

*P H Hambley*

PS/Int. MG 60-38  
9.6.1960

Special Instructions for the Engineer-in-Charge

LONG RUN FOR COUNTER TEAMS

(13.5.60 to 16.6.60)

An up-to-date copy of this will be kept in the "Instructions to E.i.C."

file in the M.C.R.

1. GENERAL.

This long run is scheduled for counter teams to make cross section measurements with liquid hydrogen and other materials.

Two liquid hydrogen targets will be in operation in the South Hall region: one of approximately 100 litres for the group of G.v.Dardel and one of approximately 25 litres for Fidecaro/Merrison's group. The former is inside the South Hall, the latter outdoors along the road.

Each target is enclosed in a ventilated hut and fitted with vent lines as prescribed by CERN Safety Code No.B2 (rev.).

These targets will need refilling with liquid nitrogen and liquid hydrogen at regular intervals, and for this purpose dewars will be kept inside the huts. Additional hydrogen dewars will be stored in the dewar store adjacent to the Linac entrance, so that they can be brought into the two huts as and when necessary. The whole area of the South Hall (central part), Bubble Chamber area and road outside will be treated as a hazardous area and normal hydrogen restrictions shall apply. The "outside" barrier shall be across the road at the corner of the new South Generator Building and will serve also as "radiation" barrier.

2. TRANSPORT AND HANDLING OF DEWARS.

A number of transports of hydrogen dewars is foreseen between the liquifier plant and the local store. In principle the transport will arrive at the "outside barrier" a quarter of an hour before the following times:

Monday 13 :     at 8.00  
                  at the end of the morning, before 12.00  
                  at 17.00  
  
Tuesday 14:     at 10.00  
                  at 17.00

etc., twice a day, until the end of the run.

Each transport will take half an hour at the most and H.Turner, under whose supervision this work will be done, will warn the E.i.C. one hour before a transport is due to arrive at P.S.

When a transport arrives at the "outside barrier" the E.i.C. will give personally permission to the guard to let this go through.

The handling of dewars in the P.S. area shall be done by the following teams of technicians:

	<u>Monday</u>	<u>Tuesday</u>	<u>Wednesday</u>	<u>Thursday</u>
01.00-07.00	—	Perret/Velati	Frachet/Beck	Dozio/Renevey.
07.00-13.00	Frachet/Velati	Dozio/Renevey	Haldemann/Fell	Haldemann/Velati
13.00-19.00	Dozio/Renevey	Haldemann/Fell	Perret/Velati	
19.00-01.00	Haldemann/Fell	Perret/Velati	Frachet/Beck	

N.B.: Frachet, Dozio, Haldemann, Perret on loan from Peyrou's Group.  
Velati from v. Dardel's Group.  
Renevey, Fell from Fidecaro's Group.  
Beck on loan from S.C.

These people will be responsible to the "shift leaders" of the physicists groups, who will ask them to refill the targets or do any other operation connected with liquid hydrogen as and when required.

### 3. SAFETY ARRANGEMENTS.

a) Hydrogen. See 1 and 2.

b) Radiation.

Normal rules for the access to the Ring and the South Hall will be applied. The "hydrogen" hazardous area is also "radiation" hazardous area. The guard at the "outside barrier" will not let anybody in unless on a personal order from the E.i.C. (hydrogen transport).

To allow access to the South Hall in emergency a beam stop-button will be installed near the guard (entrance to the South Hall). This button has to be used only in emergency and the E.i.C. notified about the reason as soon as possible. In any case the beam can be switched on again only by the E.i.C. after receiving notice from the South Hall.

c) Instructions to the guards.

The guards will be provided in due time with appropriate written instructions, copies of which will be given to the E.i.C. and the M.C.R. Operator.

The E.i.C. wearing the badge "E.i.C. - Ingénieur de Service" and/or the M.C.R. operator, wearing the badge "M.C.R. Operator - Opérateur Salle Principale" are responsible for seeing that the guards carry out their written instructions. Only the E.i.C., wearing the badge "E.i.C. - Ingénieur de Service", can give the guard not foreseen instructions, by writing in their order book. Instructions given in this way have to be dated, signed and well defined as regards the validity (e.g. valid only in this occasion, or for 1/2 hour etc.) They have to be written in French.

d) Daily Patrol.

