

***Status of the
Gravitational Wave Detector
VIRGO***

VIRGO Collaboration

CNRS (France) - INFN (Italy)

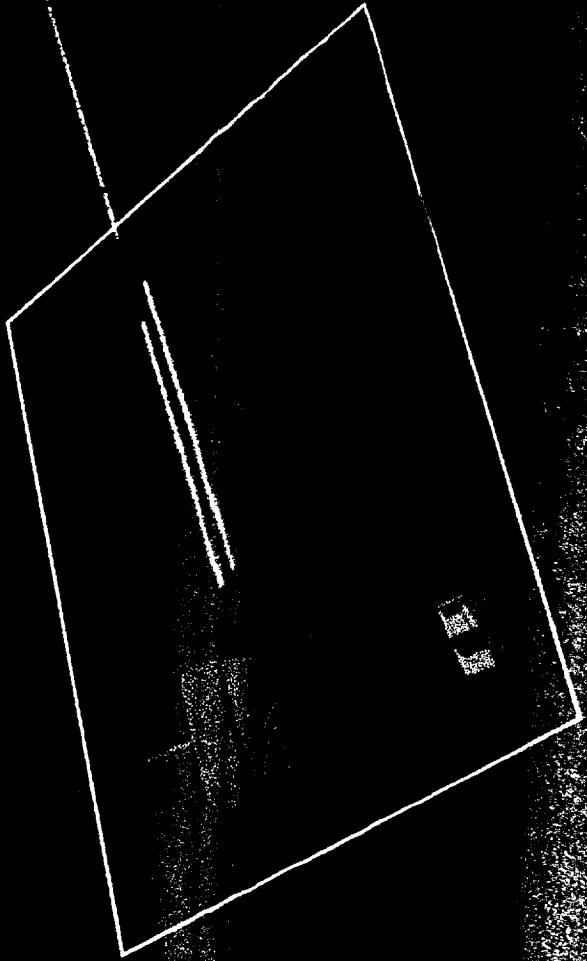
***LAPP Annecy, INFN Firenze, INFN Frascati,
IPN Lyon, INFN Napoli, LAL Orsay, LAS Orsay, ESPCI Paris,
INFN Perugia, INFN Pisa, INFN Roma***

