

Washington, D. C.
March 5, 1941.

MEMORANDUM

Subject: Engine research laboratory; review of electric power problem to time of site selection.

1. It will be realized that the electric power problem of the engine research laboratory has changed constantly as the laboratory requirements crystallized and as the special features of the chosen site were taken into account. Summarized herein are the original electric requirements and cost estimates, and the plans considered for supplying power to the Cleveland site.

2. The first study, dated January 23, 1940, of the facilities for the engine research laboratory included an allocation of \$625,000 for power and water supply, heating, roads, fences, transportation equipment, fuel tanks, sidewalks, etc. This appears to have included an electric power distribution system for supplying the 12,400 horsepower wind-tunnel motor and the refrigerating, evacuating, and pumping equipment of the laboratory. When the total amount of money was reduced from the estimate of \$10,068,250 to the \$8,400,000 appropriated in June, 1940, the allocation for these utilities was reduced to \$500,000.

3. As regards the power requirements of the laboratory, a maximum demand of 15,000 kw was specified in a mimeographed release of June 22, 1940, to all interested communities. This statement was revised on July 3 to specify 10,000 kw on-peak and 20,000 kw off-peak.

4. Upon inspection of Cleveland airport sites it developed that electric power could be supplied at 132,000 volts from either of two directions: from the east or from the south. A transmission line from the east would have been the shortest for supplying the site offered in the northeast corner of the airport, but this site was considered to have many disadvantages in comparison with the site offered on the west side of the airport. The western site could have been served by a line to the east but this was disadvantageous on four counts:

cc. to Mr. Chamberlin

- (1) The distance was greater than for a line to the south.
- (2) The line would traverse built-up sections of the city for which options would be difficult and expensive.
- (3) Airway approaches to the field would necessitate more than a mile of underground construction.
- (4) Delivery would be at the front gate of the laboratory site.

5. The most economical way of serving the proposed site from the south would have been the construction of a transmission line in the ravine of Rocky River Park to about the center of the proposed plot. Authorities of this metropolitan park would not permit this construction; the alternative was to terminate the transmission line on the south part of the proposed plot and to include the connection to the center of the laboratory area in the laboratory electric-power distribution system. Throughout these considerations the constant objection was a system of minimum final cost to Government. It was realized that an extra length of Government-owned distribution system was at least partially compensated for by a shorter company-owned transmission line in that the cost, or savings, of the company construction eventually accrues to the Government through the electric rates.

6. Before the site selection was completed it appeared that the maximum off-peak demands of the laboratory would reach 25,000 kw. In a conference with officials of the Cleveland Electric Illuminating Company, on November 22, 1948, the company agreed to this demand and met other requests of Committee representatives, including lowered rates. At this point it was agreed by all concerned that the electrical requirements of the engine research laboratory would be met satisfactorily and economically at the Cleveland site.

Russell G. Robinson.

RGR:HW