

EUROPEAN ORGANIZATION FOR NUCLEAR RESEARCH

PROGRAMME OF ACCEPTED EXPERIMENTS

CERN INTERSECTING STORAGE RINGS
May 1973.

Table 1 : ISR Experiments running or accepted

Table 2 : ISR Experiments completed at May 1973

Figures : 1. General Layout of Experiments at the ISR
2. Layout of Intersection 1
3. Layout of Intersection 2
4. Details of Experiments R-201 and R-203
5. Layout of Intersection 4 with the SFM facility
6. Elevation view of the SFM facility
7. Sketch of the MWPC system for the SFM facility
8. Layout of Intersection 6
9. Layout of Intersection 7
10. Layout of Intersection 8
11. Details of Experiment R-802.

L. Di Lella
ISR Co-ordinator.

Table 1
ACCEPTED CERN ISR EXPERIMENTS

Area	Expt. Code	ISRC Reference Number	Description of Experiment	Composition of group	Date of NRC Acceptance	Status
1-1	R-105	CERN/ISRC/72-13, Add. 1 and Add.2	To measure high transverse momentum charged particles and neutral pions	CERN-Columbia-Rockefeller-Saclay collaboration: <u>Banner</u> , <u>Blumenfeld</u> , <u>Büsser</u> , <u>Camilleri</u> , <u>Chèze</u> , <u>Cool</u> , <u>Di Lella</u> , <u>Hamel</u> , <u>Lederman</u> , <u>Pansart</u> , <u>Pope</u> , <u>Rothenberg</u> , <u>Segler</u> , <u>Smith, A.M.</u> , <u>Stirling</u> , <u>Teiger</u> , <u>Zaccone</u>	NRC 85 5.11.1969	In Production. Lead glass array to be added during May-June shut-down

Table 1 (cont'd)
ACCEPTED CERN ISR EXPERIMENTS

Area	Expt. Code	ISRC Reference Number	Description of Experiment	Composition of Group	Data of NPRC Acceptance	Status
1-2	R-201	CERN/ISRC/69-5 and Add.1-5 CERN/ISRC/69-9	Particle production at small angles	CERN-Holland-Lancaster-Manchester Collaboration: Albrow, Barber, Brooks, Bogaerts, Bosnjakovic, <u>Erné, Sens</u> , Clegg, Locke, Loebinger, Gee, Murphy, Rudge, Timmer	NPRC 84 4.7.1969	Taking data
1-2	R-203	CERN/ISRC/69-2; 69-3; CERN/ISRC/69-44; CERN/ISRC/70-32; CERN/ISRC/71-9	Inclusive production of high momentum particles in proton-proton collisions at the ISR	The collaboration mentioned below, and the Scandinavian Coll.: Alper, <u>Bøggild</u> , Booth, Carroll, Damgaard, Von Dardel, Duff, Jackson, <u>Jarlskog</u> , Klovning, Leistam, Lillethun, <u>Prentice</u> , <u>Quarrie</u> , Weiss, Manning, <u>Ølgaard-Nielsen</u>	NPRC 84 4.7.1969	Taking data till end'73
1-2	R-204	CERN/ISRC/69-3 and Add.1+2	Measurement of muons with large transverse momentum as a search for the intermediate vector boson	British Universities: Jeffs, Leechikwong, Lintern, <u>Pitts</u> , <u>Sharp</u> , <u>Sharrock</u>	NPRC 84 4.7.1969	Taking data

Table 1 (cont'd)
ACCEPTED CERN ISR EXPERIMENTS

Area	Expt. Code	ISRC Reference Number	Description of Experiment	Composition of Group	Date of NPRC Acceptance	Status
I-4	R-401	CERN/ISRC/69-14 and Add. 1-3	Isobar production at ISR energies (with the forward part of the SFM detector and additional n-, trigger- and monitor counters). Special MWPC's for the compensator magnet are added for the standard set-up (built in Vienna)	CERN-Hamburg-Orsay-Vienna (CHOV) Collaboration: Neuhofer, Regler, Schmidt-Parzefall, Winter, Brandt, Flügge, Niebergall, Schubert K.R., Schumacher, Aubert, Broll, Coignet, Favier, Massonnet, Vivargent, Bartl, Dibon, Gottfried	NPRC 83 4.7.1969	Final tests of additional equipment for SFM and analysis programmes
I-4	R-403T	CERN/ISRC/70-5	S.F.M. test	S.F.M. detector group : Charpak, Fischer H.G., Drijard, Della Negra, Flügge, Frehse, Gottfried, Innocenti, Minten, Schwille, Wegener	NPRC 95 3.2.1971	To be restarted after magnet installation: July 1973

