

TECHNICAL NOTE

MODIFICATION OF THE AA-INJECTION LINE FROM END OF THE TARGET

HALL (DUMP) TO RING SEPTUM MAGNET QDW 1

(A.72.5205/6.0)

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GENERAL :

The existing line had enough space for the beam calculated at the time.

Newer calculations by R. Sherwood showed that the line in place not only has severe restrictions, but scrapes off the beam at various places. A graph by S. Milner compares old and new beam space requirements.

WHAT HAS BEEN DONE ?

As a first stage, the septum vacuum chamber has been adapted.

Then going upstream, new vacuum chambers up to QIN 0095 were designed and made. Installation is foreseen this summer shut-down.

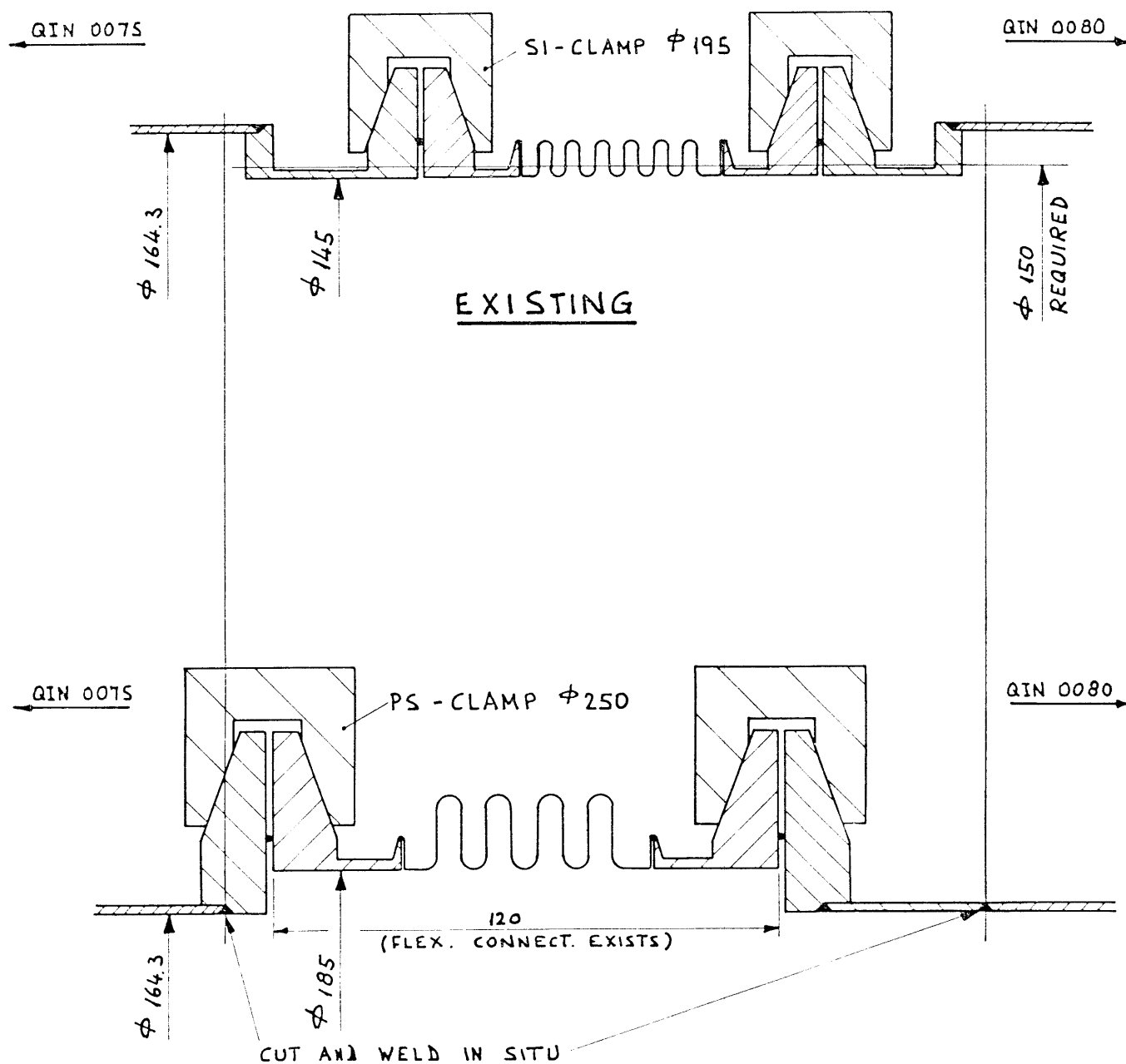
WHAT REMAINS TO BE DONE ?

To establish the conditions needed, it is proposed to do the work in two steps.

