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NACA-Cleveland

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10/2/54
Cleveland, Ohio,
December 9, 1944.

MEMORANDUM For the Executive Engineer.

Subject: Visit to the General Electric Company, River Works, West Lynn, Massachusetts, on October 29-31, 1944 by A. Silverstein, Engine Installation Research Division.

1. A conference was held at the River Works General Electric Company plant in West Lynn, Massachusetts, on October 30, 1944, to discuss tests of the General Electric I-40 jet propulsion engine, mounted in the Lockheed P-80A airplane. The conference was attended by Messrs. H. C. Towle, J. Newlands, J. S. Alferd, R. O. Miller, W. J. King, R. E. Small, W. O. Meckley, J. Goldsbury, and J. Foisey of the General Electric Company, Lt. Broadwell of the Army Air Forces, and A. Silverstein of the Cleveland laboratory.

2. The general objectives of the Cleveland wind tunnel program were outlined as follows:

- (a) Investigation of the induction system of the P-80A airplane to evaluate the losses in total pressure that occur on the ducting system, and to determine methods for increasing the ram efficiencies.
- (b) To evaluate the altitude performance of the General Electric I-40 engine with particular reference to measurements of thrust, fuel consumption, air flow, and turbine inlet temperatures.
- (c) To evaluate the operation of the engine under altitude conditions with particular reference to the starting, windmilling, idling, and accelerating characteristics.
- (d) To provide a comparative evaluation of the thrust as measured by the tailpipe rig and wind tunnel balances.

3. The instrumentation of the engine and airplane was discussed in considerable detail, and a division of the instrumentation between the NACA and the General Electric Company was outlined. In general, the NACA is to provide the instrumentation for the induction system, compressor inlets, compressor discharge, turbine nozzles, and cabin take-off discharge. The instrumentation on the airplane, including pressure-tube installations for measuring the pressures on the airplane canopy, duct inlets, wing roots, and wing stations, are also to be provided by the NACA. The General Electric Company is to provide instrumentation at the turbine inlet, turbine discharge, and tailpipe. Instrumentation for measuring the engine vibration, engine speed, manifold pressures and bearing temperatures are also to be provided by the General Electric Company.

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4. Lt. Broadwell of the Army Air Forces pointed out that the Army was particularly interested in obtaining the evaluation data on the airplane in its present condition, in order to provide a basis for the evaluation of the flight test data that had been obtained on the airplane. He requested that the evaluation tests of the airplane precede any modifications that are applied. In particular, he stressed the importance of determining the leakage from the plenum chamber ahead of the engine with special reference to the effectiveness of the leather seal that is now being used between the plenum chamber and the tailpipe section. This method of attack was agreed upon by all present.

Abe Silverstein
Abe Silverstein, Chief,

Engine Installation Research Division.

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cc: Mr. Silverstein
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