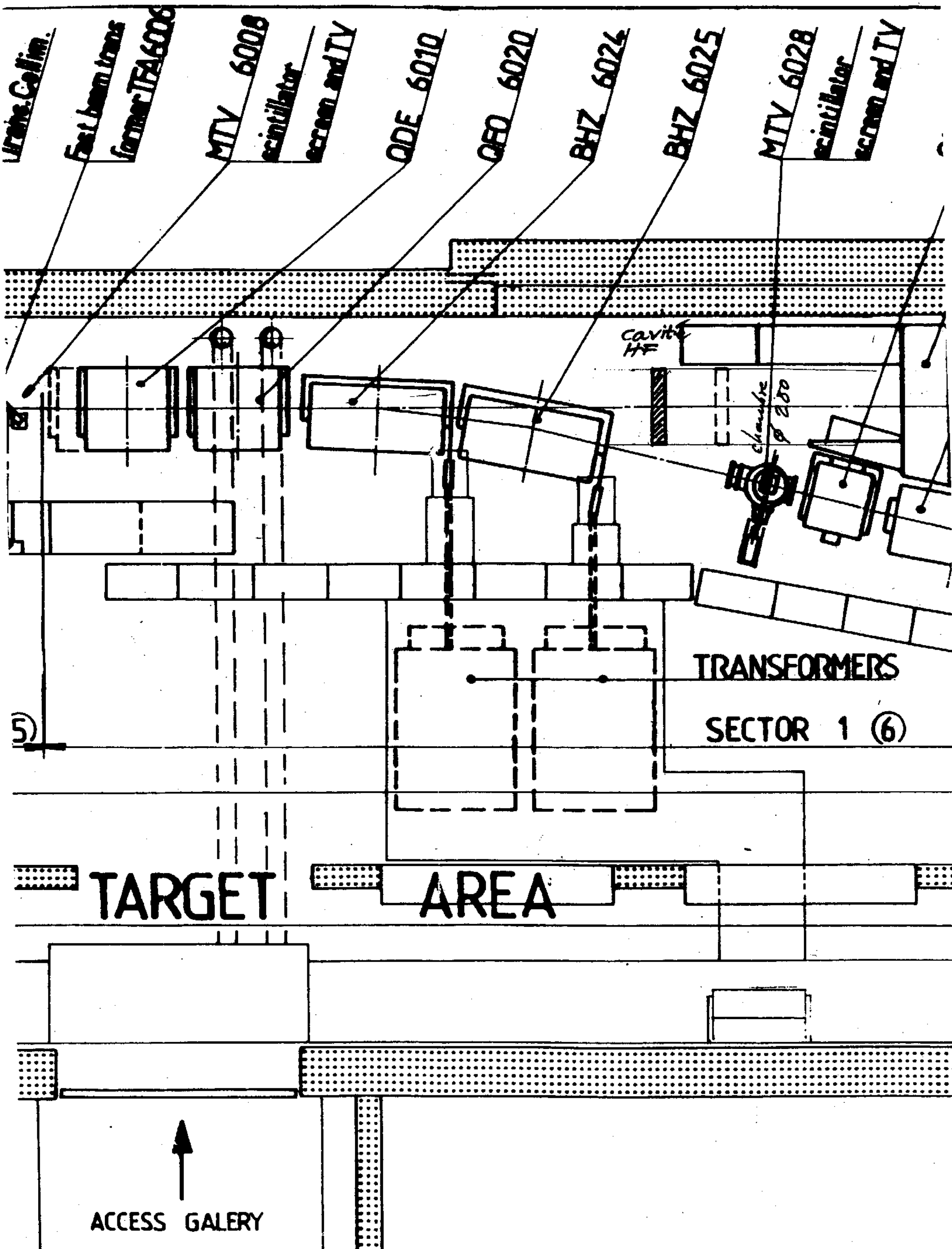
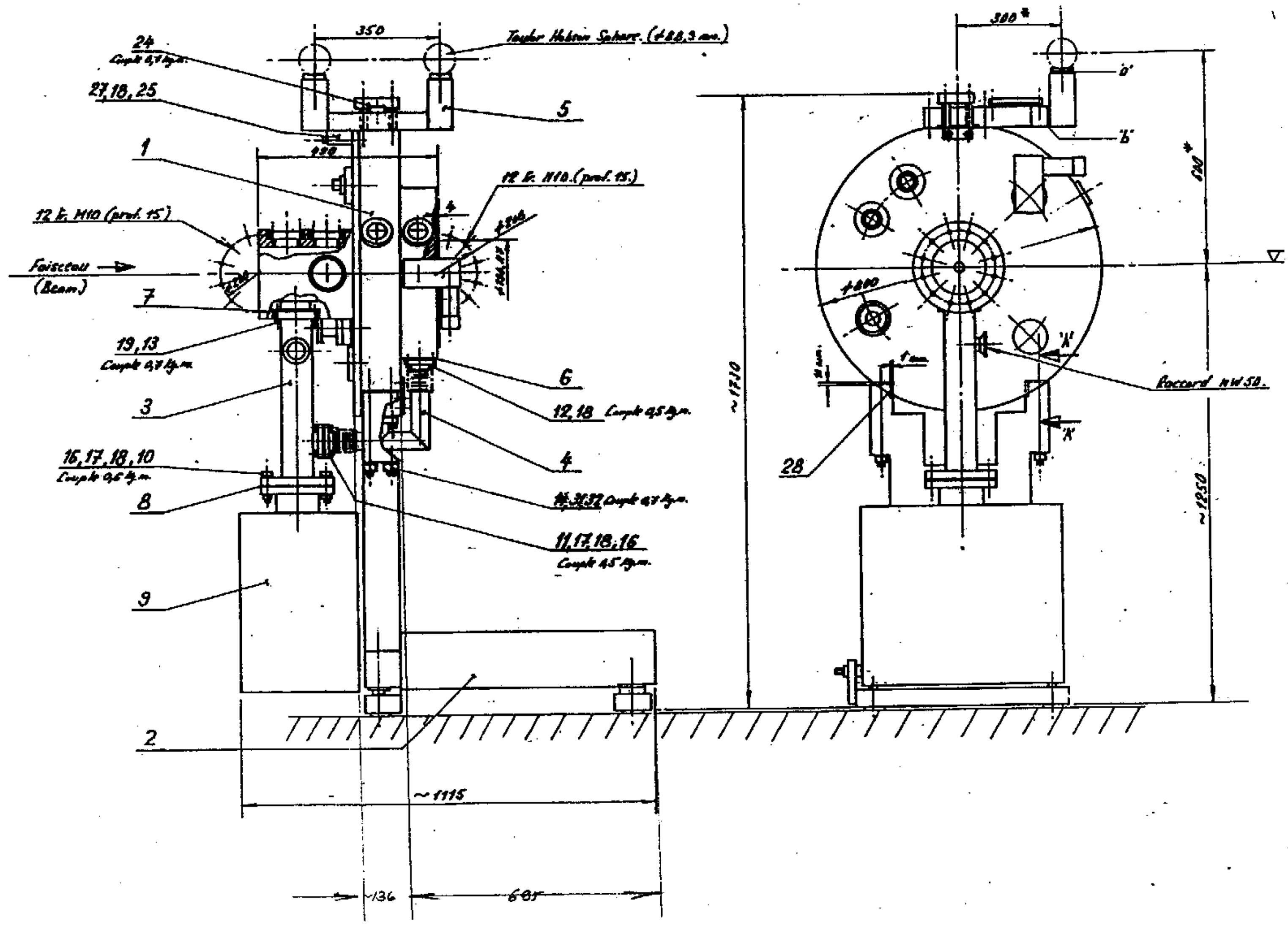
