

May 31, 1965



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M e m o r a n d u m

To : the Members of the EEC

From : G. Finocchiaro, G. Petrucci, P. Mittner, H. Müller, G. Torelli, E. Zavattini and W. Deinet

Subject : Possible lay-out for the two experiments :

- 1) $\pi^+\pi^-$ spectrum in η decay (Finocchiaro and Mittner)
- 2) $\pi^-+p \rightarrow n +$ neutral particles (Müller, Torelli, Zavattini and Deinet)

In the attached drawing we give a possible lay-out for the two experiments. It is possible to use for both experiments a new branch of the M_4 beam starting from the 1 meter bending magnet of the M_{4a} branch.

The calculations made with TRAMP have shown that no new elements are needed and that the requirements of both the experiments are satisfied.

In particular one gets :

In position 1) : at 700 MeV/c and $\pm 0.5\%$ $\Delta p/p$ an intensity of about $20.000 \pi^-/10^{11}$ protons on target 1 and an image size of about 1 cm^2 . With a $\pm 0.5\%$ $\Delta p/p$ the tails in the momentum spectrum do not extend beyond $\pm 0.7\%$ $(\Delta p/p)^*$.

In position 2), for a momentum of 2 GeV/c and a momentum band of $\pm 0.5\%$ $\frac{\Delta p}{p}$ we get an intensity of $64.000 \pi^-$ per 10^{11} protons on target 1, and an image size of about 2 cm^2 . The angular divergence of the beam is smaller than 7 mr. The momentum selection is of course as good as in position 1.

Both experiments will not require the excitation of all the transport elements of the M_4 beam. In particular will be excluded : the electrostatic separator with its two compensating magnets; the two

* This was achieved by inverting the role of the two first quadrupoles of the beam.

field lenses around the momentum and mass slits, and with the exception of a 1 meter bending magnet and of 2 quadrupoles all the other elements of the M_{4a} branch. As a consequence the use of the M_4 beam, under these conditions, will not represent a serious demand for power and generators.

Work involved

Engineering : construction of a new vacuum chamber for the 1 meter bending magnet. Cost about Fr.S. 3.000.-.

Lay-out : No major work is involved. Some rearrangements of the space presently used for electronics in the Paplep experiments, and storage of other groups is required as well as the usual shielding work.

We also want to point out that all the problems of compatibility of space with the set-up of Rubbia-Steinberger on beam b_{10} are completely solved.