Step 1

It is a provisional solution only, but it could be done in the summer shut-down and would remove the two main restrictions :

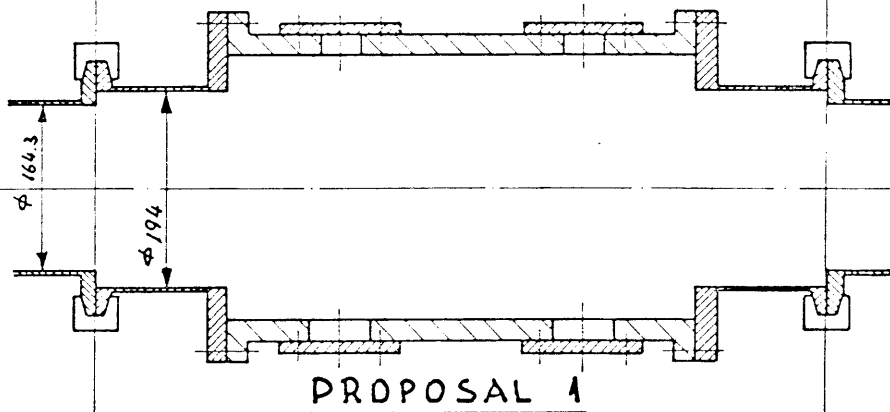
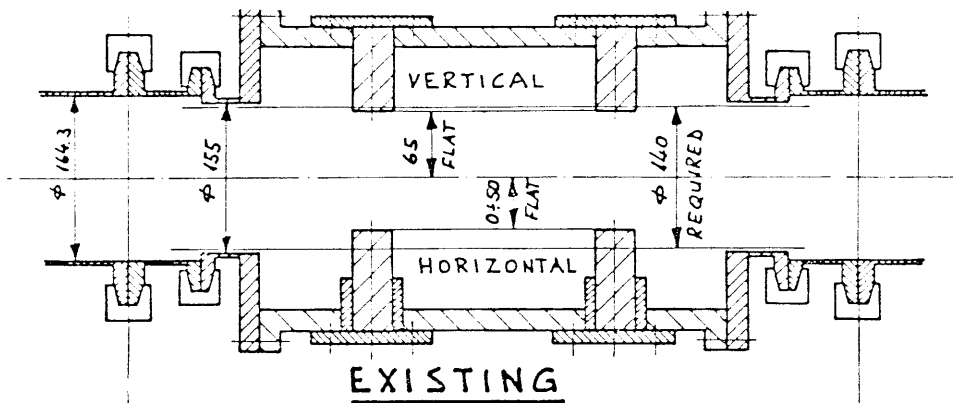
- A) There is a tube in the shielding wall between the target tunnel and the AA-Ring hall surrounded by sand. Its inner diameter limits the vacuum tube components passing through it. In effect, the flanges determine the size of the bellows and its transition pieces.



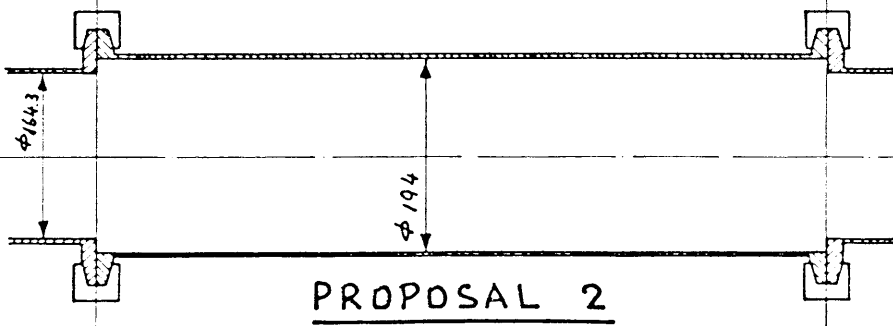
PROPOSED

REMARK: TUBES WILL BE TRAPPED AND HAVE TO BE CUT FOR REMOVAL.

B)



REMARK: VARIABLE COLLIMATOR CAN STAY IN PLACE, BUT FOR BETTER WORKING CONDITIONS (LESS RADIATION) IT SHOULD BE REMOVED.



REMARK: IF VARIABLE COLLIMATOR IS REMOVED, TOP OF CONCRETE SHIELDING HAS TO BE REMOVED.

Step 2

All tubes in and upstream of QIN 0095 to the inside of the target tunnel will be increased from 164,3 I/D to 194 I/D.

In general, it is proposed to use less flanged and flexible connections. Since the magnets have a clearance of 200 diameter only, all the tubes will be trapped.

The manifolds of the vacuum pump group will be cut off and re-used.