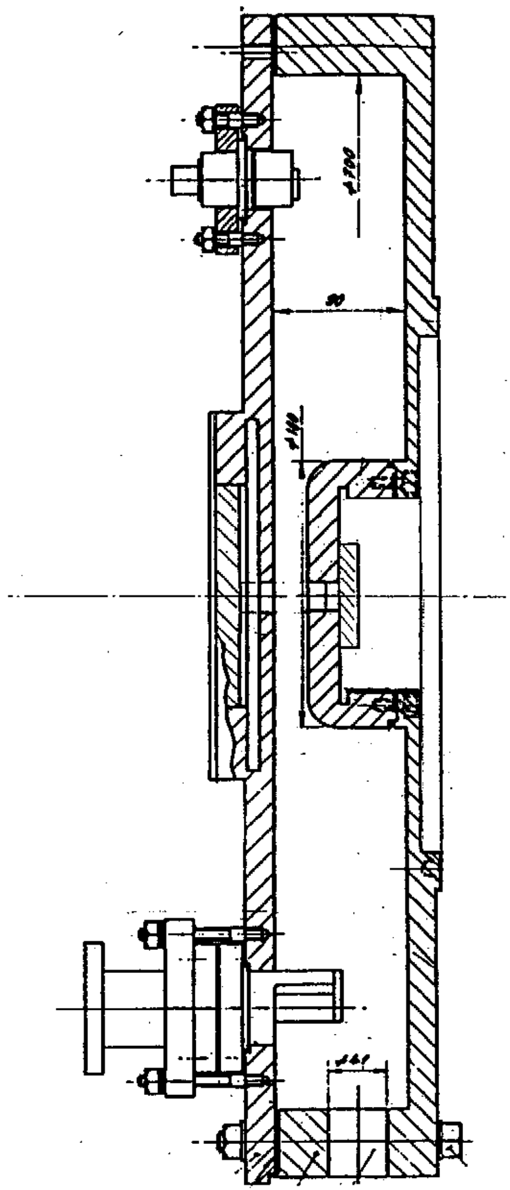


