BEVATRON AND BNL A.G.S. EXPERIMENTAL AREA SECONDARY BEAM UTILITIES

W. W. Salsig Jr.

POWER AND COOLING SYSTEM UTILIZATION AND RATINGS AS FUNCTION OF TOTAL NAMEPLATE RATING OR AUXILIARY MAGNETS

	BEVATRON 8-21-68 (H. VOGEL)	BEVATRON 8-21-66 (AILOOR R. FORCE)	BNL A.G.S. AVE 1965 (W. WALKER)
1) TOTAL EXP AREA MAGNETS	91 {DIFF IN COUNTING QUADRUPOLE UNIT}	131	166
2) NUMBER INSTALLED	47	88	118
3) % OF MAGNETS INSTALLED	52%	67%	82%
4) NAMEPLATE RATING — TOTAL MAGNETS	17.2 MW	22.4 MW	59.7 MW
5) AVE POWER USED	5.1 MW	3.9 / 5.0 } LOOP'S RANGE	17 MW
6) AVE POWER — % OF MAGNET RATING	29.7%	22.3% (ON 5 MW)	27.5%
7) INSTALLED ELEC DISTRIBUTION	8.9 MW (VOGEL)	17.2 MW (FORCE)	36 MW
8) AVAILABLE POWER SUPPLIES	?	15.7"	34 MW
9) COOLING SYSTEM RATING	9* MW	14** MW	27 MW (14 MW PORTA
MAXIMUM POWER WHICH COULD BE DRAWN ON EXP MAGNETS AS % OF MAGNET TOTAL RATING (THIS IS ESTIMATE OF "DEMAND" WHICH MIGHT BE ACHIEVED)	53% LIMITED BY ELEC. CAPACITY AND COOLING	63% COOLING SYSTEM LIMITED	45% COOLING SYSTEM LIMITED

* CT-5-51 4 MW
CT-6-51 4 MW
CT-1-64 5 MW
13 MW
LESS 4 MW FOR 72" LIQUID CHAMBER −4
EXP MAGNETS 9 MW

** CT-5-51 4
CT-6-51 4
CT-1-64 5
CT-2-64 5
18
LESS 4 MW FOR 72" LIC −4
14 MW

DISTRIBUTION

1) D. KEETE
2) R. MEVIOR
3) E. MARSHALL
4) G. LAMBERTSON
5) J. BURS
6) W. HARTSOUGH
7) R. FORCE
8) C. PIKE
9) W. EATON
10) H. VOGEL

ACTUALLY, COOLING TO MAGNETS IS SLIGHTLY LESS SINCE DUMPERS 25" DIA LIC ALSO

FN-76
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BEVATRON EXPERIMENTAL AREA
MAGNET POWER SUPPLIES

(INFORMATION FROM DISCUSSION WITH R. FORCE 11-10-66)

1) RECTIFIER SUPPLIERS

AUG 1966 a) TOTAL OWNERS = 106 UNITS = 12 MW
104 WERE CONNECTED
b) INSTALLED 480V A.C. DISTRIBUTION FOR SUPPLIES 12.5 MW
(THIS IS TRANSFORMAL CAPABILITY)

USUAL UTILIZATION (ESTIMATE)
- 1/4 OF RECTIFIERS OPERATING @ 100% RATING
- 1/2 " " " @ 50% "
- 1/4 " " " " >30% "

RECTIFIERS REQUIRE 5% - 7% OF THEIR OUTPUT IN COOLING

2) GENERATOR POWER SUPPLIES (D.C)

UNIT #	RATING	UTILIZATION ON MAGNETS.
#3	370 KW	360 KW
#4	540 "	
#5	540 "	
#6	1500 "	1500
#7	750 "	750
(8 & 9 ON 72" CHANNEL)		
(#10 REMOVED FROM SERVICE ≈ 1960)		
#11	550 KW	550
#12	550	550

ALL CAN BE OPERATED IF GEN 8 & 9 ALSO NOT OPERATING

BALANCE OSUAM... TO SPECIAL LOADS NOT MAGNETS

TOTAL AVAILABLE TO MAGNETS 3,710 KW (LESS DIT = $\frac{1}{.8}$ MORE = 4.7 MW, 12.5, 17.2)

