836	1.071992	1.132559
21	5.801531	1.040549	1.259063	50	6.195434	1.111199	1.168981
22	5.825762	1.044931	1.259142	51	6.177713	1.108021	1.158989
23	5.844981	1.048343	1.258011	52	6.057645	1.086486	1.129401
24	5.852713	1.049729	1.255475	53	5.826973	1.045113	1.079601
25	5.830612	1.045765	1.244460	54	5.461761	0.979610	1.007038
26	5.635915	1.019813	1.209497	55	4.925494	0.883426	0.901094
27	5.333891	0.856675	1.126876	56	4.185402	0.750685	0.761944
28	5.572204	0.999418	1.175315	57	3.163085	0.567324	0.612710
29	5.860924	1.051202	1.229905				

PEAK ROD ENTHALPY RISE

HBR2 CYC2 MAP117 1KLOCAL 3KTHIMBLE 9-14-73 POS 181

	R	P	N	M	L	K	J	H	G	F	E	D	C	B	A	
1								1.162.	1.270.	1.162.						1
2					1.161.	1.326.	1.448.	1.143.	1.448.	1.326.	1.161.					2
3				1.150.	1.399.	1.034.	1.132.	1.292.	1.132.	1.034.	1.399.	1.150.				3
4			1.165.	1.153.	1.011.	1.297.	1.030.	1.112.	1.030.	1.297.	1.011.	1.153.	1.165.			4
5		1.340.	1.394.	0.994.	1.181.	1.022.	1.095.	0.944.	1.095.	1.022.	1.181.	0.994.	1.394.	1.340.		5
6		1.333.	1.014.	1.208.	0.995.	1.194.	1.141.	1.305.	1.141.	1.194.	0.995.	1.208.	1.014.	1.333.		6
7	1.086.	1.377.	0.969.	0.983.	1.098.	1.133.	1.121.	0.942.	1.121.	1.133.	1.098.	0.983.	0.969.	1.377.	1.086.	7
8	1.129.	1.022.	1.207.	1.110.	1.018.	1.255.	0.914.	0.927.	0.914.	1.255.	1.018.	1.110.	1.207.	1.022.	1.129.	8
9	1.086.	1.377.	0.969.	0.983.	1.098.	1.133.	1.121.	0.942.	1.121.	1.133.	1.098.	0.983.	0.969.	1.377.	1.086.	9
10		1.333.	1.014.	1.208.	0.995.	1.194.	1.141.	1.305.	1.141.	1.194.	0.995.	1.208.	1.014.	1.333.		10
11		1.340.	1.394.	0.994.	1.181.	1.022.	1.095.	0.944.	1.095.	1.022.	1.181.	0.994.	1.394.	1.340.		11
12			1.155.	1.153.	1.011.	1.297.	1.030.	1.112.	1.030.	1.297.	1.011.	1.153.	1.155.			12
13				1.150.	1.399.	1.034.	1.132.	1.292.	1.132.	1.034.	1.399.	1.150.				13
14					1.161.	1.326.	1.448.	1.143.	1.448.	1.326.	1.161.					14
15								1.162.	1.270.	1.162.						15

P N M L K J H G F E D C B A

SUMMARY OF KEY PERFORMANCE PARAMETERS

MAXIMUM PEAK KW/FT OF 9.88 OCCURRED IN ASSEMBLY 6 LOCATED AT J 2
PEAK KW/FT IN REGION 1 OF 6.67 OCCURRED IN ASSEMBLY 79 AT LOCATION H 8
PEAK KW/FT IN REGION 2 OF 7.79 OCCURRED IN ASSEMBLY 7 AT LOCATION H 2
PEAK KW/FT IN REGION 3 OF 8.74 OCCURRED IN ASSEMBLY 15 AT LOCATION H 3
PEAK KW/FT IN REGION 4 OF 9.83 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 PEAKING FACTOR IN REGION 1 OF 1.25 OCCURRED IN ASSEMBLY 79 LOCATED AT H 8
MAXIMUM AXIAL PEAKING FACTOR IN REGION 2 OF 1.19 OCCURRED IN ASSEMBLY 85 LOCATED AT H 8
MAXIMUM AXIAL PEAKING FACTOR IN REGION 3 OF 1.25 OCCURRED IN ASSEMBLY 133 LOCATED AT H12
MAXIMUM AXIAL PEAKING FACTOR IN REGION 4 OF 1.23 OCCURRED IN ASSEMBLY 156 LOCATED AT H15

MAXIMUM RADIAL PEAKING FACTOR OF 1.26 OCCURRED IN ASSEMBLY 6 LOCATED AT J 2
MAXIMUM RADIAL PEAKING FACTOR IN REGION 1 OF 0.85 OCCURRED IN ASSEMBLY 79 LOCATED AT H 8
MAXIMUM RADIAL PEAKING FACTOR IN REGION 2 OF 1.05 OCCURRED IN ASSEMBLY 144 LOCATED AT G13
MAXIMUM RADIAL PEAKING FACTOR IN REGION 3 OF 1.19 OCCURRED IN ASSEMBLY 108 LOCATED AT H10
MAXIMUM RADIAL PEAKING FACTOR IN REGION 4 OF 1.26 OCCURRED IN ASSEMBLY 152 LOCATED AT G14

AVERAGE AXIAL OFFSET (PERCENT) -7.20

MAXIMUM GROSS PEAKING (FQN) FACTOR OF 1.72 OCCURRED IN ASSEMBLY 6 LOCATED AT J 2
MAXIMUM GROSS PEAKING FACTOR IN REGION 1 OF 1.16 OCCURRED IN ASSEMBLY 79 LOCATED AT H 8
MAXIMUM GROSS PEAKING FACTOR IN REGION 2 OF 1.36 OCCURRED IN ASSEMBLY 151 LOCATED AT H14
MAXIMUM GROSS PEAKING FACTOR IN REGION 3 OF 1.52 OCCURRED IN ASSEMBLY 143 LOCATED AT H13
MAXIMUM GROSS PEAKING FACTOR IN REGION 4 OF 1.72 OCCURRED IN ASSEMBLY 152 LOCATED AT G14

CENTER ASSEMBLY AVERAGE POWER FRACTION 0.845
REGION 2 AVERAGE POWER FRACTION 0.925
REGION 3 AVERAGE POWER FRACTION 1.061
REGION 4 AVERAGE POWER FRACTION 0.935