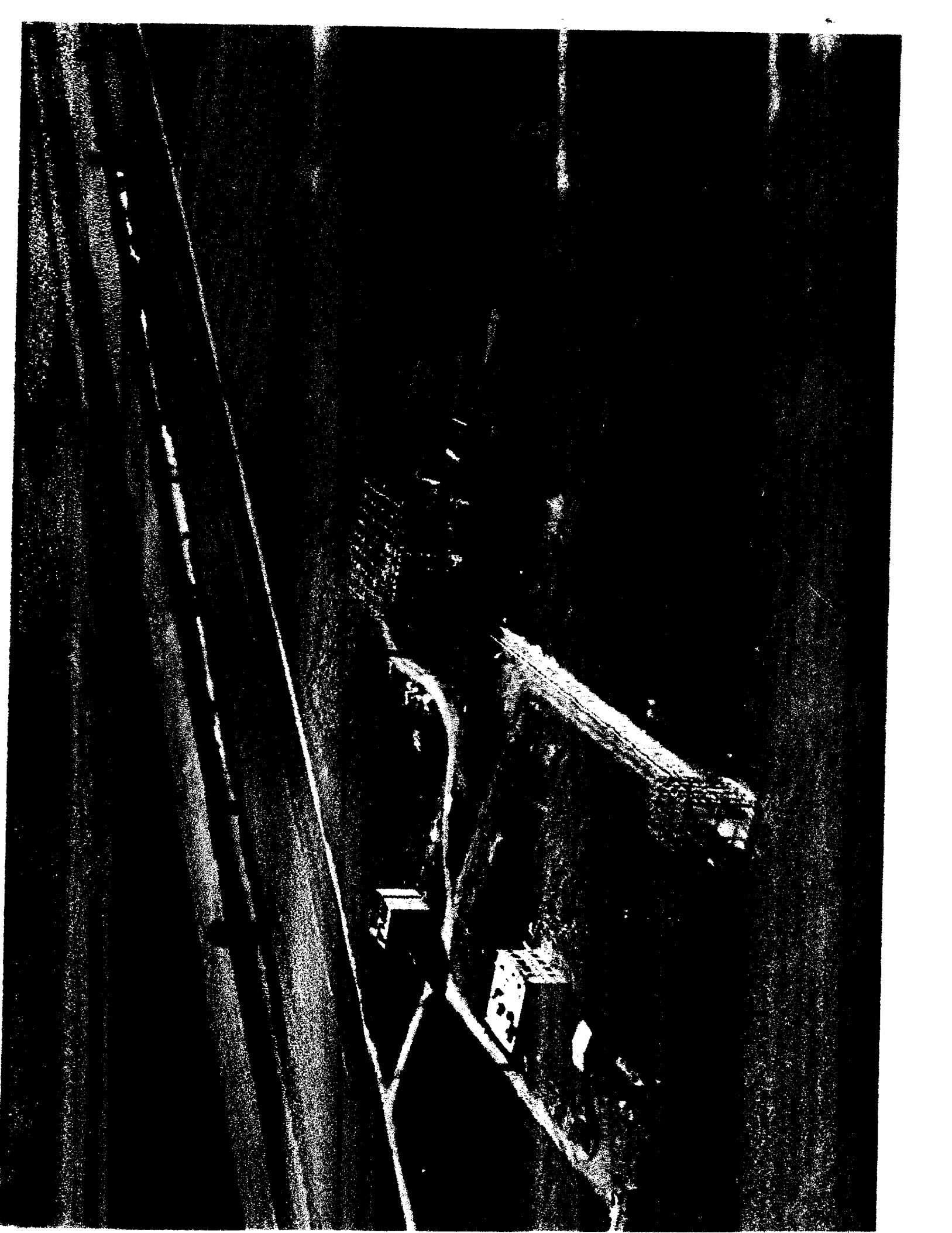
presented by Raffaele Flaminio

L.A.P.P. Annecy

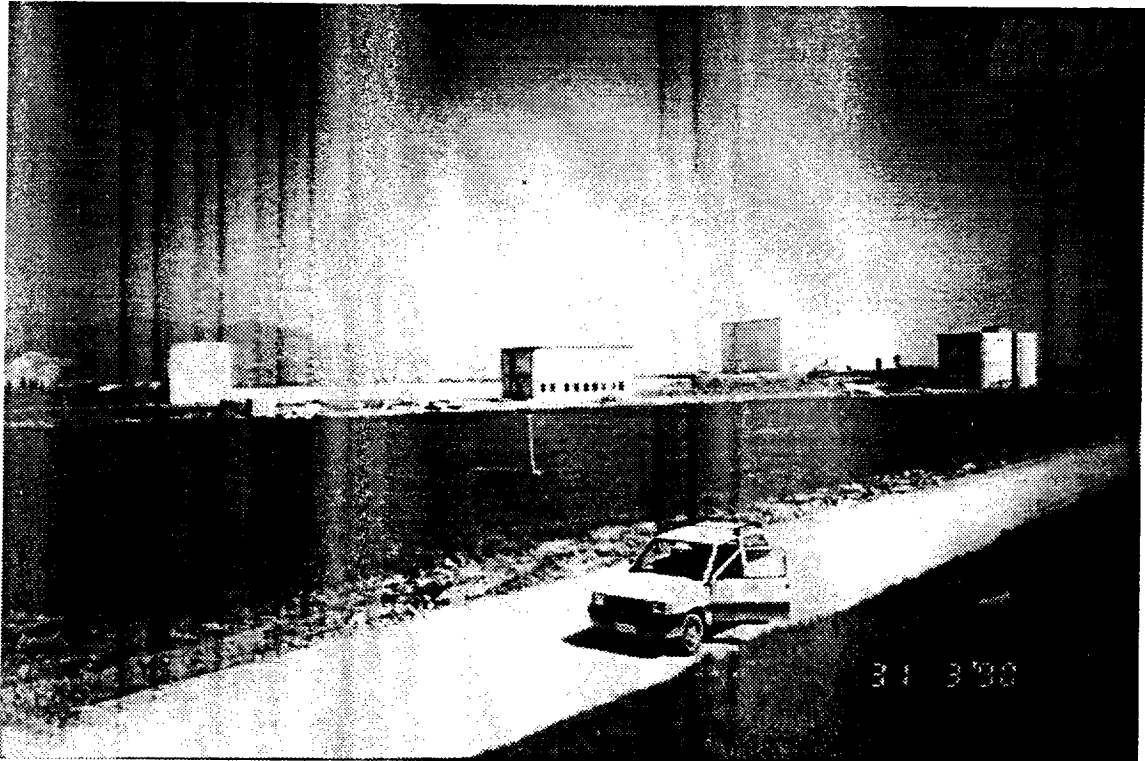
flaminio@lapp.in2p3.fr

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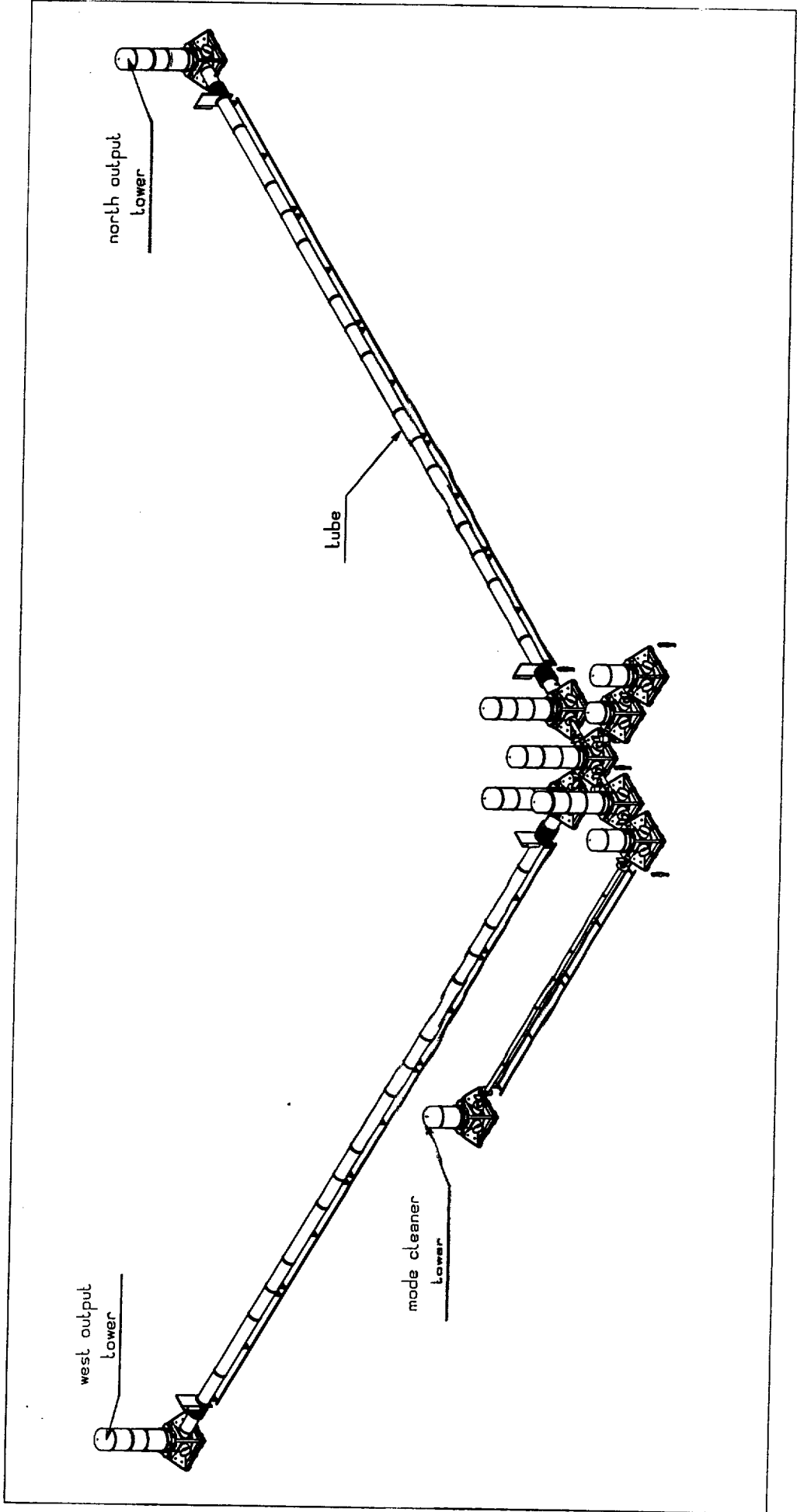




