

Notes on the Linac Running-In Committee Meeting No 7

June 16th, 1959

Present : H.G. Hereward - U. Tallgren - F.H. James - P. Lapostolle -  
B. Vosicki - C.S. Taylor.

1. Log Sheets and instruction notices

The instruction notice for the pre-injector is ready; instruction notices for R.F. and Vacuum are ready but still to be typed. The one for Beam measuring and focusing (BV) should be ready very soon.

All these instruction notices should be issued in both French and English. Six copies will be made of each of them. One will **always** be kept in the Linac C.P. The others could be circulated among the operators who would like to study them outside their time of duty.

A log sheet for Beam measuring and focussing will be prepared (BV).

2. Progress

a) R.F.

α) Tilting experiments :

Two methods have been used :

- Operation at  $30^\circ$  phase angle and optimum focussing. The optimum tilt should give the highest output current.
- Threshold level measurement. The optimum tilt should correspond to minimum threshold.

Both methods exhibited a very flat curve; the variations did not look much larger than the accuracy of the measurements. Threshold level for instance remains between 430 and 470 kw for all tilt tuners positions.

From these experiments it results that it is not necessary to flatten Tank I any more. The optimum tilt looks to be half way between central and maximum input field positions.

All these measurements have been made at a rather low output current of 150  $\mu\text{A}$  or 250  $\mu\text{A}$  corresponding to an operation without magnetic lens, the only injection adjustment being made with electrostatic lens and steering coils.

### $\beta$ ) Intensity / R.F. characteristics

The intensity depends appreciably on the AG focusing adjustment in the tank.

Two curves of output current versus R.F. power have been measured : one with a fixed focusing (adjusted for around  $38^\circ$  phase angle) the other one for optimum focusing at each point.

These two curves differ very much and neither of them agrees at all with the theoretical phase trapping efficiency curve as did a preliminary experiment.

These curves have been measured with no solenoid lens on the pre-injector and only electrostatic focusing and steering coils. The preliminary curve had been obtained with the second solenoid lens in action and the output current was of the order of 1,5 mA instead of only 250  $\mu\text{A}$  in the present measurement. The discrepancy in the results can come from the acceptance / emittance situation.

### $\gamma$ ) Multipactor

A good situation on the multipactoring point of view had been found on the 8/6 with a rather bad vacuum. This good situation lasted even when the vacuum became good again. But it disappeared as soon as the beam was sent to the tank : it increased from around 1 o/o to more than 20 o/o.

The beam affects very much the situation of multipactoring; on the contrary breakdown is rather insensitive to it.

δ) Phase adjustments

Experience with power dividers and phase trombones had shown a strong dependence of amplitude versus phase adjustments and of phase versus amplitude. This situation has been found to be the result of a poor matching situation at the output of the power divider and an imperfect match at the input of the final amplifier, **that** is to say at the two ends of the trombone. The situation has been very much improved by putting the trombone before the power divider circuit instead of after.

The phase and amplitude adjustments are now rather independent.

b) Pre-injector

The second solenoid lens has been damaged by a breakdown. This one was due to some hardness deposit from the water which had been brought by compressed air (See Meeting No. 4).

Both solenoid lenses will be ready at the end of the week.

At that time additional current transformers should also be ready.

c) Health Physics

Preliminary rules are being given. Rules will be issued during the week.

Provided the neutron **track** badge service exists, 8 hours a week of operation are possible. But nobody should stay near the target for more than 20 min./week at less than 1 metre and more than 4 h/week at less than 3 metres.

The replacement of copper target by carbon gives an extra safety factor.

3. Programme

I. -- Week 15/19.6.1959

- a) Put in position new transformer between tanks. Shield the provisional modulator cables.
- b) If possible outside normal working hours :  
Tilting and intensity / R.F. amplitude and phase experiments on Tank II.
- c) Any time :  
Multipactoring experiments on Tank I.

II. -- Week 22/26.6.1959

- a) Put in position repaired solenoid lenses and new current transformers at the end of the pre-injector.
- b) If possible outside normal working hours :  
Tilt and RF experiments on Tank II (continued).  
Test solenoid lenses and new current transformers with Tanks I and II.
- c) As the occasion permits :  
Start emittance measurements of the column.
- d) Multipactoring experiments.

III. -- Week 29.6/3.7.1959

- a) If possible outside normal working hours :  
RF experiments on Tank II (continued)
- b) As the occasion permits :  
Emittance measurements of the column.  
Start acceptance measurements and focusing experiments on Tank I.  
Multipactoring experiments.

IV. -- Week 6/10.7.1959

Same programme as on the previous week

4. Next meeting

On Tuesday June 23rd, 1959 at 10.30 a.m.

P. Lapostolle

Distribution (closed) :

Parameter Committee -- Machine Operation Committee.

MM. Bramham	MM. James	MM. Marsicanin	MM. Tallgren
Hereward	Kracht	Montague	Taylor
Huguenin	Lapostolle	Standley	Vosicki

(Linac control centre file)