

TRIP REPORT

*V. L. Campbell*

March 18, 1954

Place Visited: IBM, Endicott, New York

Date of Visit: March 17, 1954

Contacts: R. Pratt - Electrical Laboratory  
W. Crapo - Physics Laboratory  
J. Norton - Glendale Laboratory  
J. Gaffney - Glendale Laboratory  
R. Brown - High Street Laboratory  
R. Mork - Vestal Laboratory

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**MAR 19 1954**

**C. R. TUBE ENGINEERING - 6**

G. E. Representatives: C. Cillie  
C. Dichter  
R. Millett

**Purpose:**

To discuss special tube requirements with various IBM systems groups.

**Conclusions:**

The various groups at IBM are working on an extended systems evaluation program. Their present tube requirements are highly specialized cathode-ray tubes to be used in the input or output of computers. They would need, at the most, a dozen tubes for extended evaluation. At the end of this period a system would be decided on and tube requirements, if any, known. In any case only a small number of tubes would ever be needed, since the computer market is small and easily saturated.

The military group (R. Mork) would like to set up a second source of supply for the charactron (Convair is primary source). This is work being done in conjunction with MIT. This business has a large potential.

**Recommendations:**

1. IBM be shown the transparent phosphor tube.
2. IBM be sampled with flying spot scanner tubes being built for CED.
3. Efforts be made to determine exact charactron drawings and IBM requirements.
4. No specific development work be done for IBM on phosphors or tubes. When we have products that might be satisfactory, IBM should be sampled.
5. In the future sales should establish customer needs before calling in engineering.

**General:**

Flying spot scanners -- required for high speed displays at writing rates of 5 to 20 times that of present scanners. Must be inexpensive. For some applications of bright display the P-11 phosphor would be satisfactory if the decay time was cut from 150  $\mu$  sec to 50  $\mu$  sec. Rise times must be under 2  $\mu$  sec. For character generators a decay of .1 to .5  $\mu$  sec is needed. They would like to display 25,000 characters per second. The phosphor should have an S-4 response to match their multipliers. Presently are using a special DuMont P-15 at +7KV on PA and -7KV on cathode with  $I_g = 5\mu a$  and  $I_k = 10\mu a$ . Spot size required is

6 mils maximum. DuMont claims 1000 lines per inch on tube and actual single line scan profile measurement indicates about 100 lines per inch. For very fine focus transparent phosphor tube has possibilities.

Charactron -- Interested in 5" and 19" sizes using electrostatic focus and all deflection to be performed electrostatically. IBM wants a second source of supply. They will show us complete drawings when received from Convair. The patent situation is clouded and Convair is showing reluctance to license. Convair is setting up tube building facilities. There is a possibility that Hughes will buy the matrix element from Convair and combine this with the Haefl tube (barrier grid type). There are definite large requirements for this tube in conjunction with the MIT project.

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