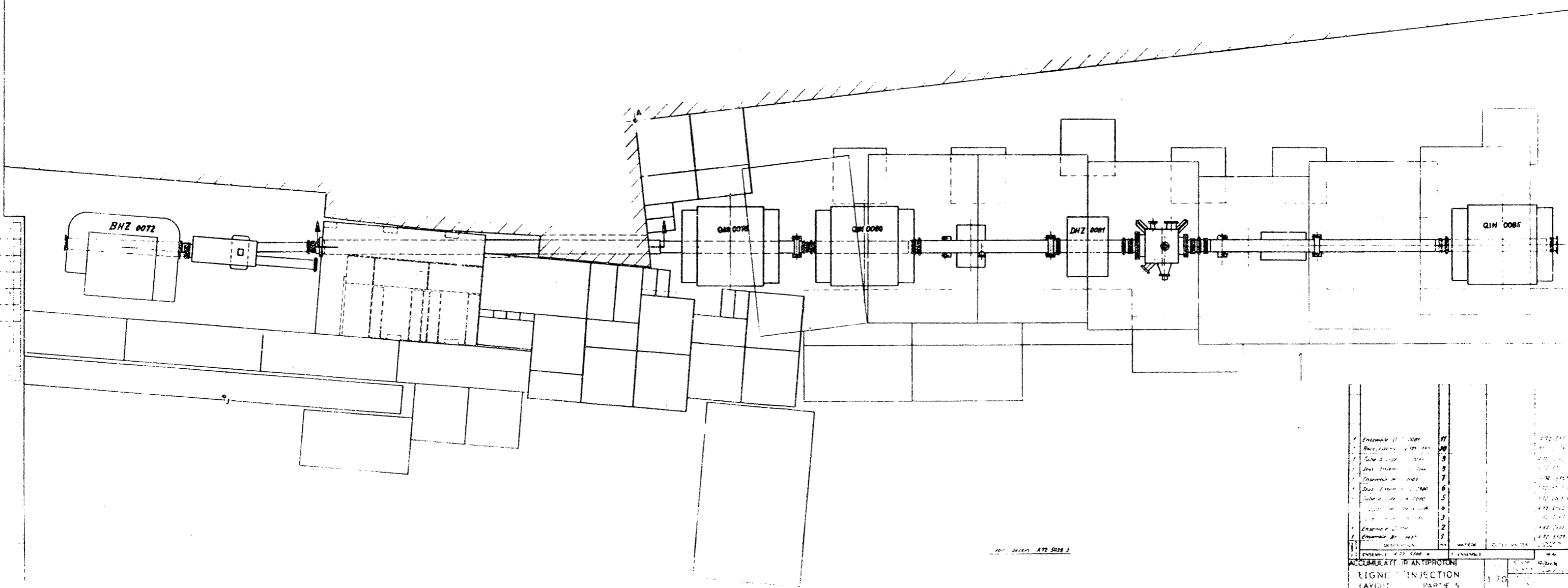
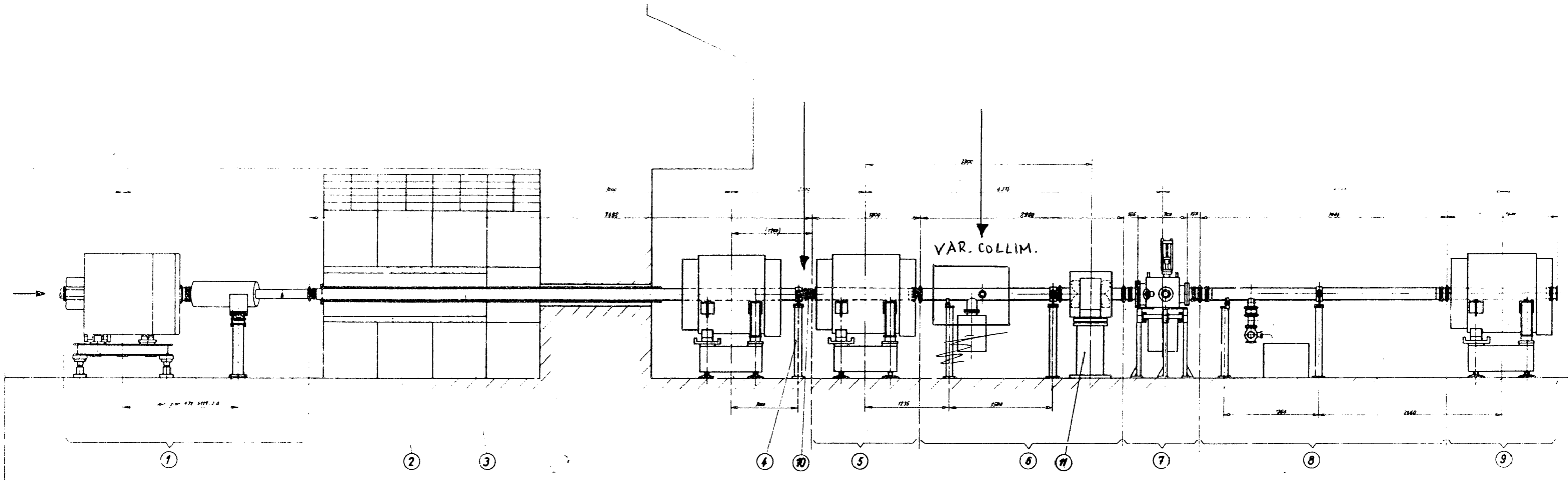
The shielding tube in the wall must also be replaced by a larger one. The existing one has 200 I/D.