Collim.
Fast beam trans former TFA6008
MTV 6008
scintillator
screen and TV
QDE 6010
QFO 6020
BHZ 6024
BHZ 6025
MTV 6028
scintillator
screen and TV
Cavité HF
chambre ϕ 200
TRANSFORMERS
SECTOR 1 (6)
(5)
TARGET AREA
ACCESS GALERY



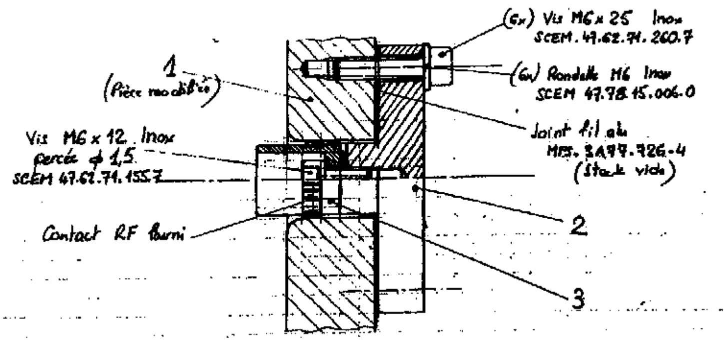
350
Faisceau
(Beam)
1
2
3
4
5
6
7
8
9
24
27,18,25
19,13
16,17,18,10
11,17,18,16
12,18
28
~1115
136
~1730
~1250
300
Raccord NW 50.
'a'
'b'
'X'

