

SUMMARY OF SYLVANIA VISIT  
March 30, 1973

MAY 16 1973

A technical exchange of high voltage information was made with Sylvania, Seneca Falls. As the result of this meeting the essentials of the Sylvania tube finishing is as follows:

Mounts are unpacked and blown off, after what appeared to be a cursory visual inspection, they are dipped in liquid N<sub>2</sub> and placed on trays. After getter is welded they are rapped in a mechanical device to remove loose particles from mount but particularly the getter.

The mounts are transported to gun seal in unheated cabinets. The preheat is in the form of a small carousel. At gun seal the mount is put on the sealing head and an arm is provided to guide the antenna as the gun is inserted in the bulb. Bulb assembly is vibrated and flushed before gun seal.

Automatic transport is provided to exhaust where tube is automatically loaded on exhaust. The operator places socket connector, raises the pump and tightens port rubber.

Exhaust machine had a 48 second index and 180 carts. Centerface temperature reached 400°C, neck near room temperature. No grid current activation on exhaust.

After exhaust again an automatic transfer is made to spark and age conveyor adjacent to exhaust. This conveyor is very simple and changes can easily be made. Tubes are face up throughout the high voltage and aging process. The conveyor indexes at about a 21 second rate. The schedule is as follows:

Getter flashed - on 25V neck and antenna getter used (1000 mg on antenna).

Sparking -

Section 1: 40KV + RF 7 sec. (1/4 sec. on, 3/4 sec. off)

40KV Focus to grd 7 sec. (1/4 sec. on, 3/4 sec. off)

40KV + RF 7 sec. (1/4 sec. on, 3/4 sec. off)

Section 2: 56KV 7 sec. (1/4 sec. on, 3/4 sec. off) focus to grd.

56KV + RF 14 sec. (1/4 sec. on, 3/4 sec. off)

Time delay - 7 min.

Section 3: 45-47-55KV gradually increasing

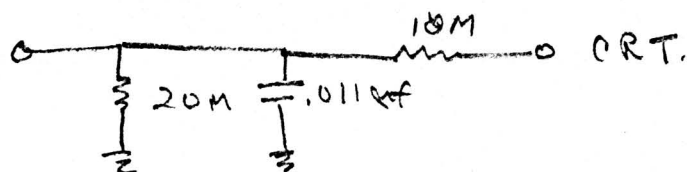
No RF - no current limiting resistor in anode

7 positions - 21 sec/position

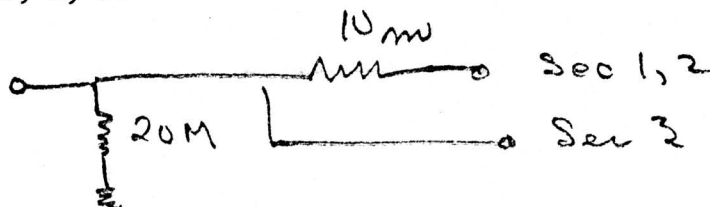
Aging - Only draw current to G2 on aging, G1 tied to cathode.

Hi-voltage Conditioning - 45-55KV - 5 positions for 18 sec. each.

DC supply for this section:



For Section 1, 2, 3:



The 150KV pulse technique is apparently a means of applying a high voltage stress without heating the mount to clean up field emission.

150KV supply is believed to be a Del Electronics supply with control circuit to phase pulse at peak of half wave rectified voltage every other cycle. Can also be used with DC. There is also a pre-pack test or conditioning but details were not offered, may be the pulse method.

Although field emission is eliminated by this method, stray emission is now a problem. Transportation tests demonstrate effectiveness of this method.

Other information: Beam shields are cleaned in trichlor (dip & vapor) at Seneca Falls and freon at Ottawa.

Dag used is Pearson Stevens 7381X. Careful to specify F, Cl, and sulfides.

They have been arc testing tubes since May '72 for a total of 2712 with the following results:

Filament off - G3 = 4.6KV

G4 = 40KV

G4 = 45KV

Total (2712 tubes) 95% arc free

88% arc free

Quality test - after processing 96.6

89

After finishing (implosion

protection, outside paint, etc.) 94.6

80.7

10 tubes a day are tested by arc test.

Sylvania reported emission maintenance poor on their tubes on life test at 30 KV and 1.5 ma.

Competitive performance: Zenith was good for field emission and hi-voltage arc test. RCA sprayed cathodes used and no new gun features noted. Sylvania below Zenith, RCA-inferior and Philco-worse.

Agreed that tube must be protected as well as set. Conductive coatings a problem to evaluate. They believe one must look at current pulse during arc to evaluate coatings and have ordered a \$5.5K Tektronic #7623 storage scope for this purpose.

They requested 25 mounts from each of our suppliers, EI, Vega and Electro Scan, to be finished by their process and arc tested. Also, they would high voltage pulse a box of tubes and return them to us for evaluation.

The next meeting date has been set for May 18th.

J. H. Affleck

Attendees:	J. H. Affleck	L. Wanner
	V. C. Campbell	CH Rehkopf
	J. V. Foley	RE Neuber
	D. S. Monroe	J. Webster
	J. C. Hickie	E. Schwartz
	R. B. Priest	G. Burdick
		EA Gunning
		D. Benda
		AJ Heitner
		M Fishman
		B. Smith