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Note: **DI-2**

DAΦNE EXPERIMENTAL AREA PRELIMINARY STUDY

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- A) Comments to Detector Technical note No. 002 by Paolo Franzini.
- 1a) The new lay-out of the assembly hall means to destroy completely the Jet target hall and to rebuild a new building, significantly larger and higher, saving only the crane.
 - 2a) The $3 \times 8 \text{ m}^2$ area extending into the Adone hall is intended for a height of 16.5 m. This seems not so easy to realize for two reasons:
 - The first discussed version of the Detector Assembly Hall, saving a significant part of the Jet Target building with an enlargement of about four meters on the west side, would have needed to cut and rebuild $7 \times 7.5 \text{ m}^2$ of reinforced concrete Adone structure; the new proposed lay-out would need to cut and rebuild $8 \times 16.5 \text{ m}^2$ Adone perimeter wall structure. Of course the pivot point for the cable belt was intended, in the first version, at the limit of the Jet target wall.
 - The Adone crane movement, specially foreseen for the machine assembling, able to cover 360 degrees of the ring, would result obstructed by the structure, extending into the Adone hall, whose height would even require to cut the crane rail.
 - 3a) A minor observation is that, in any case, the elongation by 6 m at the west wall would obstruct the Adone main entrance, so that it would be more convenient the elongation at the opposite side.
- B) Before going deeply into a technical solution, under suggestion of G. Vignola, an alternative Detector Assembly Hall lay-out has been preliminary investigated, trying to keep the most of the Detector Group requests.

The boundary conditions were:

- 1b) The DAΦNE rings orientation into the Adone building and the machine orbit level were still not frozen.
 - 2b) The Jet Target hall is a valuable working area, equipped with a 20 tons capacity crane; it would be appreciable to keep it for the DAΦNE future needs.
 - 3b) To reduce structural problems and many complications in modifying the Adone building wall, would bring to saving time and money.
- C) Bearing this in mind there is a first proposal, sketched in Fig. 1, which shows the plane view of the hall, located where, at present, there is the Puls area.
- The Adone wall structure, facing that area, allows to open an easy aperture to bring the detector on the machine orbit, because the reinforced concrete is missing there, and it is replaced by tufa blocks. The width of this window is much larger than needed, the only limit is the height which must be contained in something less than 4 meters to allow an easy passage. This would bring to unbearable complications if the detector height, over the orbit level, should be kept 3 m and another 2 m vertical clearance, or more, should be foreseen for the cable belt. What is the possibility to lower the DAΦNE orbit plan with respect to the Adone floor has been checked: **1.2 m** above the Adone present floor is the orbit minimal height. One has to do the maximum effort to avoid cutting the Adone building structural part. If the cable belt length, allowing the positioning of the detector on the machine orbit, could develop on one side instead on top of the detector, with the DAΦNE orbit laying at 1.2 m above the Adone present floor, the height of the reinforced concrete to be cut over the tufa blocks would be significantly less than half a meter. But, of course, the goal should be not to cut the reinforced concrete at all and this would limit the detector radial extension, all included, to possibly 2.8 meters. In any case one can expect a saving of time and money up to more than 50% in cutting and restoring the Adone wall (rough evaluation) compared to the first investigated solution (Jet target area).
- The sketched solution, (Fig. 1) shows also the synchrotron radiation fans led into the SCOW and PWA buildings. Photon beam lines from two bendings and from a wiggler magnet are involved.
- D) A further investigation concerning the development of the present Adone experimental and servicing area (Fig. 2) has been done from a logistic point of view taking into account the following:
- 1d) Decommissioning of Adone and commissioning of DAΦNE operations (storing areas availability, accessibility, road conditions).

- 2d) Building yards practicability (the possibility to push ahead works in parallel seems to be mandatory: in particular the Puls building demolition and the DAΦNE detector assembly hall construction should not interfere with the Adone decommissioning, the commissioning of the Accumulator Ring for DAΦNE and the new machine component test phase).
- 3d) Availability of a suitable area for the Detector mechanical plants including cryogenics and ambient temperature and humidity control.

