

Sep. 10, 1959

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PROJECT M

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C. B. Jones, and R. F. Mozley

FROM: T. F. Turner

SUBJECT: Choice of Number of Modulators per Power Supply for
Project M

1. The Power Committee, C. B. Jones, Chairman, has examined the variable costs involved in this choice and presented the information given in Fig. I. The drastic savings to be had by using several modulators per supply are offset somewhat by the desire for flexibility inherent in a system with individual supplies for each modulator. The purposes of this memo are:

- a) To show that flexibility and reliability need not be sacrificed if many modulators per supply are used.
- b) Point out some of the consequences of each design choice.
- c) Stimulate thinking leading to an early decision on this subject.

2. Fig. II, illustrates a system for increasing the overall machine reliability by providing one or more standby supplies that can be substituted in a few seconds for any supply requiring maintenance. For example, if 24 modulators per supply were chosen a total of 10 supplies would be required for Stage I and 40 for Stage II operation. One spare supply would provide respectively 10 and 2½% available down time for maintenance. Since the reliability of very large supplies can be made very high, 2½% is probably a more than adequate margin.

3. Fig. III, shows schematically a modulator circuit that simultaneously meets the following requirements:

- a) Fast shut-down when connected to a common supply.
- b) Amplitude jitter of $\pm .25\%$.
- c) Pulse amplitude individually adjustable over limited range at each tube.
- d) Repetition rate variable.
- e) Provides for delayed charging if necessary.