T = Test Experiment

Table 1 (cont'd)

ACCEPTED CERN ISR EXPERIMENTS

Area	Expt. Code	ISRC Reference Number	Description of Experiment	Composition of Group	Date of NPRC Approval	Status
1-4	R-406	CERN/ISRC/70-31 and Add. 1 and 2	Search for new particles at the ISR (Using Split Field Magnet)	CERN-Bologna Collaboration: Bollini, Alles-Borelli, Brunini, Giusti, Monari, Rimondi, Valenti, <u>Massam</u> , Palmonari, Zichichi	NPRC 110 30.8.1972	No time allocation yet
1-4	R-407	CERN/ISRC/71-30 and Add.1	Two particle correlations in the fragmentation region using the SFM	CERN-Hamburg-Karlsruhe Collaboration: Jeanke, Köbberling, Mintz, Isenbeck, Schmidt, Zeller, <u>Wegener</u> , Schopper	NPRC 110 30.8.1972	No time allocation yet
1-4	R-408	CERN/ISRC/71-34	To measure inelastic proton-proton scattering at the ISR	<u>Charpak</u> , Drijard, Durwoodie, Fischer Innocenti, Minten	NPRC 110 30.8.1972	No time allocation yet
1-4	R-410	CERN/ISRC/71-37, CERN/ISRC/72-7 and Add.1-3	Study of particle correlations at large angles	MIT-Orsay-Scandinavian Collaboration: Burger, <u>Chen</u> , Ting, <u>De Bouard</u> , Favier, Smith, Bøggild, von Dardel, <u>Jariskog</u> , Lillethun	NPRC 110 30.8.1972	No time allocation yet
1-4	R-411	CERN/ISRC/72-23	Double Isobar Production at the ISR to study $p+p \rightarrow (\rho^+\pi^-) + (\rho^+\pi^-)$	Pavia-Princeton Collaboration: Cavalli-Sforza, Coyne, Dolfini, <u>Goggi</u> , Mantovani, O'Neil, Piazzoli, Ratti, Scannicchio	NPRC 112 1.11.1972	No time allocation yet

Table 1 (cont'd)
ACCEPTED ISR EXPERIMENTS

Area	Expt. Code	ISRC Reference Number	Description of Experiment	Composition of Group	Date of NPRC Acceptance	Status
1-1	R-602 Phase II.	CERN/ISRC/69-19, and Add. 1-3	Measurement of elastic scattering cross section beyond the Coulomb interference region. Search for "Quarks" at small angles	CERN-Aachen-Genova-Harvard-Munich Collaboration: Ellis, Naroska, Rubbia, Strolin; Baksay, Boehm, Foeth; Bozzo, de Zorzi, Sette;	NPRC 83 4.7.1969	Apparatus in common to both experiments being installed
1-6	R-603	CERN/ISRC/71-45 and Add.1	Inclusive Measurement of Multiparticle Hadron Systems (Δ^{++})	CERN- Aachen(III.Phys.Inst.)- UCLA- Harvard Univ. - Univ.of Genova(+INFN)- Univ.of Munich Collaboration: Ellis, Kernan, Muller F., Naroska, Rubbia, Strolin; Baksay, Boehm, Foeth; Drickey, Lockman, Medinnis, Meyer T., Rander, Schlein, Webb; Losecco, Kozanecki, Sulak; Bozzo, de Zorzi, Setti; Staude	NPRC 104 2.2.1972	