4. 6. 65 APRIL FOLDERS

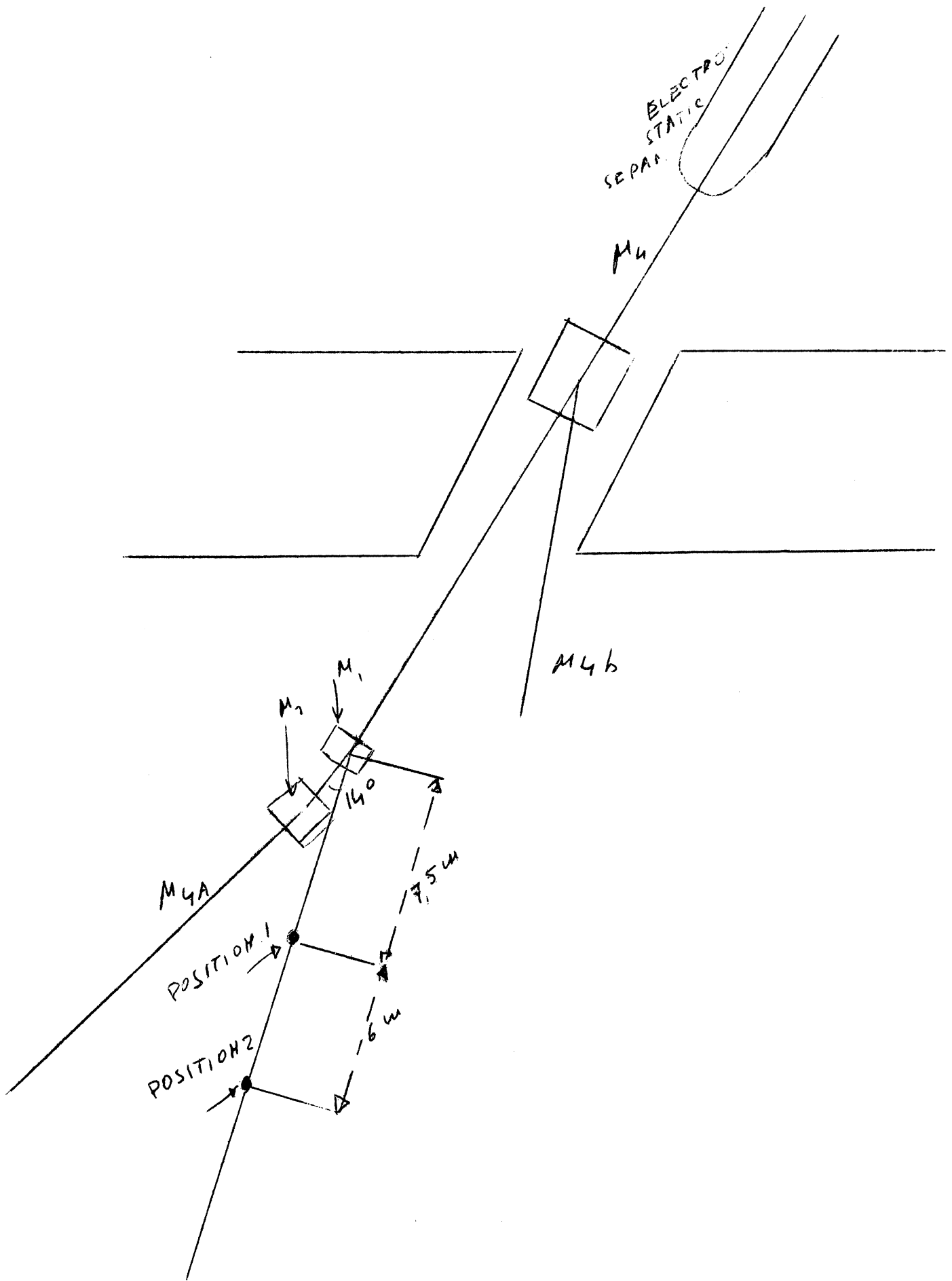
31. May 65

1) SET-UP OF THE PROPOSED EXPERIMENT ON η DECAY
(FINOCCHIARO AND MITTNER)