A daily patrol will take place in the Ring, mainly to check the correct behaviour of the equipment.

This patrol will start at 10 a.m. on Tuesday 14th and Wednesday 15th and will last about 30 minutes. It will consist of 3 operators, 2 of the R.F. section and one of the Magnet/Vacuum section. All the people wishing to enter the Ring and South Hall during this time should call at the E.i.C. not later than 9.45 a.m. Machine Operators and Experimenters will be reminded about this through announcements at 9.30 a.m.

In particular, one of the dewars transports should be made at this time.

4. USERS AND SHIFT LEADERS.

Main "users" will be alternately the groups of G.v.Dardel and Fidecaro/Merrison, as follows:

Monday 13 :	13.00 - 24.00 :	G.v. Dardel (South Hall)
Tuesday 14:	00.00 - 12.00 :	G.Fidecaro (Counting Room)
	12.00 - 24.00 :	G.v.Dardel (South Hall)
Wednesday 15:	00.00 - 12.00 :	G.Fidecaro (Counting Room)
	12.00 - 24.00 :	G.v.Dardel (South Hall)
Thursday 16 :	00.00 - 08.30 :	G.Fidecaro (Counting Room)

Each group will have a "shift leader" responsible for the experiments, including the respective hydrogen target, starting their duty at the following times:

<u>v.Dardel's Group:</u>	Monday	Tuesday	Wednesday	Thursday
01.00	--	v.Dardel	Milburn	Frisch
07.00	v.Dardel	Milburn	Frisch	v.Dardel
13.00	Milburn	Frisch	D.Dardel	
19.00	Frisch	v.Dardel	Milburn	

Fidecaro/Merrison's Group: Fidecaro the whole time (in his absence: Merrison).

"Hydrogen Safety Monitors" are: Frisch (v.Dardel Group)  
Fidecaro (Fidecaro/Merrison Group)

5. BEAM LAYOUT (an up-to-date drawing is posted up in the M.C.R.)

The main beams to be used will be two charged beams, one for v.Dardel and one for Fidecaro, both issuing from the target in straight section No.1.

Details as follows:

G.v.Dardel: Analysing magnet (6-block magnet) inside ring. Four quadrupoles inside ring. All fed by BBC generator in Power House, with remote control of polarity and current intensity from the racks of v.Dardel. Cooling partly from water mains (quadrupoles) and from special pump (magnet).

G.Fidecaro: Analysing magnet (P.S., 2 metres) inside ring, fed by Ramm's generator in South Hall. Six quadrupoles (four in ring, 2 outside South Hall) fed by S.C. generator via long cables to P.S. Cooling all by water mains. Remote control of polarity and current intensity for analysing magnet, from racks in counting room.

Other groups will parasite with beams also issuing from the same target as follows:

A.Lundby/W.C.Middelkoop: Neutral beam ( $0^{\circ}$ ) with sweeping magnet in South Hall, fed by a rectifier nearby. Cooling by water from the mains. Analysing magnet in South Hall, fed by a generator from S.C., via long cables to P.S. Cooling by water from the mains.

G.Cocconi/W.Gibson: Scattered proton beam (Berne beam) in South Hall.

6. MACHINE BREAKDOWNS.

In case of Machine breakdown (no internal accelerated beam) the users have to be informed as soon as possible (see "Announcements to Experimenters") and kept informed on the foreseen OFF time.

Unless otherwise specified, all the people on duty must not leave their normal positions without a specific permission by the Engineer-in-Charge.

The shift arrangement is in principle independent of Machine or Experimental Apparatus state; that means that the people on duty have to turn up at the appropriate time, irrespective of the running conditions. In the event of a long breakdown, the Engineer-in-Charge has to inform P.H.Standley (or P.Germain if the former cannot be contacted).

7. SPECIAL INSTRUCTIONS.

A book will be left with the E.i.C. entitled "Long Run 13/6 - 16/6. Special E.i.C. Instructions" in which only P.Germain, P.H.Standley, F.Bonaudi, G.Brianti may write unforeseen instructions. These instructions will be signed and dated.

