

ANSWERS TO THE QUESTIONS CONTAINED IN THE PROTOCOL
OF THE SERPUKHOV MEETING OF 15 - 19 DEC. 1969.

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GENERAL REMARKS

The answers given in this paper refer only to questions in relation with the fast ejection system : They do not refer to the pulsed beam transport, for which a separate answer should be expected.

All the paragraphs of the protocol which are not referred to in this note do not require an answer or a comment according to the opinion of the authors.

1. CONSTRUCTION

1.4 On the subject of the test bank in the pump station, IHEP refers to Soviet construction practice and standards, which are unknown to us. To get an idea we would like to receive a drawing of what IHEP intends to make in replacement of our proposal. Starting from this drawing we will indicate fixation points and methods.

1.5 A floor loading of 400 kg/m^2 has been agreed upon in November 1968 (see Protocol, paragraph 5, V) for the double floors. As we have repeatedly pointed out, IHEP should design a double floor for the ejection equipment rooms consisting of square (or rectangular) metal plates resting on a net of rails; this modular floor should cover the whole ejection equipment room. CERN will cut the double floor wherever it is necessary to rest the equipment on the concrete floor. Therefore, we suggest that IHEP goes ahead with design and construction and sends to CERN drawings for information.

1.6 In order to give a meaning to a discussion of planning during the May 70 meeting, CERN asks IHEP to submit a draft planning by the 15th April 1970. This planning should incorporate into the present line of thinking of IHEP the main features of the planning of Dr. P. Germain (CERN/DIR/PS/PG/jg dated 14.11.68) and H.E.Th. Bakker (CERN-PS/FES/TN-112, dated 11.12.1969).

1.7 Unfortunately we are not in a position to send a list of cables between rooms together with this note. We will do our best to send it in April 1970.

1.8 It is impossible to give a meaningful answer before end 1970.

2. ELECTRICAL SUPPLIES

2.1 Our comments are detailed on enclosed CERN/PS/FES/TN-138 a of 20.3.70, by H.E.Th. Bakker, which includes drawing 315-128-2/1.

2.2 The layout proposed by IHEP is accepted by CERN.

2.3 Fig. 1a gives a plot of the charging current versus time and fig. 1b a plot of capacitor voltage versus time, as observed on a prototype power supply. Similar behaviour is expected on the final supplies. Fig. 1c gives the ohmic power and fig. 1d the reactive power for KM and SM supplies together. The graphs are to be taken as a preliminary approximation of the final charging cycle.

2.4 The proposal of having a common earth connection between the Ejection Equipment room, the EPBT Equ. room and the local control room is accepted. For the straight sections of KM16, SM24, SM26 and SM28, on account of the considerable distance, a connection to the earth of the shielded rooms would be good only for d.c. Connecting the earth of these straight sections to a separate ground near the straight sections themselves would represent a more favourable situation in the regime of large and fast pulses.

2.5 For the ejection system the layout of the equipment in the equipment room and local control room is not frozen yet. It will reach a final form towards the end of 1970. On the other hand, the total length of power cables had been agreed upon in February 1969 with a good reserve.

2.6 We have worked out a proposal for cable installation in the tunnel (see enclosed drawing 315-131-1). Three points are clear from discussions at CERN and with cable manufacturers :

- a) The HV cables must not be closely packed;
- b) They must be almost continuously supported on cable trays and
- c) They must not be buried in concrete.

Therefore, we insist on our proposal for a labyrinth for radiation protection.

2.7, 2.7-1, 2.7-2, 2.7-3, 2.7-4, 2.7-5, 2.7-6 and 2.8

It is felt that the layout of the local control room is a problem which can best be dealt by IHEP where a view of future plans of accelerator operation should become clear. In this spirit we suggest that IHEP makes a detailed proposal for the layout and submits it to CERN before the next joint meeting (May70). On our part we are working towards presenting IHEP with a list of recommendations which reflect CERN experience in beam sharing.