3) TOTAL INSTALLED POWER SUPPLIES FOR AUX MAGNET OPERATION

RECTIFIER	12.0 MW
GEN	3.7 "
	15.7 MW

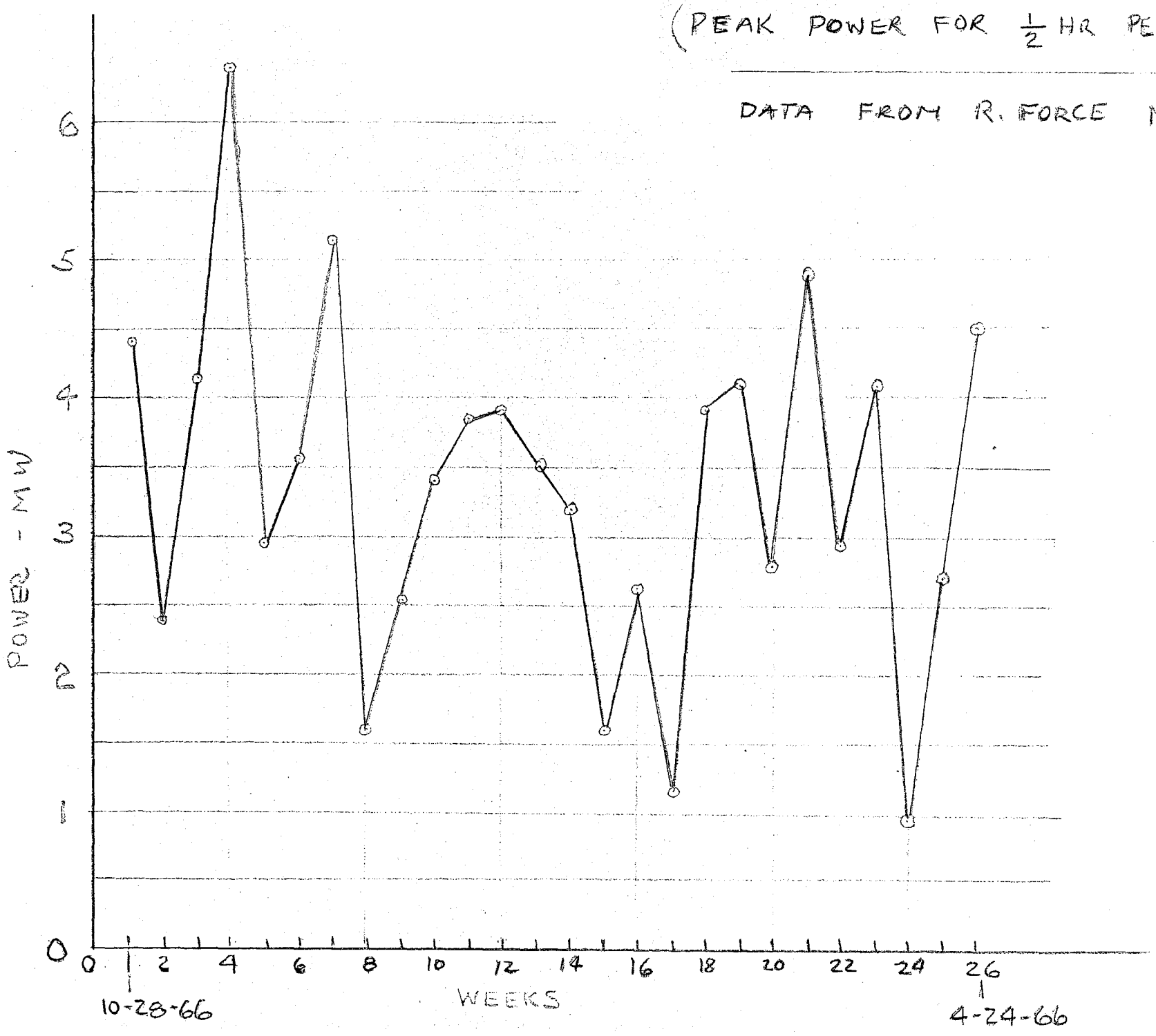
R. FORCE DOES NOT BELIEVE PEAK LOAD IN BEVATRON IS MUCH LARGER THAN AVE LOAD, 10% MORE?

HOWEVER FOR LARGE FUTURE SYSTEMS HE BELIEVES $\frac{\text{PEAK}}{\text{AVERAGE}}$ SHOULD BE ≈ 2

BEVATRON - PEAK EXPERIMENTAL AREA POWER

(PEAK POWER FOR $\frac{1}{2}$ HR PERIODS,

DATA FROM R. FORCE NOV '66



TRACED OVER CHART SUPPLIED BY R. FORCE