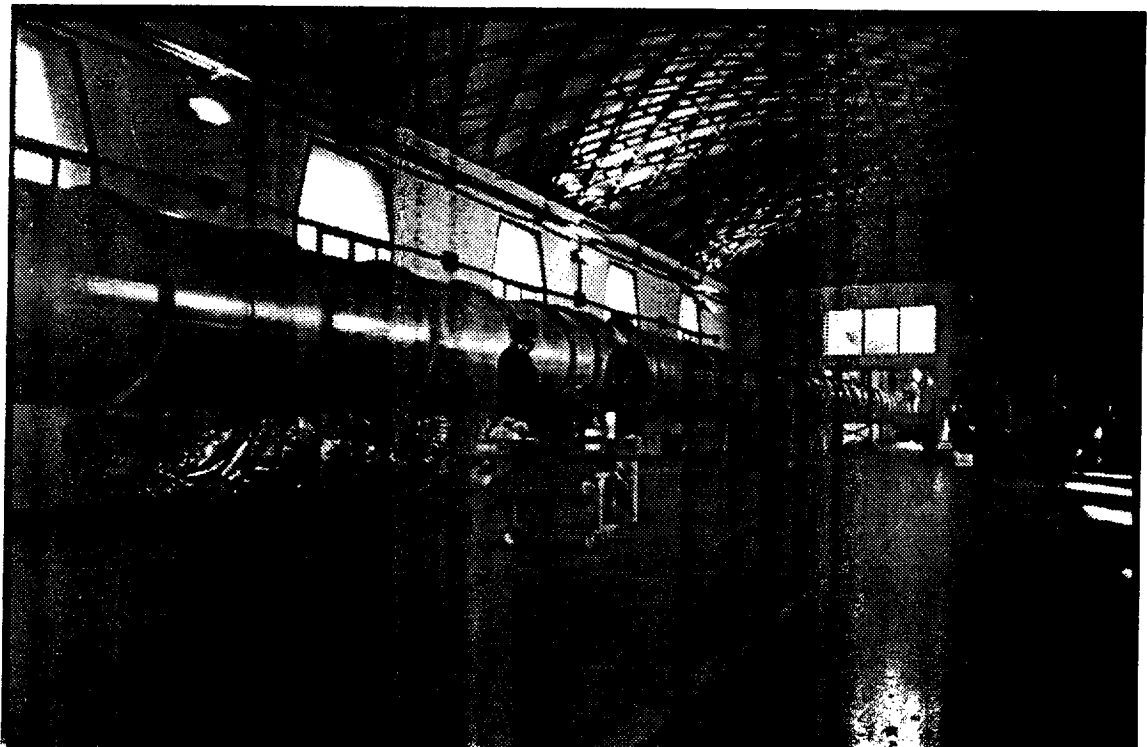
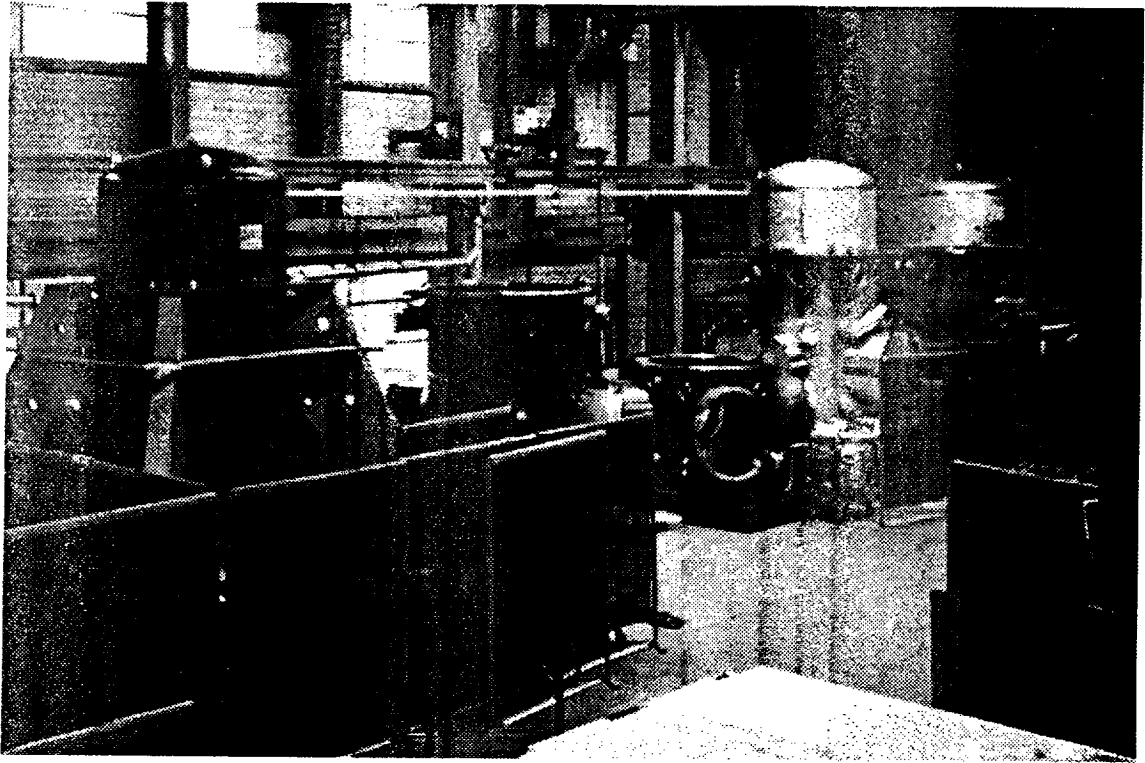
Construction at the site