2.9 A sample of filter for multicore cable will be sent to IHEP on about 15 April 1970.

2.10 The enclosed drawing No 315.132.3 gives an estimate of the amount of oil in each bay of the ejection equipment room.

2.12 CERN reiterates the request for

- a) information on dimensional tolerances of cables PK 75-17-11 and PK-75-7-11.

b) a sample 1.5 m long of cable PK-75-17-11.

4. TAP WATER COOLING SYSTEM

4.3 CERN would like to be informed before the 15th April 1970 (this information could be given to Mr. Kournaev) on the reasons why cooling water temperature is as high as 25 to 30°C and not around 15°C, as more usual in similar installations. The temperature of tap water is important not only for cooling of the pump station but also for other equipment, like for instance the terminating resistors for the kicker magnet or the ignitrons for the septum magnet pulse generators. We would also like to know the pressure at which the water is supplied.

5. COMPRESSED AIR

The question is academic. If you install a compressor of 2000 l/m it should be amply sufficient.

6. PUMP STATION

6.1 The answer is contained in the letter of 9th February 1970 sent by B. Kuiper to Dr. K.P. Myznikov. We would also like IHEP to propose a date for test of pipefitter as explained in the same letter and in CERN/PS/FES/TN-112 of 11.12.1969 by H.E.Th. Bakker.

8. INSTALLATION AND SUPPLIES

8.1 We have not received the preliminary drawings as promised.

8.2 The pipe connection between the oil tanks and equipment are being worked on. It is hoped to present a note on this subject at the May 1970 meeting.

9. VACUUM CHAMBER

9.1 Remarks on the proposed design are transmitted with M. Kournaev. (TN-149 and TN-150 by R. Cuénot and letter TN-148 by B. Kuiper).

9.2 The dimensions of the current transformer will be given in April 70. The maximum stray field acceptable at its location is of the order of 200 or 300 gauss.

11. GENERAL

11.1 We refer to points 1) and 2) of our telex No. 575 of 17 March 1970 and insist on receiving a detailed and complete report on the steps taken to improve emittance and range of radial stability and on the success (or lack of it) of each steps. We would like to have this information before 15 April 1970 in order to participate actively in the

discussion on this important point which will take place during the May 1970 meeting.

11.2, 11.3 and 11.5

We are waiting for this information. It would be interesting to have it by 15 April 1970 in order to discuss these points at the May meeting.

11.4 We would like to have comments of IHEP on our proposal.

Annex I

We are studying the details of the proposal for the shielded rooms. We have a favourable impression and we will communicate our comments, if any, at the May meeting.