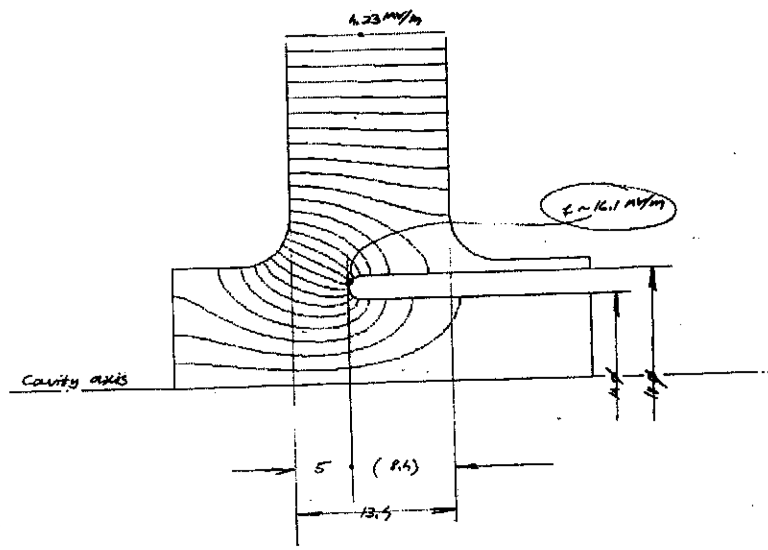


<u>Cavity parameters:</u>

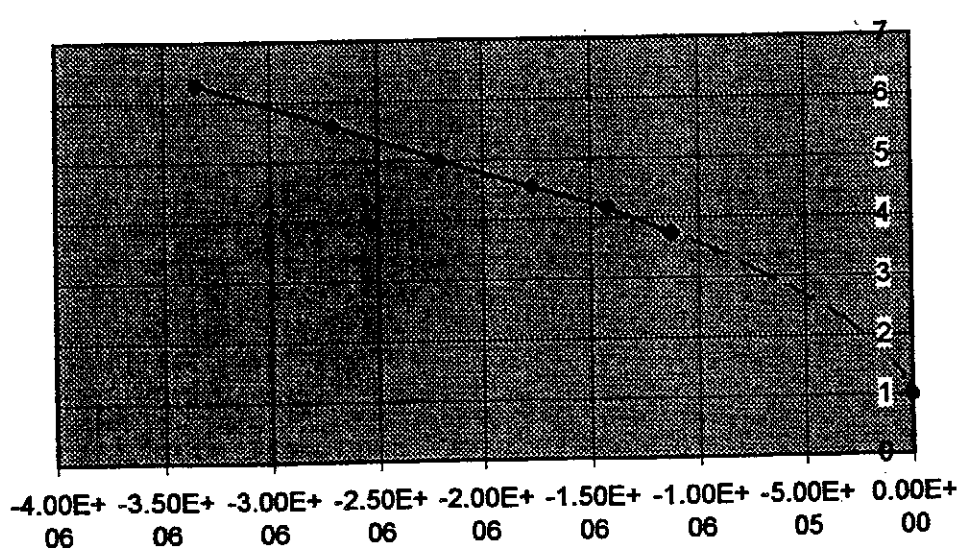
Nominal resonant frequency f = 202.56 MHz (without field enhancing "finger")
r/Q = 31.5 Ohm
measured Q_0 = 13'800
Shunt impedance (equivalent cicuit definition) r = 435 kOhm