8. FOOD ARRANGEMENT.

Only the normal service for sandwiches is planned (canteen employee coming at 6.00 p.m.). Bigger stocks of drinks will be kept in the M.C.R.

9. TARGETS (CIBLES).

Les cibles à employer pendant l'expérience de longue durée se trouvent dans la section droite No.1 et s'avancent **dens** le faisceau venant de l'extérieur. Suivant la terminologie adaptée il s'agit donc de deux cibles O1.

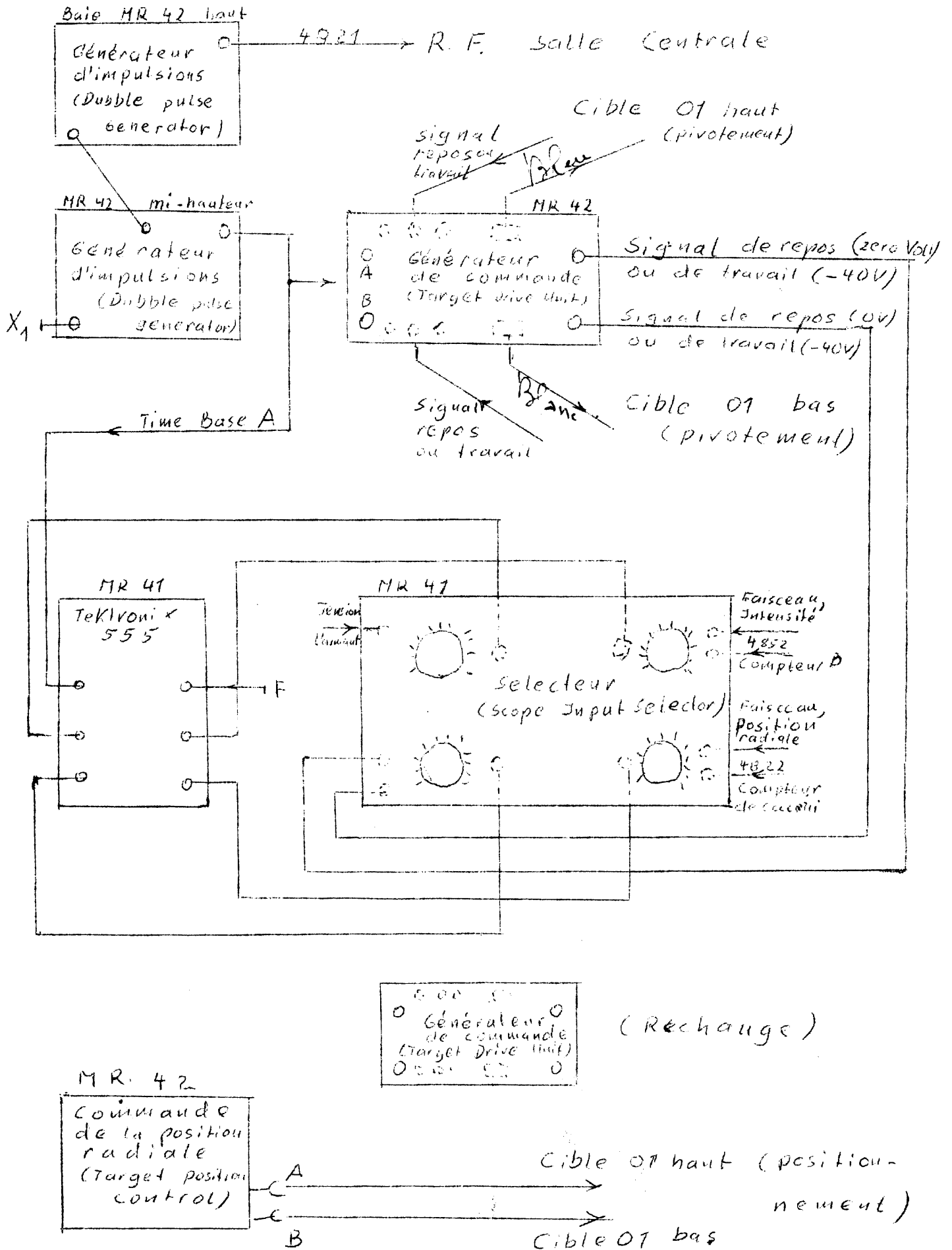
Leur caractéristiques principales sont:

	<u>O1 haut</u>	<u>O1 bas</u>
<u>Cibles installées.</u>		
Matériau	A1	A1
Epaisseur	0,025 mm	0,05 mm
Position radiale	$-(2 \pm 0,25)$ cm	$-(2 \pm 0,25)$ cm
Durée d'impulsion de courant	100 msec	100 msec
Déclenchement du générateur de commande:	$X_1 + (\dots \pm 2)$ msec	$X_1 \pm (\dots \pm 2)$ msec
Ajuster de telle façon que le début du signal position de travail coïncide avec le début du palier du champ magnétique (voir figures ci-après).		
Déclenchement de l'arrêt de l'accélération.	$X_1 + (\dots \pm 1)$ msec	$X_1 \pm (\dots \pm 1)$ msec.
Ajuster de telle façon que le début du signal du compteur coïncide avec le début du palier du champ magnétique (voir figure ci-après) et que la durée du signal du compteur a la valeur spécifiée.		
Durée du signal du compteur	40 msec	30 msec

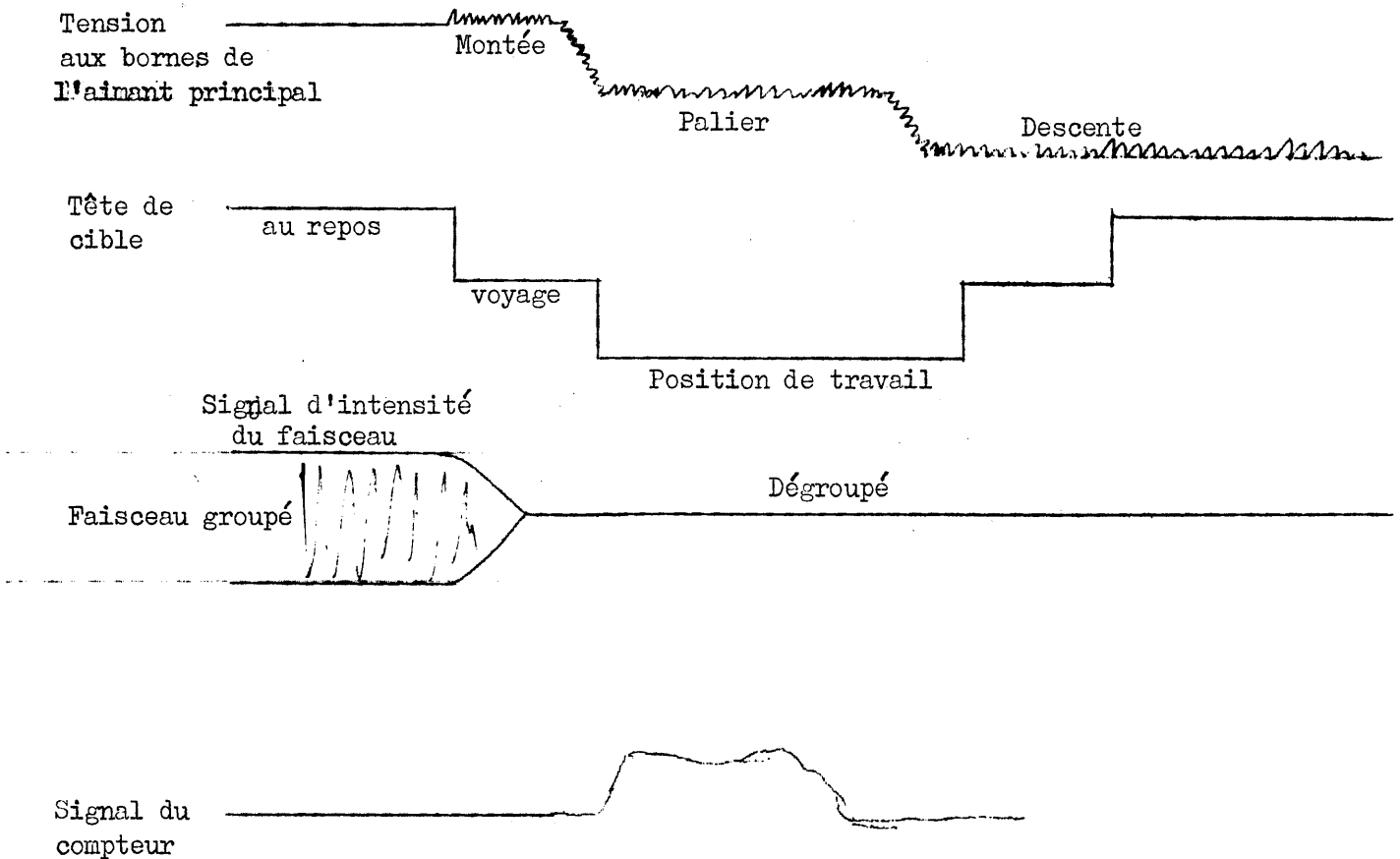
L'unité de cible de rechange:

Mêmes caractéristiques.

Voici le schéma de principe:



Si tout est bien ajusté suivant les indications données au tableau en haut de la baie MR, on doit voir sur l'écran de l'oscilloscope l'image suivant:



Si un réglage s'avère nécessaire, procéder comme suit:

- 1) Contrôler la position radiale de la cible ( $\Delta r = -2$  cm):
- 2) Régler le début du signal position de travail avec le générateur d'impulsions <sup>à mi-hauteur</sup> ~~en haut~~ de MR42.
- 3) Ajuster forme du signal du compteur avec le générateur d'impulsions se trouvant <sup>en haut</sup> ~~à mi-hauteur~~ de MR42.
- 4) Si le dégroupage du faisceau n'est pas complet, faire varier la fréquence  $f_{\infty}$  à la salle du calculateur.

Ad 2) Si l'arrivée du signal "position de travail" est irrégulier ou si le signal de repos réapparaît (contact rebondit) on peut essayer d'ajuster l'accélération de la cible moyennant le bouton pertinent du générateur de commande. Ne pas dépasser la position "max" (position horizontale du bouton). Après ce réglage le générateur d'impulsions doit de nouveau être ajusté.

En cas d'une panne:

- 1) du générateur de commande employer le générateur de rechange; changer les câbles en conséquence;
- 2) d'un générateur d'impulsions employer le générateur de rechange qui se trouve dans le M.C.R. ;
- 3) de l'impulsion  $X_1$  employer le pulse M sortant de l'unité de cadencement standard se trouvant en haut de la baie MR 40 et refaire les ajustages décrits ci-haut;
- 4) de l'alimentation des enroulements polaires raccourcir la montée du champ magnétique à 0,84 sec et refaire les ajustages décrits ci-haut.
- 5) En cas d'autres pannes se référer aux instructions contenues dans le classeur "Cibles" dans le M.C.R.

Ad 3) Choisir la valeur donnée dans le tableau en haut de MR 40.