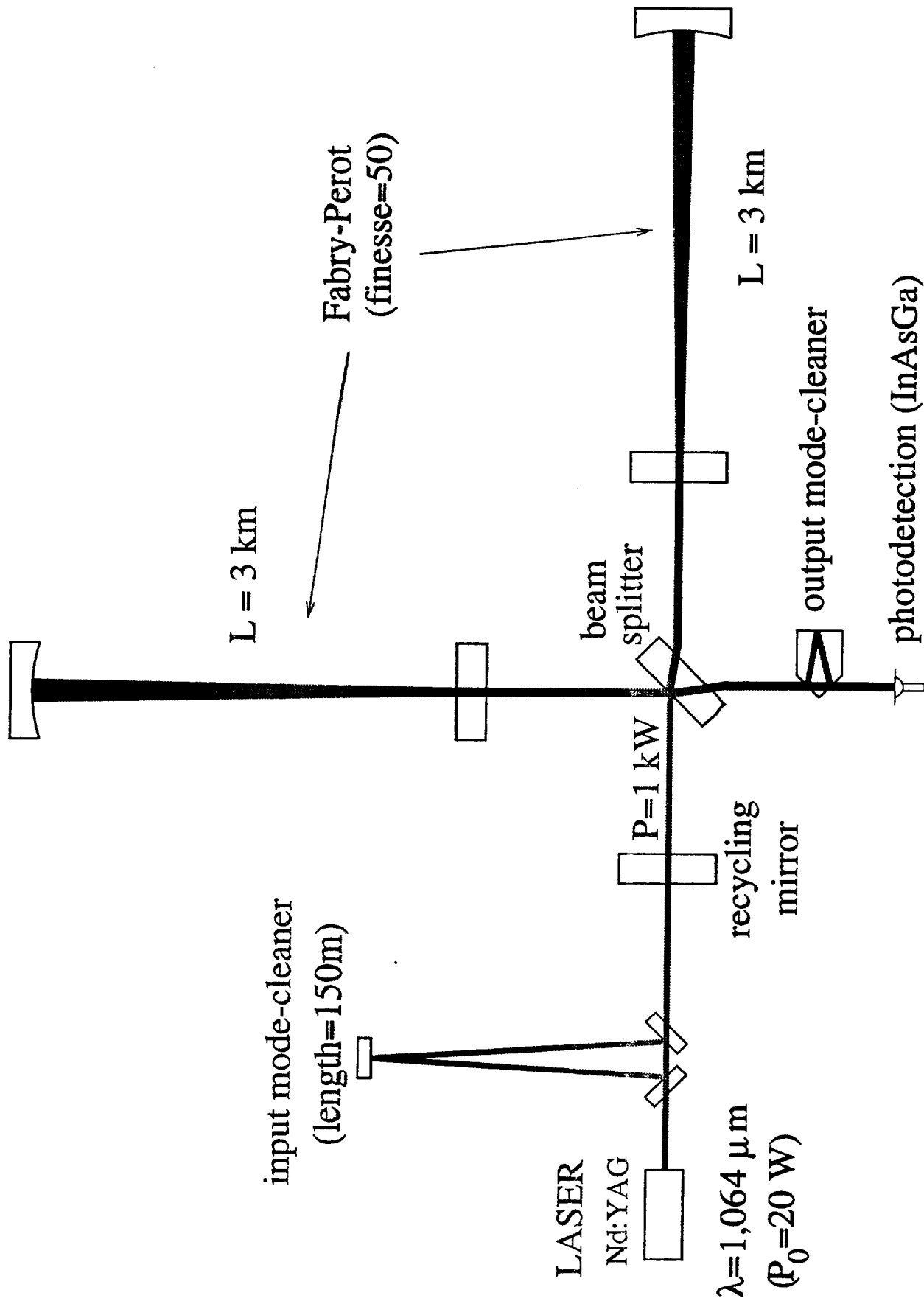
The VIRGO Vacuum System



Vacuum system construction



VIRGO Optical Scheme



Laser, Input & Output Optics

- *Laser operational:*

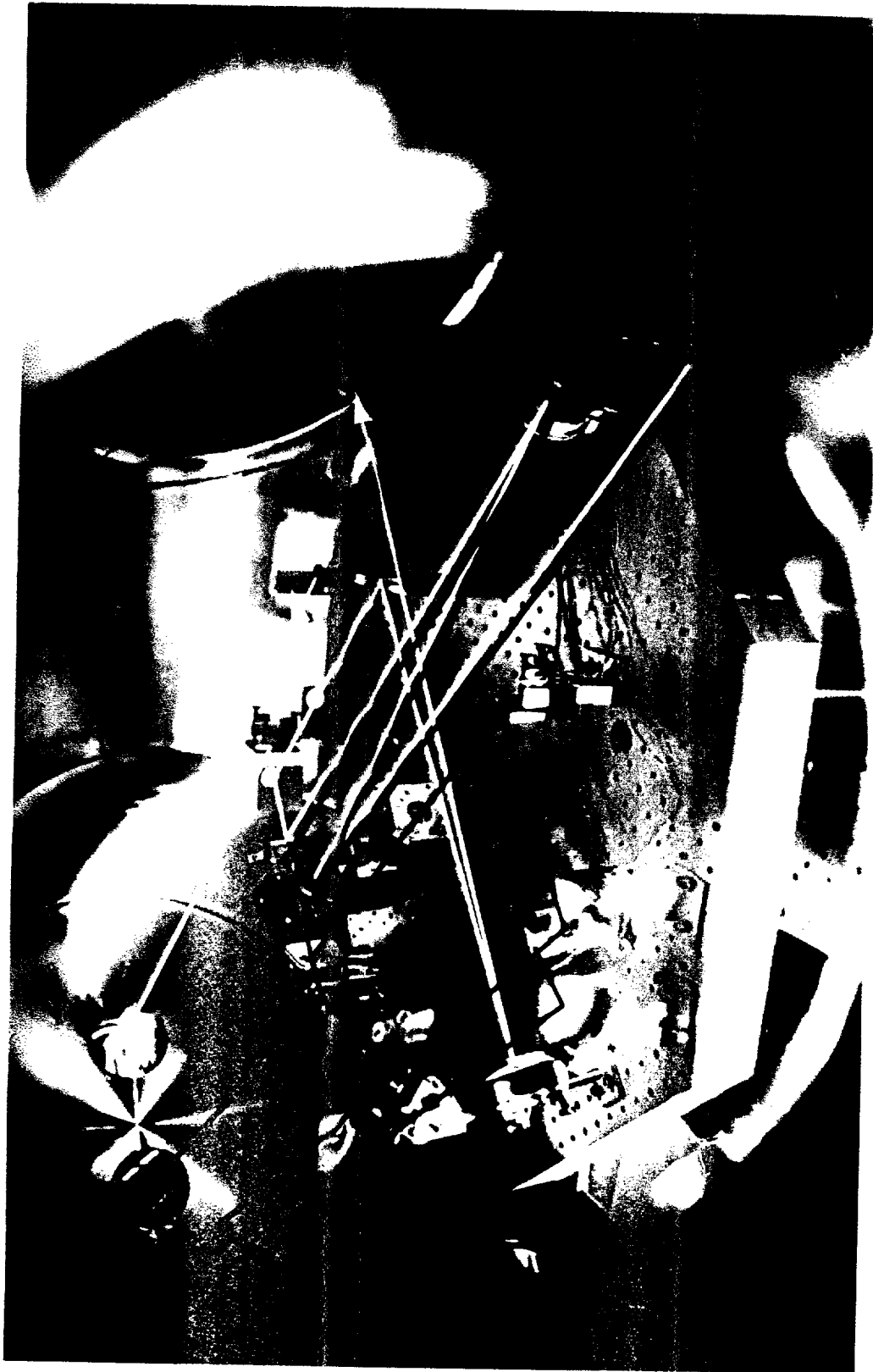
- *delivering 10 W single mode*
- *frequency and power stabilised*