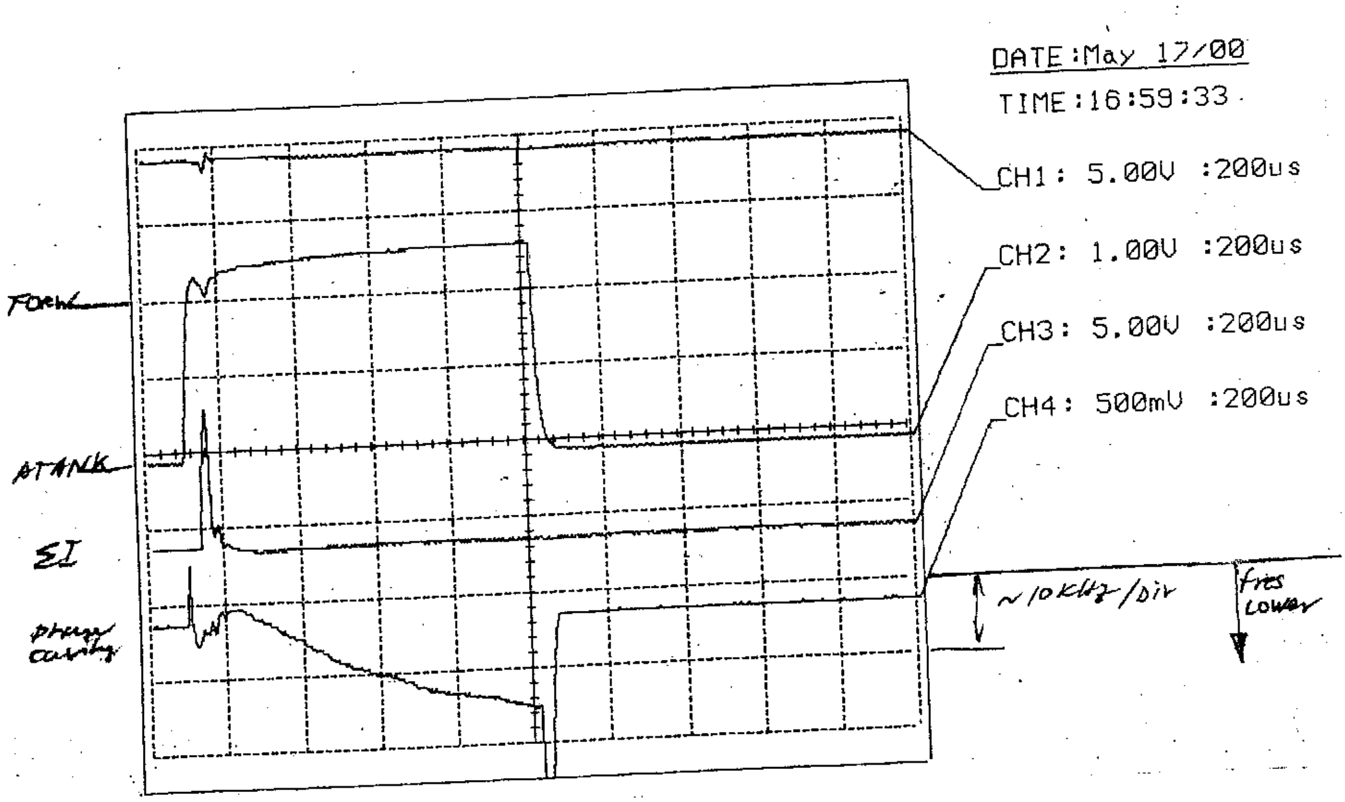
Available amplifier power ~ 55 kW





Field enhancement vs. frequency shift due to insertion of "finger"





Traces for long RF pulse 1 ms (from top):

- Forwarning pulse (switching from local timing 2 Hz repetition rate to machine timing)
- Cavity field (all servo loops open to study perturbations)
- Current in magnetic horn (beam marker)
- Cavity phase (note the strong drift to lower frequency as response to the beam)

To date TEST RESULTS

1.- Without beam, the cavity withstands reliably a peak surface field of at least 47 MV/m, corresponding to about 3.15 Kilpatrick .
(f=199.7 MHz, RF pulse length 200 μs, pulse rate 2 Hz)

The RF field is likely to be even higher judging the amplifier power delivered to the cavity.... this may be attributed to dark currents but more probably to a calibration error.... recalibration will be carried out after the removal of the cavity from the hot target area.

2.- With beam impinging on the front plate of the cavity downstream of the target, *the voltage holding capability is maintained*. Dosimetry of the radiation monitors will permit to estimate the total dose received and the peak dose per pulse.

(Beam date on target: 1.5E13 protons in 4 bunches, each 30 ns long, bunch spacing 105 ns; target 50 mm long, made mainly of Iridium and some Carbon).

3.- Following the proton pulse, the cavity is detuned to lower frequencies. The detuning builds up after the pulse and returns gradually to the initial tuning state within about ten seconds.