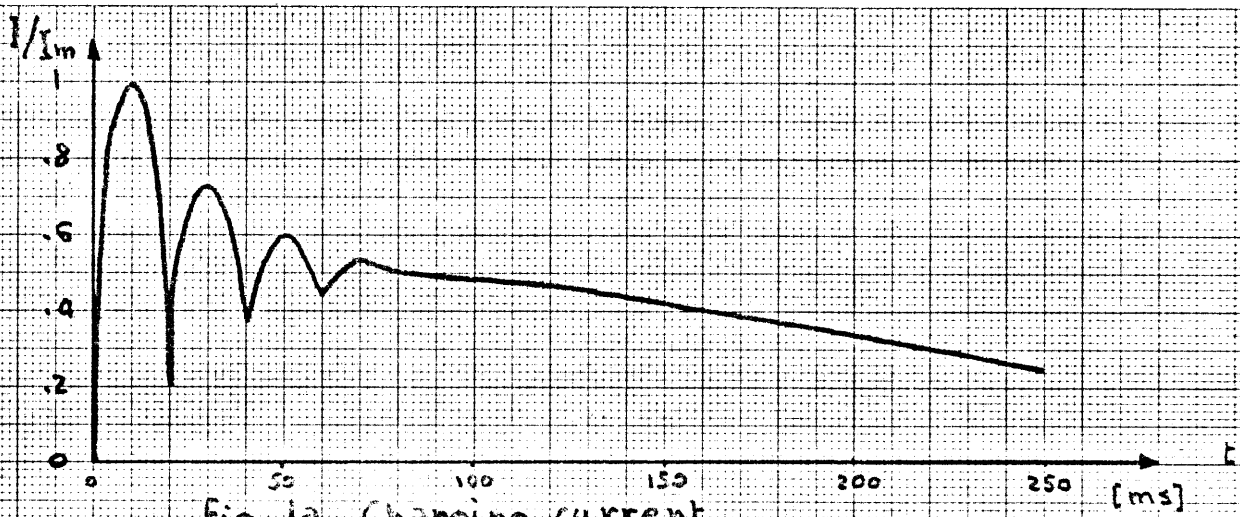


Fig. 1a - Charging current

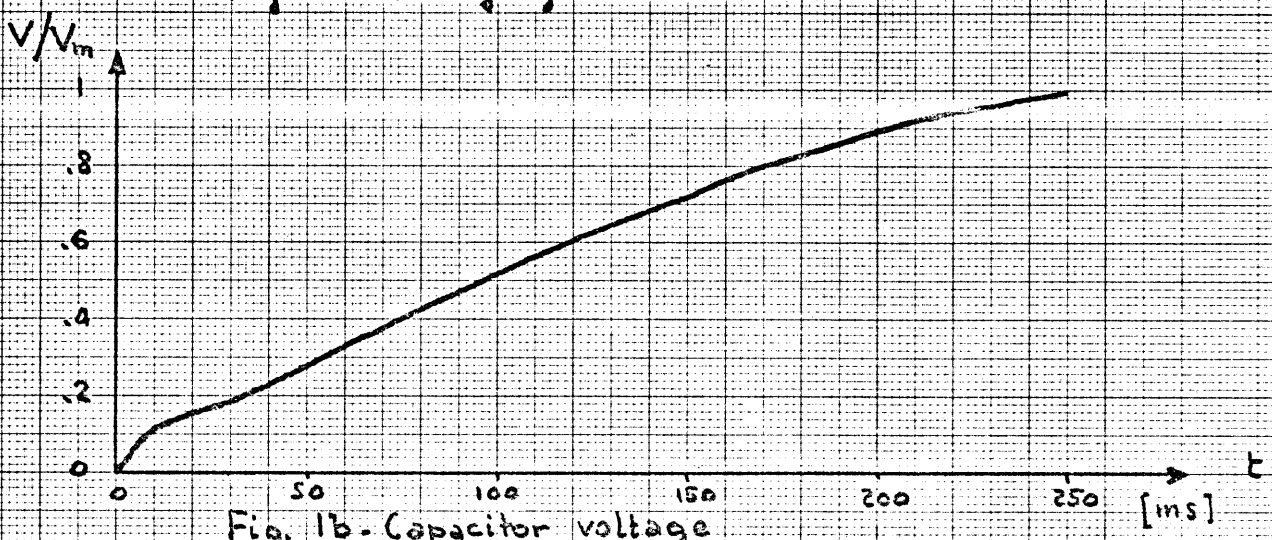