Fig. 3 shows a first tentative solution where the most significant changes with respect to the present lay-out are:

- accessibility and road conditions for trucks movement
- reduction of the embankment facing the Jet Target building
- enlargement of the clearance between the Detector building and the present Adone cooling pumps hall (likely could be avoided after a more precise definition of the entire planimetry of this zone)
- utilization of an existing area (to be properly equipped) on the Detector building west side for the above mentioned plants (3d)
- creation of a second access road (already foreseen, has to be completed) for the B area (decommissioning operations zone).

Fig. 1

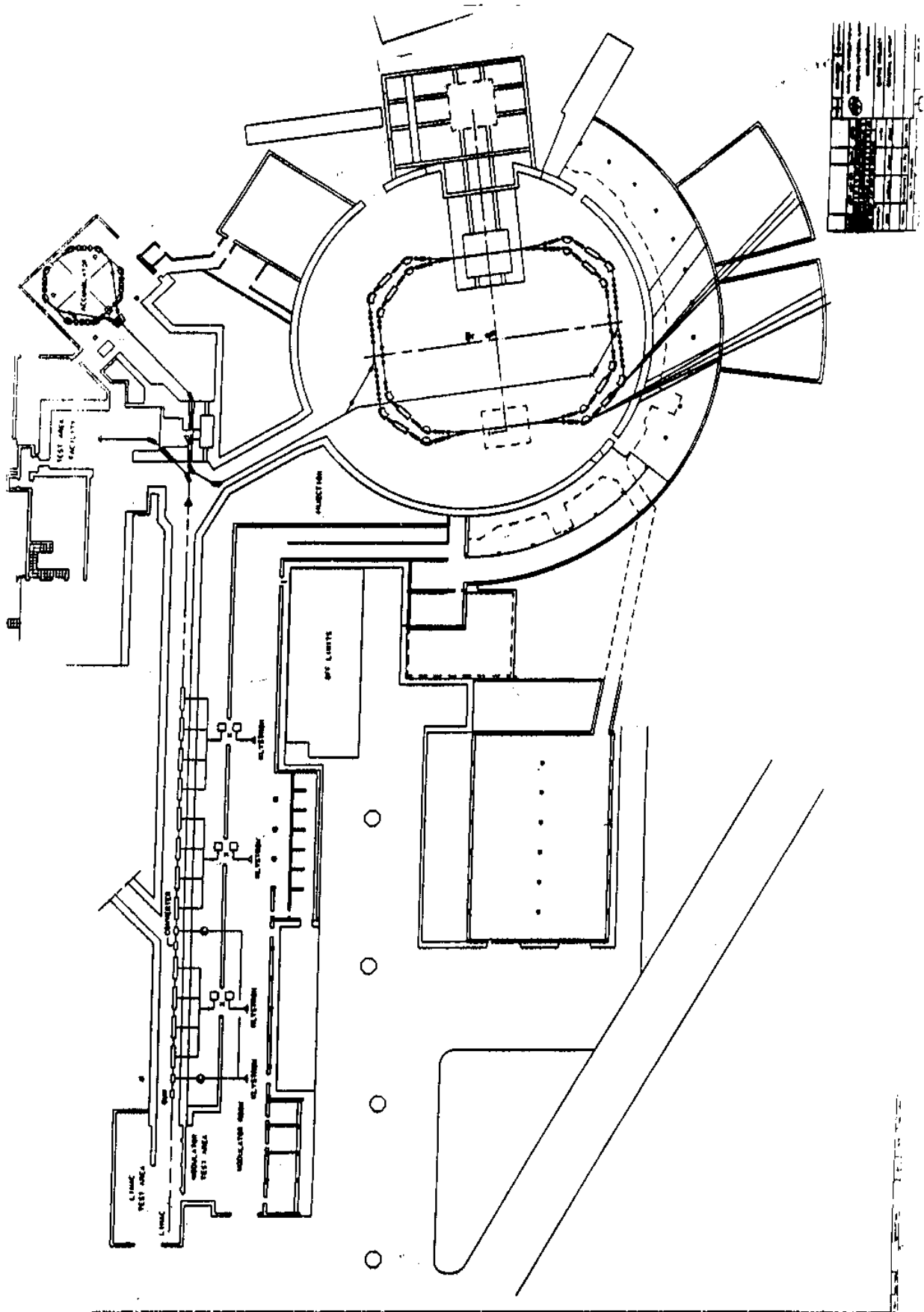


Fig. 2

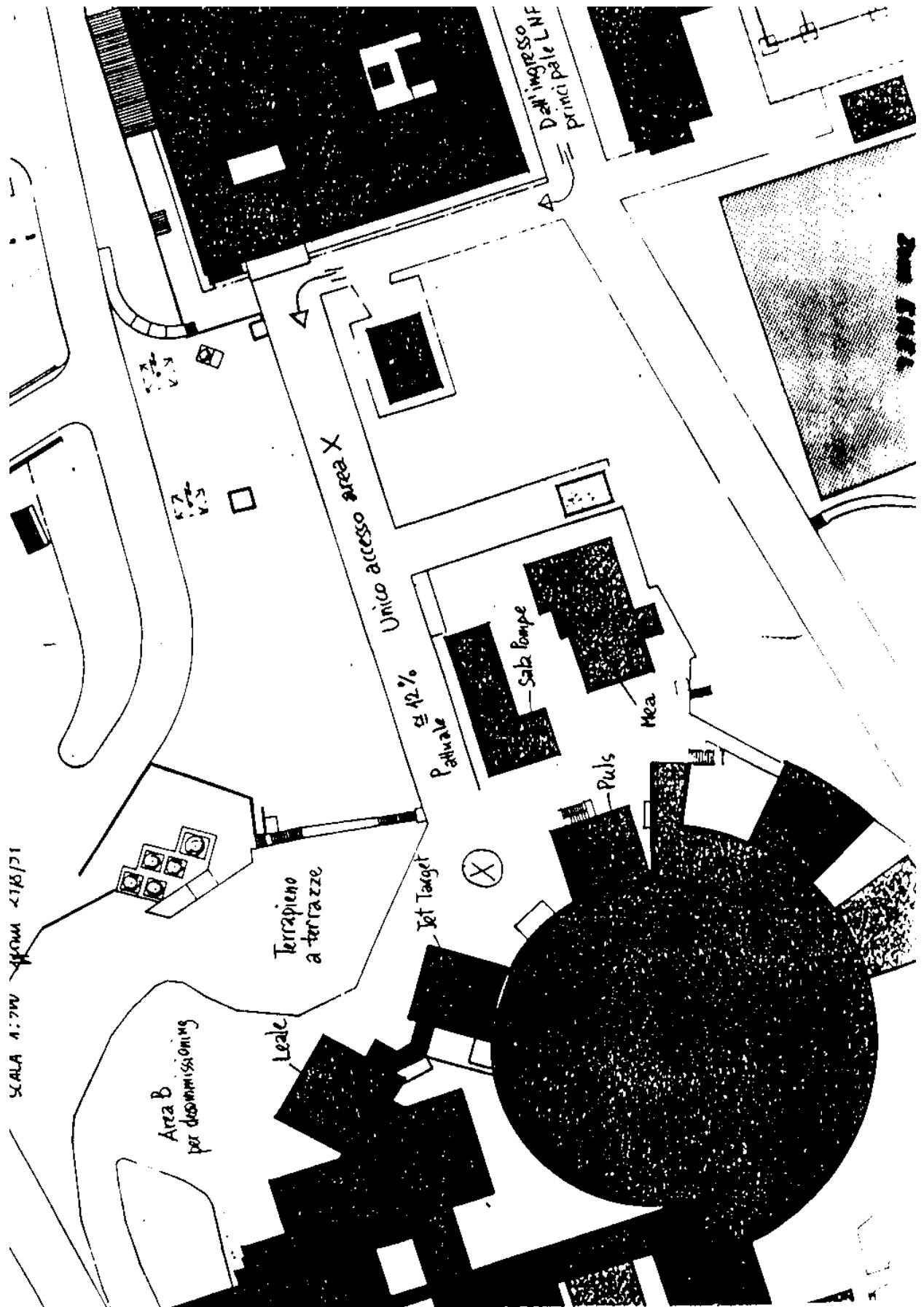


Fig. 3