- *Input Optics:*

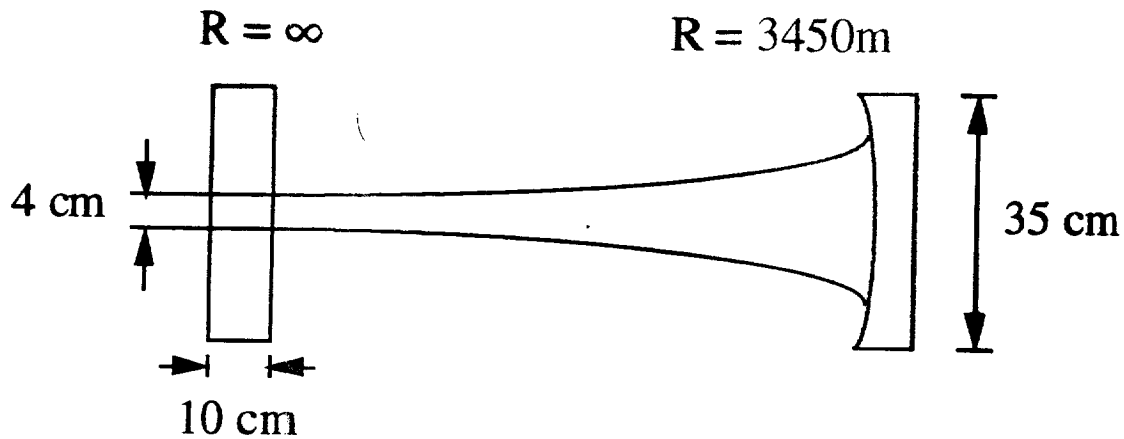
- *30 m mode-cleaner prototype locked (filtering properties under studies)*
- *optics for final mode-cleaner being assembled*
- *input bench being assembled*

- *Output Optics:*

- *detection bench assembled*
- *bench position control (with CCD) tested*
- *output mode-cleaner tested*
- *photodetectors delivered*



Mirrors



- Mirrors dimension:

- front mirrors $35 \times 10\text{ cm}$ $\Rightarrow 22\text{ kg}$
- end mirrors $35 \times 20\text{ cm}$ $\Rightarrow 44\text{ kg}$

- Substrates:

- collaboration with Heraeus solved absorption problem
- 4 recycling and 3 end mirrors delivered

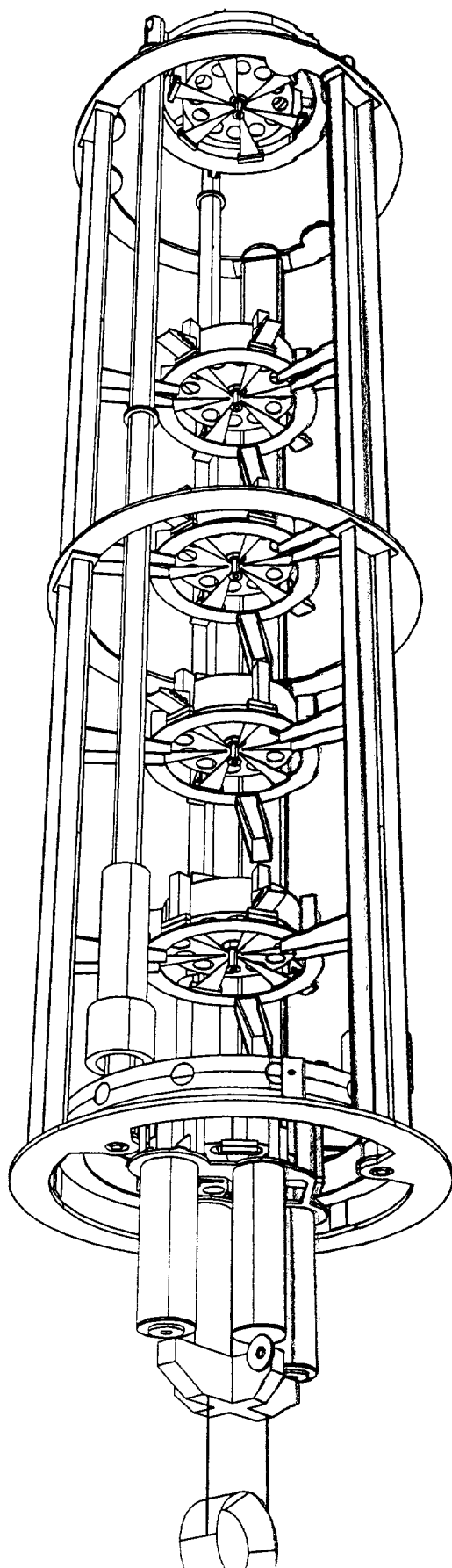
- Polishing:

- CITF polished by General Optics
- Contract for large mirror in progress

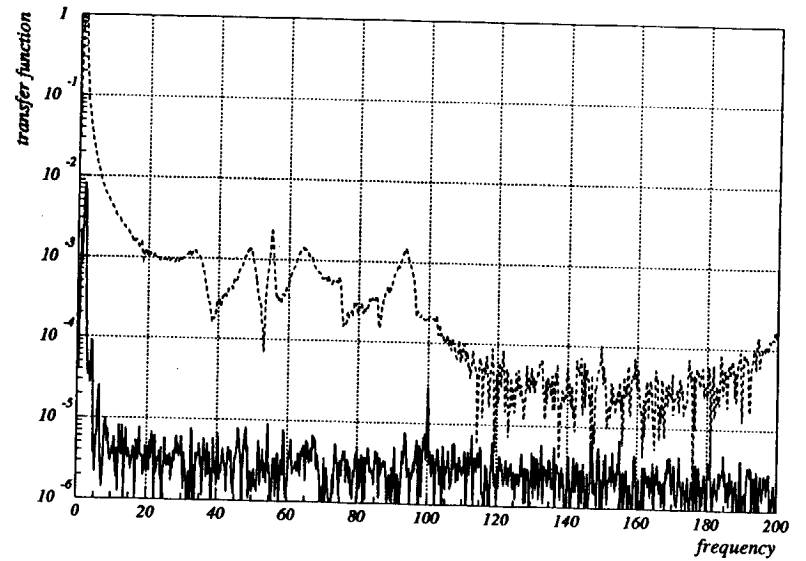
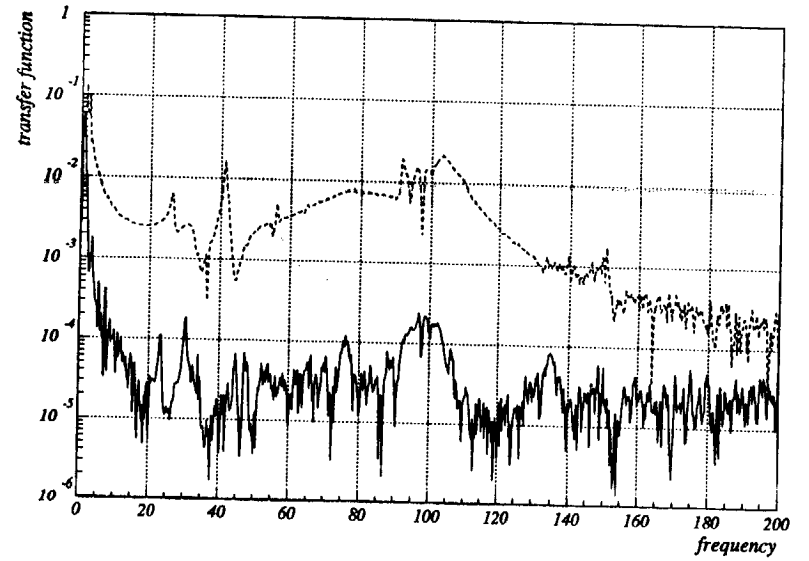
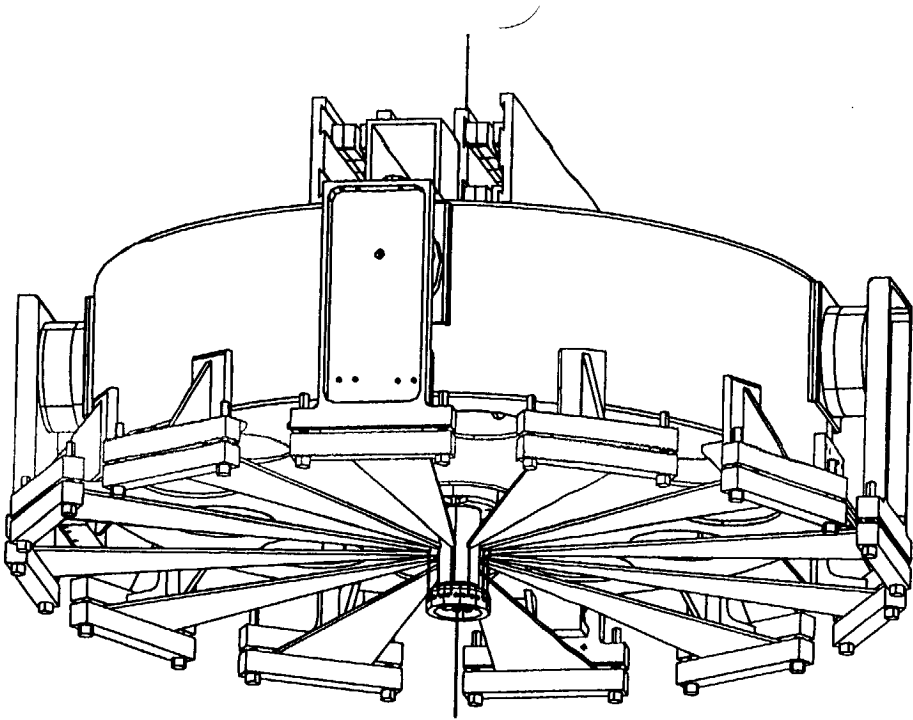
- Coating development:

- coating facility under construction in Lyon
- corrective coating gives 1.5 nm rms , limited by wavefront measurement