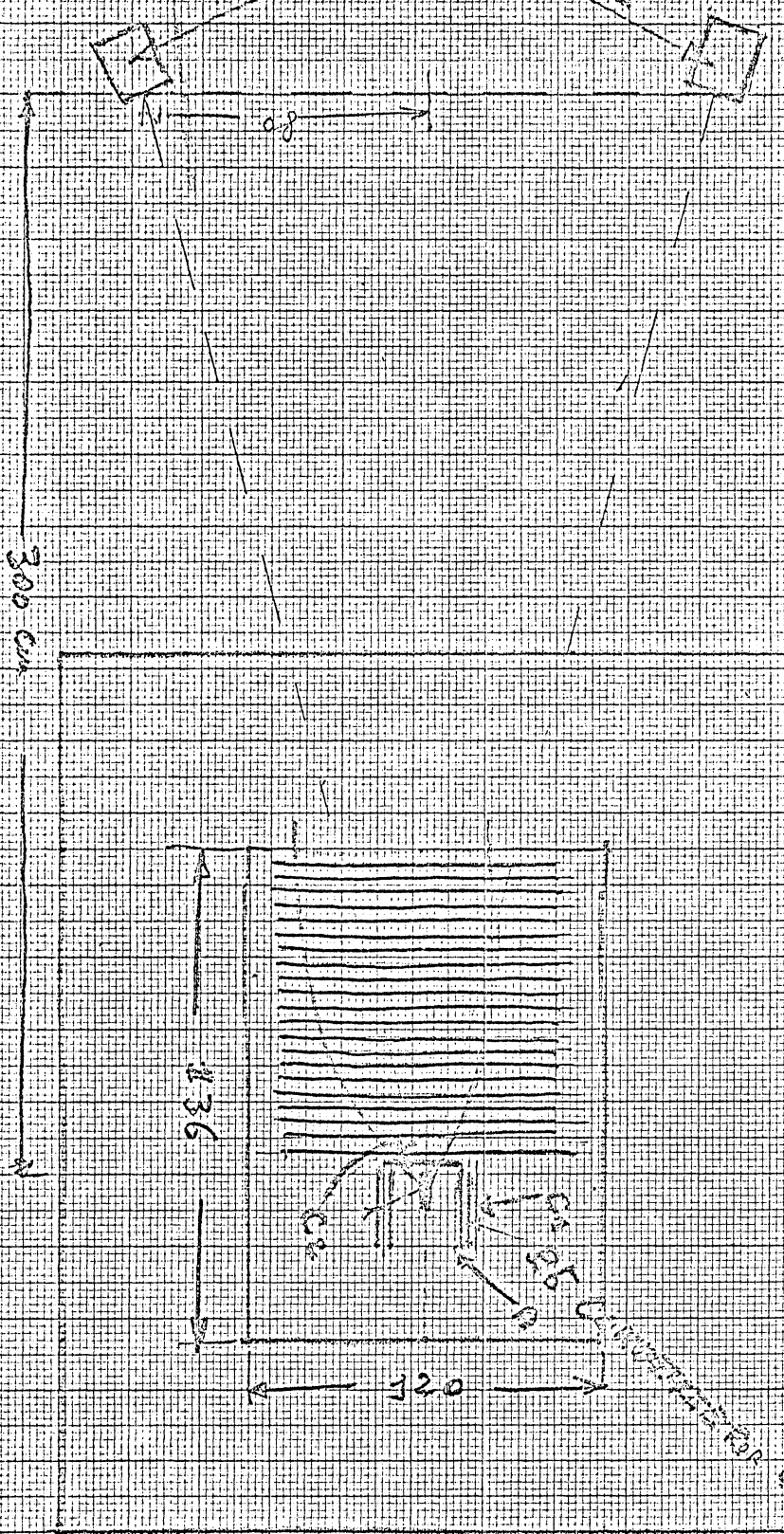
2) $\vartheta_N = \vartheta_N(T_N)$

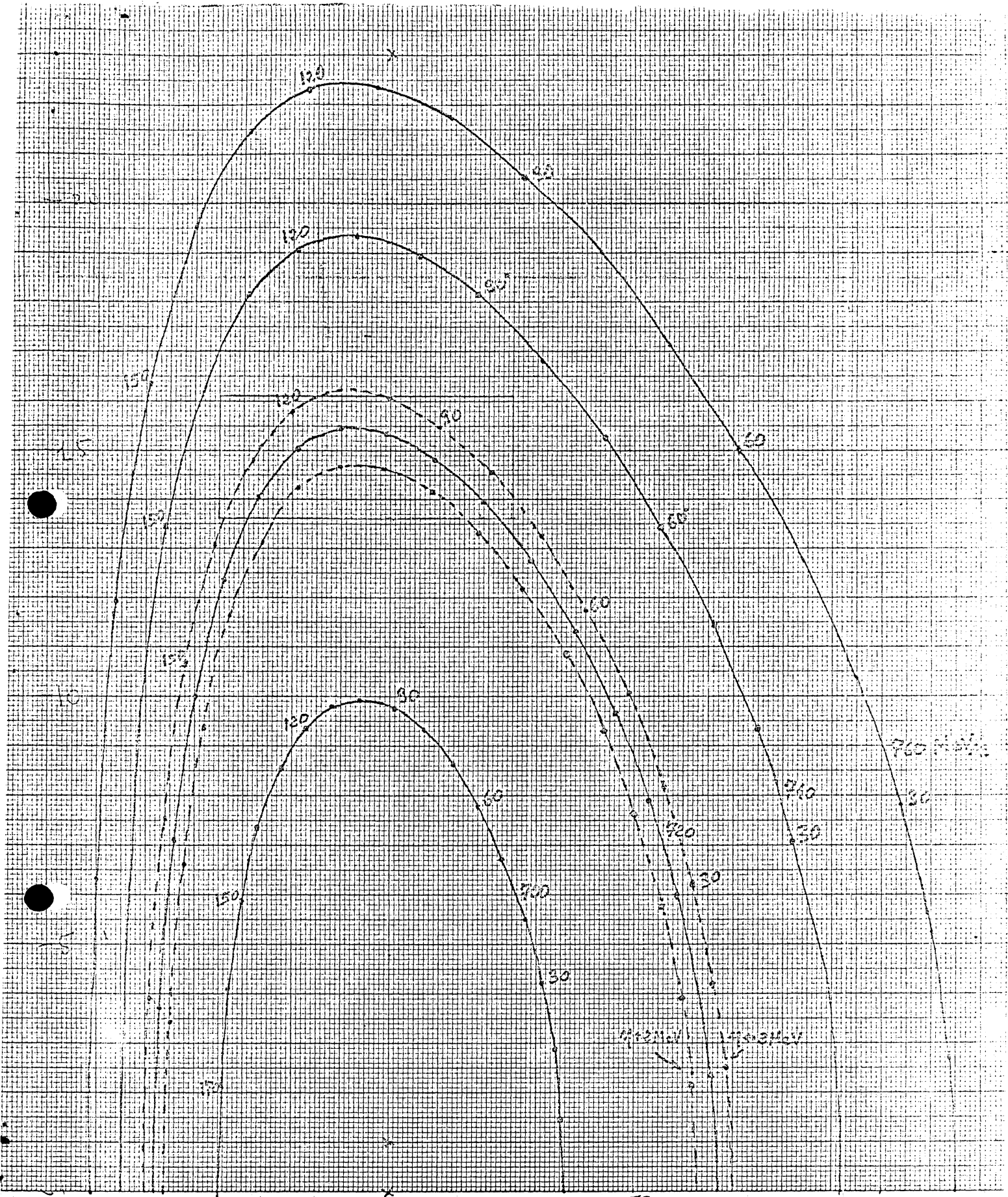
ϑ_N = LAB. ANGLE OF NEUTRON

T_N = KINETIC EN. OF N.



RING OF
M COUNTERS





30 50 100 150 200 T_u (May) T_m

120 130

160 170

180 190

200 210

220 230

240 250

260 270

280 290

300 310

320 330

340 350

360 370

380 390

400 410

420 430

440 450

460 470

480 490

500 510

520 530

540 550

560 570

580 590

600 610

620 630

640 650

660 670

680 690

700 710

720 730

740 750

760 770

780 790

800 810

820 830

840 850

860 870

880 890

900 910

920 930

940 950

960 970

980 990

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1040 1050

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1080 1090

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1180 1190

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1260 1270

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1880 1890

1900 1910

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1940 1950

1960 1970

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2000 2010

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2180 2190

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2280 2290

2300 2310

2320 2330

2340 2350

2360 2370

2380 2390

2400 2410

2420 2430

2440 2450

2460 2470

2480 2490

2500 2510

2520 2530

2540 2550

2560 2570

2580 2590

2600 2610

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2660 2670

2680 2690

2700 2710

2720 2730

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2800 2810

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3640 3650

3660 3670

3680 3690

3700 3710

3720 3730

3740 3750

3760 3770

3780 3790

3800 3810

3820 3830

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