To do the job faster and in a more convenient way, the shielding blocks on top of the injection line should be removed in order to use the crane.

Re-alignment of this region seems to be necessary anyway.

An immediate measurement of the radiation along the injection line could give an indication of the obstructions.

It is believed that this work could be done in the october shutdown provided that we can find the bellows needed.



1	Ensemble de 2000	17	172 8112
2	Ensemble de 1000	18	172 8113
3	Tube de 1000	19	172 8114
4	Tube de 1000	20	172 8115
5	Ensemble de 1000	21	172 8116
6	Ensemble de 1000	22	172 8117
7	Ensemble de 1000	23	172 8118
8	Ensemble de 1000	24	172 8119
9	Ensemble de 1000	25	172 8120
10	Ensemble de 1000	26	172 8121
11	Ensemble de 1000	27	172 8122
12	Ensemble de 1000	28	172 8123
13	Ensemble de 1000	29	172 8124
14	Ensemble de 1000	30	172 8125
15	Ensemble de 1000	31	172 8126
16	Ensemble de 1000	32	172 8127
17	Ensemble de 1000	33	172 8128
18	Ensemble de 1000	34	172 8129
19	Ensemble de 1000	35	172 8130
20	Ensemble de 1000	36	172 8131
21	Ensemble de 1000	37	172 8132
22	Ensemble de 1000	38	172 8133
23	Ensemble de 1000	39	172 8134
24	Ensemble de 1000	40	172 8135
25	Ensemble de 1000	41	172 8136
26	Ensemble de 1000	42	172 8137
27	Ensemble de 1000	43	172 8138
28	Ensemble de 1000	44	172 8139
29	Ensemble de 1000	45	172 8140
30	Ensemble de 1000	46	172 8141
31	Ensemble de 1000	47	172 8142
32	Ensemble de 1000	48	172 8143
33	Ensemble de 1000	49	172 8144
34	Ensemble de 1000	50	172 8145
35	Ensemble de 1000	51	172 8146
36	Ensemble de 1000	52	172 8147
37	Ensemble de 1000	53	172 8148
38	Ensemble de 1000	54	172 8149
39	Ensemble de 1000	55	172 8150
40	Ensemble de 1000	56	172 8151
41	Ensemble de 1000	57	172 8152
42	Ensemble de 1000	58	172 8153
43	Ensemble de 1000	59	172 8154
44	Ensemble de 1000	60	172 8155
45	Ensemble de 1000	61	172 8156
46	Ensemble de 1000	62	172 8157
47	Ensemble de 1000	63	172 8158
48	Ensemble de 1000	64	172 8159
49	Ensemble de 1000	65	172 8160
50	Ensemble de 1000	66	172 8161
51	Ensemble de 1000	67	172 8162
52	Ensemble de 1000	68	172 8163
53	Ensemble de 1000	69	172 8164
54	Ensemble de 1000	70	172 8165
55	Ensemble de 1000	71	172 8166
56	Ensemble de 1000	72	172 8167
57	Ensemble de 1000	73	172 8168
58	Ensemble de 1000	74	172 8169
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66	Ensemble de 1000	82	172 8177
67	Ensemble de 1000	83	172 8178
68	Ensemble de 1000	84	172 8179
69	Ensemble de 1000	85	172 8180
70	Ensemble de 1000	86	172 8181
71	Ensemble de 1000	87	172 8182
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74	Ensemble de 1000	90	172 8185
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79	Ensemble de 1000	95	172 8190
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81	Ensemble de 1000	97	172 8192
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87	Ensemble de 1000	103	172 8198
88	Ensemble de 1000	104	172 8199
89	Ensemble de 1000	105	172 8200
90	Ensemble de 1000	106	172 8201
91	Ensemble de 1000	107	172 8202
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103	Ensemble de 1000	119	172 8214
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107	Ensemble de 1000	123	172 8218
108	Ensemble de 1000	124	172 8219
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224	Ensemble de 1000	240	172 8335
225	Ensemble de 1000	241	172 8336
226	Ensemble de 1000	242	172 8337
227	Ensemble de 1000	243	172 8338
228	Ensemble de 1000	244	172 8339
229	Ensemble de 1000	245	172 8340
230	Ensemble de 1000	246	172 8341
231	Ensemble de 10		