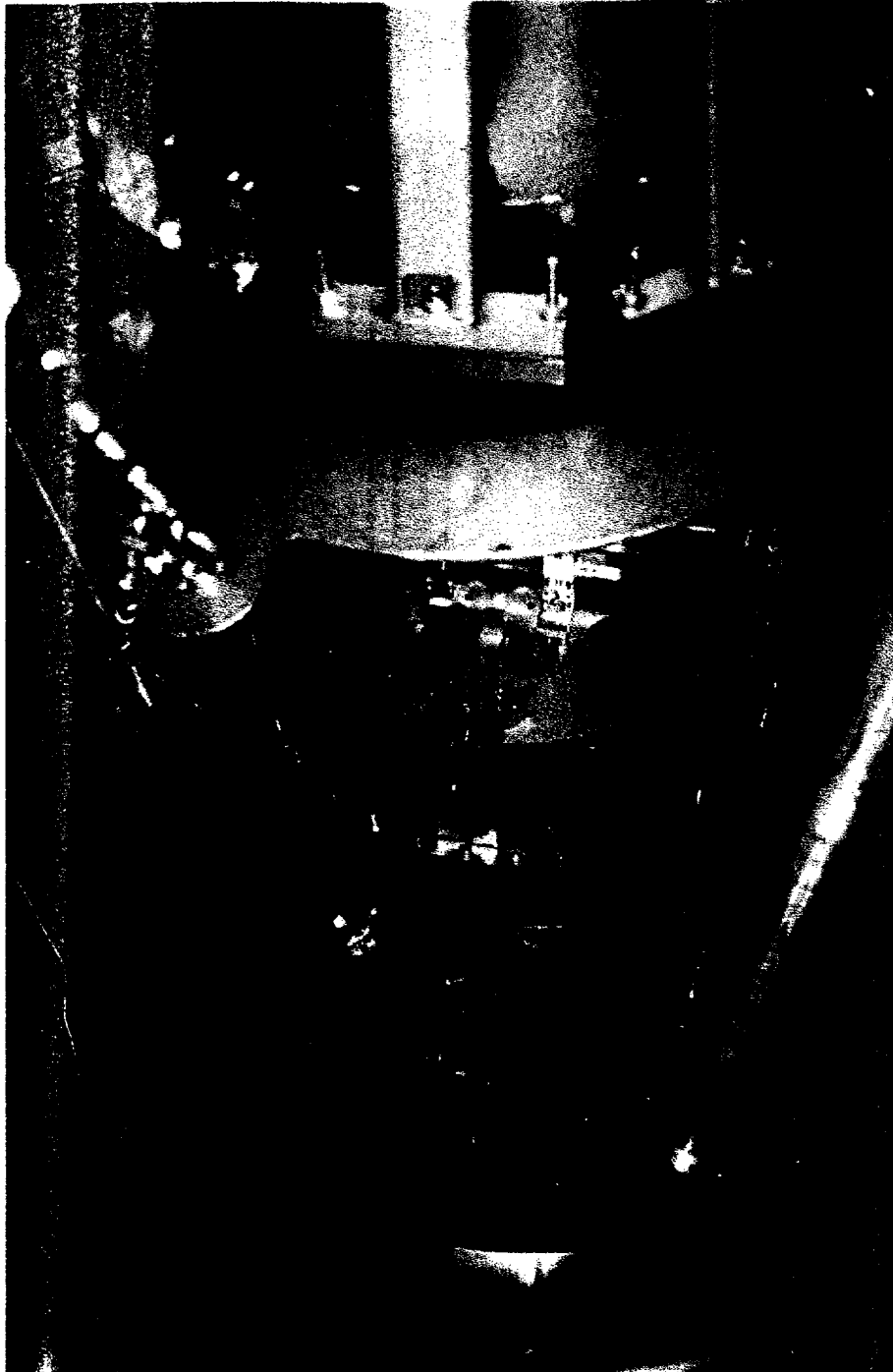
The VIRGO Suspension System



Seismic Filters



Suspension construction





Last Stage Suspension

Suspension Cable
(to Filter 7)

