

MODULATOR COMMITTEE MEMORANDUM NO. 2

To: Modulator Committee, R. B. Neal, J. V. Lebacqz

From: T. F. Turner

Subject: MAGNETIC SWITCHING FOR PROJECT M MODULATORS

January 6, 1959.

1. Since our last meeting when the possibility of replacing spark gaps by saturable reactors was introduced, a considerable search of the literature on this subject has been made.

2. In general this approach looks very promising. Several modulators capable of delivering one or two megawatts have been satisfactorily completed and Levinthal Electronics Company is presently developing an 8 Mw peak, 25 kw average unit under Air Force Contract AF 30(602)-1177.

3. While none of the modulators described exactly meet the requirements for project M, there is no doubt that a trouble-free magnetic modulator for this service can be developed. As soon as funds become available, a thorough technical and economic study of this approach should be made. Meanwhile the bibliography below will assist those on the committee who desire to become acquainted with the subject:

Melville, W.S.: "The Use of Saturable Reactors as Discharge Devices for Pulse Generators".  
Proc I.E.E., vol 98, part III, pp 185-207, 1951

Mathias, R.A.; Stapelfeldt, R.; and Walker, J.M.: "An Investigation of Magnetic Pulse Generators for Medium Power Radar", final report, Contract AF30(602)-914  
Carnegie Institute of Technology, November 1955.

Sunderline, J.E.: "Development of a Two Repetition Rate Magnetic Pulse Modulator".  
Westinghouse Electric Corporation, Contract No. AF33(616)-2020, WADC Technical Report 55-380

Busch, K.J.; Hasley, A.D.; and Nietzert, C.: "Magnetic Pulse Modulators".  
BSTJ, vol. 34, No. 5 pp 943-993, September 1955.

Thompson, M.F.; Trautwein, R.R.; and Ingersoll, E.R.: "Magnetic Pulse Generator Practical Design Limitations".  
A.I.E.E. Conference Paper 56-728.

Wolfframm, B.M.: "The Efficiency of Magnetic Pulse Generators".  
A.I.E.E. Conference Paper CP 56-729.

Wolfframm, B.M.: "Versatile Magnetic Pulse Generator", Report No. 1.  
Contract No. AF33(616)-2970  
W.A.D.C. September 15, 1955

Smith, E.J.; and Antin, J.: "A Study of High Power Magnetic Modulators for Radar Applications".

Polytechnic Institute of Brooklyn, Contract No. AF30(602)-387,  
Final Report R-369-54, PIB-303, RADC, January 1954.

Smith, E.J.; Antin, J.; and Lian, K.T.: "Magnetic Modulators for Radar Applications".

Polytechnic Institute of Brooklyn, Contract No. AF30(602)-984  
Research Report R-419-55, PIB-351, RADC, April 1955.

TFT /mm