Fig. 1b - Capacitor voltage

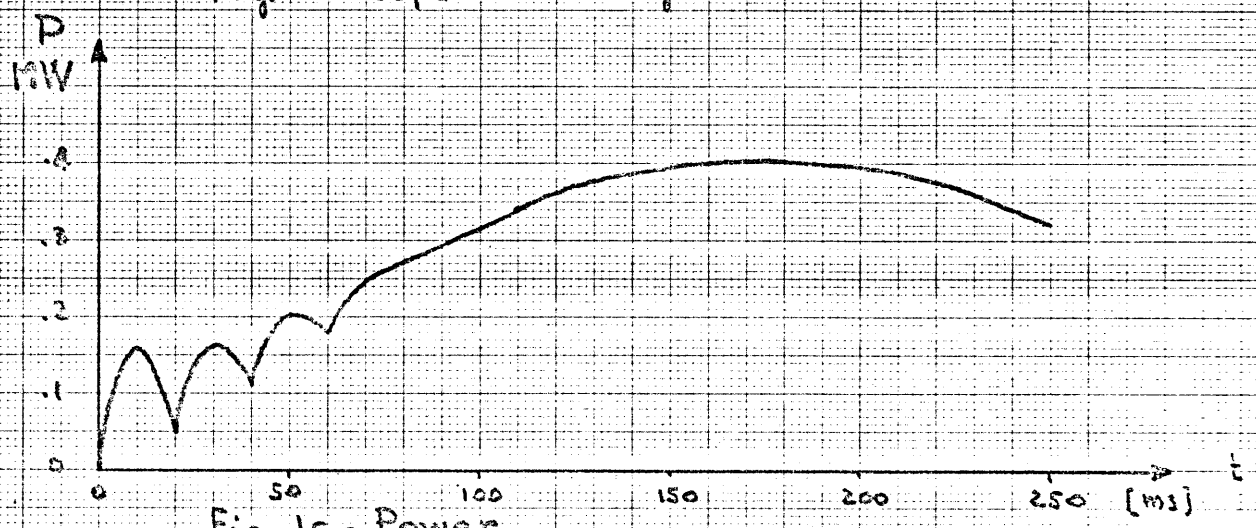


Fig. 1c - Power

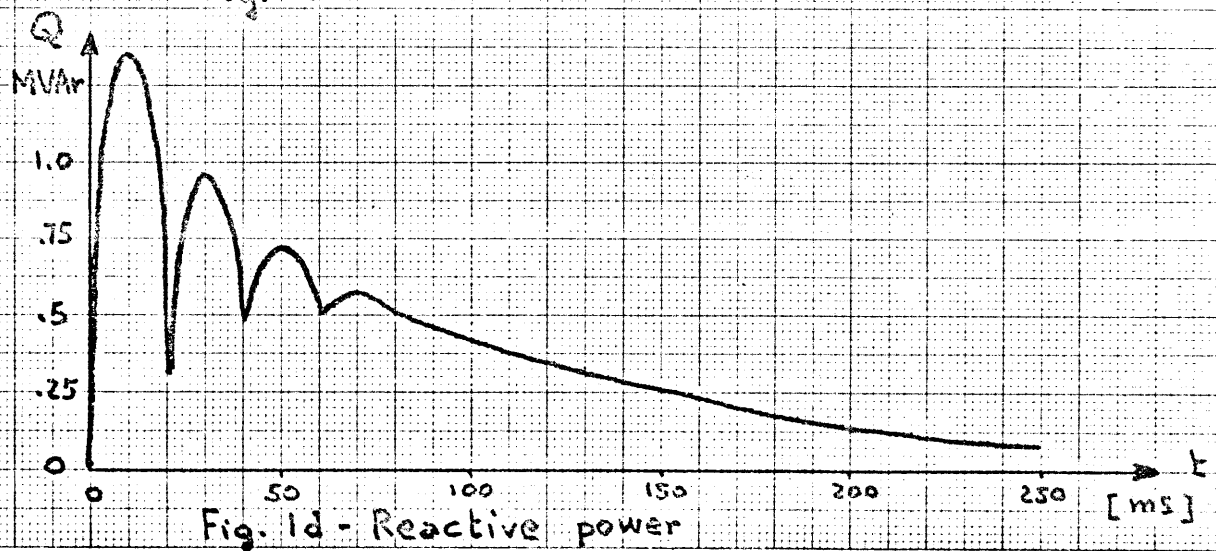