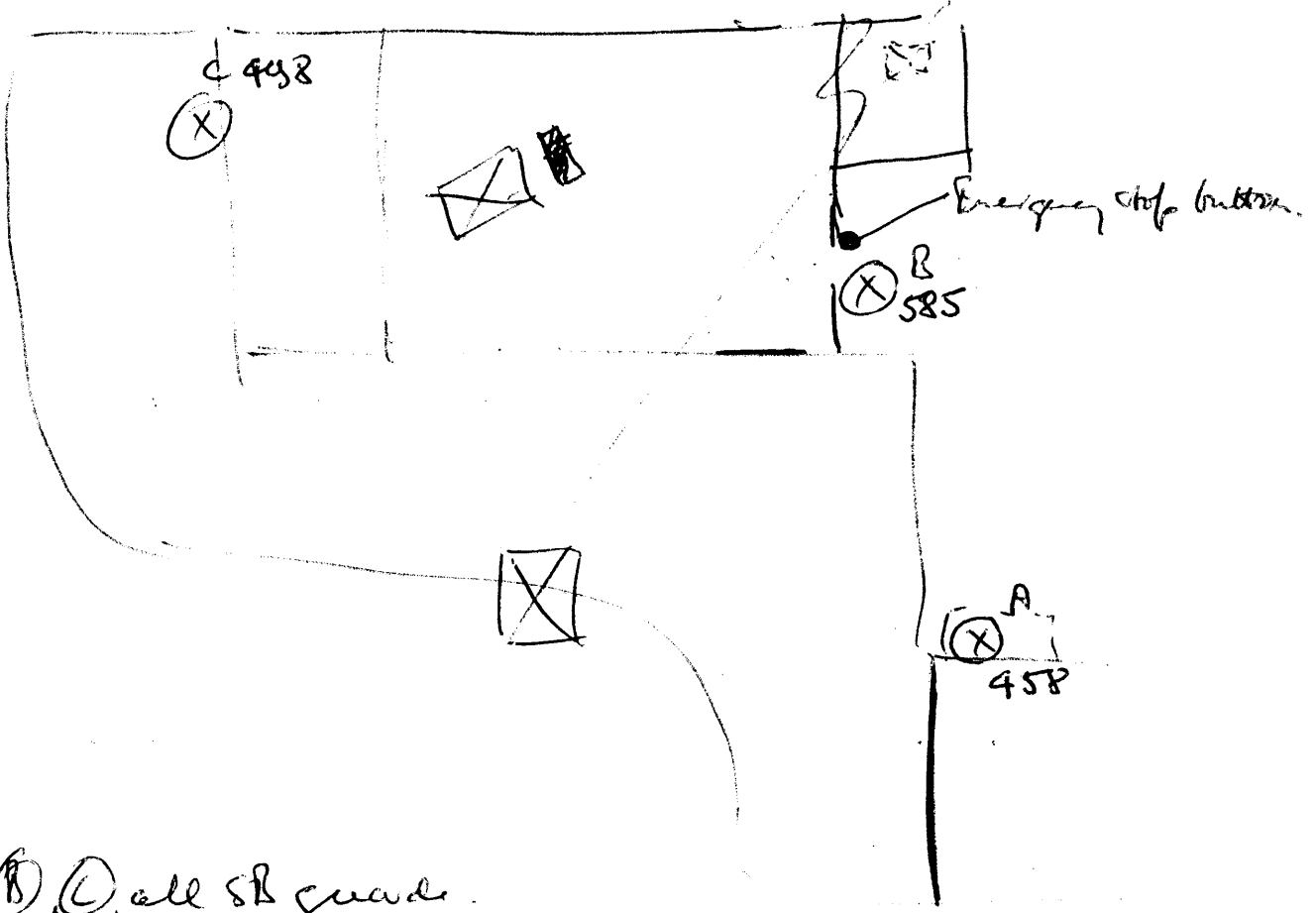
F.Bonaudi  
G.Brianti  
K.H.Reich

Distribution: (open)

Machine Group Committee members  
P.S. Parameter Committee members  
M.G. Operating Staff

MM.	Th.Ball	A.Lundby
	G.Cocconi	W.C.Middelkoop
	G.v.Dardel	A.W.Merrison
	G.Fidecaro	R.Milburn
	H.Filthuth	C.Peyrou
	D.Frisch	H.Turner
	W.Gibson (3)	P.Vosdey (5)
	G.Leskens	F.A.R.Webb (5)





(A), (B), (C), all SB guards.

(A) No one can pass except under PIC personal instruction

(C) ----- except Deacon transports.

(B) For ----- with (a) brass tally  
 (b) direct instruction from PIC  
 (c) emergency - ~~the~~ ~~all~~ ~~the~~ Push off button.

Von Dandel

Entry & exit with beam off. PIC's responsibility.

Max 3

When in hut V.D. telephones back ~~and~~ ~~be~~ before beam goes on. VD's responsibility to stay in hut.

Time equivalent document was not valid for entry in

10 brass tallies for S. Hall entry - kept by S Hall guard on entry

Pidei

Time goes to zero. Put blocks in position. (585)  
 Then can enter.

[Central building down is now in operation]