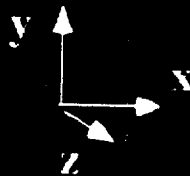
Marionetta



Driving Coils

Reaction Mass

Mirror

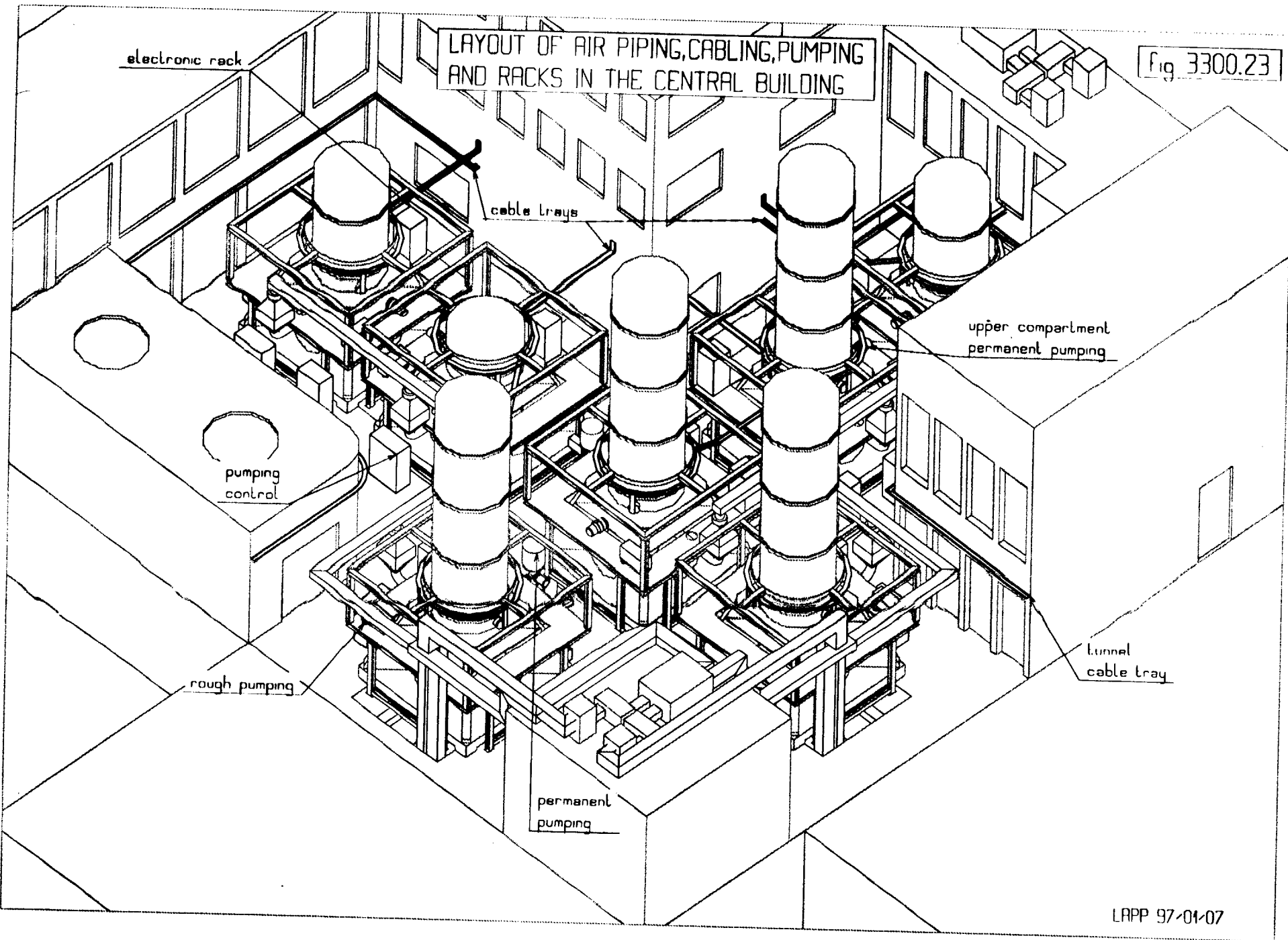


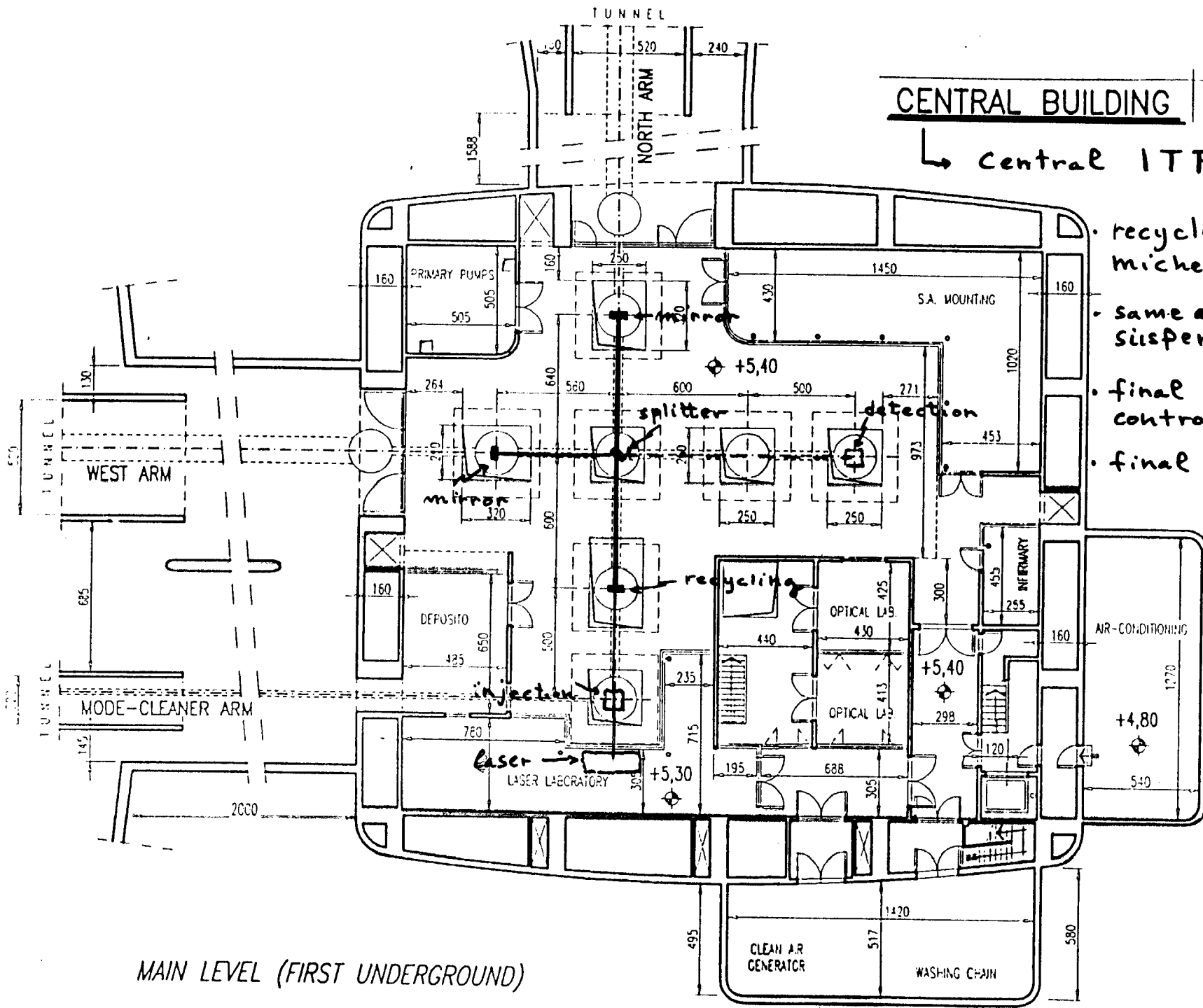
Status and Schedule

- *Infrastructure for central area near completion*
- *Installation of central vacuum chamber and central interferometer start next fall*
- *First test of central interferometer by the end of 1999*
- *First 3 km arm available in 2001*
- *First operation of VIRGO in 2002*

LAYOUT OF AIR PIPING, CABLING, PUMPING
AND RACKS IN THE CENTRAL BUILDING

Fig 3300.23





CENTRAL BUILDING

↳ Central ITF :

- recycled michelson (6m)
- same as final suspensions
- final control
- final DAQ

MAIN LEVEL (FIRST UNDERGROUND)

Note 1, Linda Turner, 08/20/98 12:54:48 PM
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