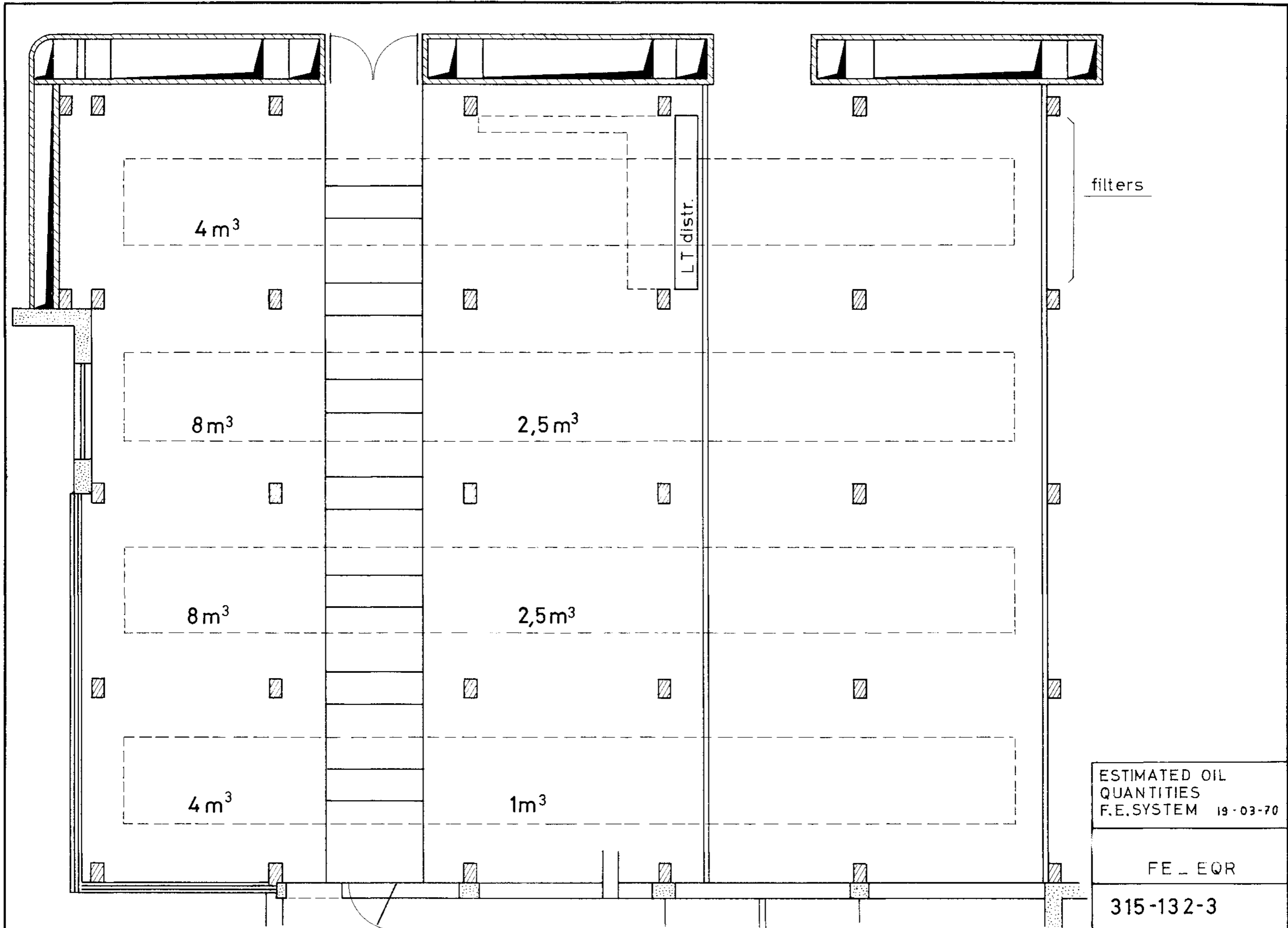


Fig. 1d - Reactive power



ESTIMATED OIL
 QUANTITIES
 F.E.SYSTEM 19-03-70

FE - EQR

315-132-3