Table 1 (cont'd)
ACCEPTED CERN ISR EXPERIMENTS

Area	Expt. Code	ISRC Reference Number	Description of Experiment	Composition of Group	Date of NPRC Acceptance	Status
1-7	R-701	CERN/ISRC/72-17 CERN/ISRC/72-30 and Add.1, Add.2	Observation of p-p collisions with streamer chambers	CERN-Aachen-Munich Collaboration: Darriulat, Holder, McDonald, Pugh, Tittel, Schneider, Eggert, Thomé, Steiner, Eckardt, Gebauer, Derado, Seyboth, Sanders, Schmitz, Meinke	NPRC 110 30.8.1972	Running (approved until end '73)

Table 1 (Cont'd)
ACCEPTED CERN ISR EXPERIMENTS

Area	Expt. Code	ISRC Reference Number	Description of Experiment	Composition of Group	Date of NPRC Acceptance	Status
1-8	R-801	CERN/ISRC/69-12 and Add.1-5	Measurement of α_{tot} and correlations with counter hodoscopes and luminosity telescope	Pisa-Stony Brook Collaboration: Amendolia, <u>Bellettini</u> , Braccini, Cavasinni, Cerri, <u>Dei Prete</u> , <u>Fca</u> , Giromini, Laurelli, <u>Menzione</u> , Ristori, Sanguinetti, Valdata; <u>Finocchiaro</u> , Grannis, Green D., Kephart, <u>Thun</u>	NPRC 83 4.7.1969	Running
1-8	R-802	CERN/ISRC/71-41 and Add.1+2	Particle production in the forward direction using a magnetic spectrometer and multi-wire proportional chambers	CERN-Rome Collaboration: Allaby, Bartel, Cocconi, Diddens, Dimcovski, Dobinson, Duinker, <u>Wetherell</u> ; Amaldi U., Baroncelli, Bosio, <u>Matthiae</u>	NPRC 107 3.5.1972	Setting up

Table 2
ISR EXPERIMENTS COMPLETED AT MAY 1973

Area	Expt. Code	Description of Experiment	Authors	Completion of Data-taking	Status
1.1	R-101	Emulsion Exposures giving Angular distribution of charged and stopping particles between 35^θ and 90^c	CERN-Cracow-Bucharest-Tata Emulsion Collaboration: Annoni, Cordailat, Czyzewski, Friedländer, Gierula, Gurtu, Haiduc, Herz, Marin, Vicky, Wolter	September 1971	Published in Physics Letters 41B, 2 (1972)
1-1	R-102	a) Study of interactions in which gamma rays and electrons with large transverse momentum are emitted. b) Search for "Quarks" at large angles.	Saclay-Strasbourg Collaboration: Banner, Cheze, Hamel, Stirling, Teiger, Zaccone, Pansart; Bassompierre, Croissiau, Gresser, Morand, Schneegans, Riedinger	April 1972	Phys. Letters
1-1	R-103	Search for Massive Dileptons	CERN-Columbia-Rockefeller Collaboration: Büsser, Camilleri, Di Lella, Placci, Pope, Smith A., Yoh, Zavattini; Blumenfeld, Lederman; Cool, Litt L., Segler	December 1972	Analysis
1-1	R-104T	An Exploratory Experiment on the Search for Multigamma Events	Brookhaven-Grumman-Rome Collaboration: Yuan, Uto, Dell, Doher, Amaldi, Beneventano, Borgia, Pistilli	December 1972	Data being analysed
1-2	R-202	Study of positive and negative particle production in high energy proton-proton collisions at medium and intermediate angles	Argonne-Bologna-Michigan Collaboration: Antinucci, Babcock, Bertin, Bussière, Cappeluppi, D'Agostino-Bruno-Ellis, Giacomelli-Krisch, Maroni, Ratner, Roberts, Rossi, Vannini	September 1971 (Positive particle production). May 1973 (Negative particle production)	Published
1-4	R-404T	Test to search for heavy baryon isomers	CERN-Hamburg-Vienna Collaboration: Dibon, Flügge, Gottfried, Nefkens, Neuhofer, Niebergall, Regler, Schmidt-Parzefall, Schubert, Schumacher, Winter	May 1973	Published in Physics Letters

Table 2
ISR EXPERIMENTS COMPLETED AT MAY 1973

Area	Expt. Code	Description of Experiment	Authors	Completion of Data-taking	Status
1-4	R-402	Search for fractionally charged particles	CERN-Munich Collaboration: Caldwell, Fabjan, Gruhn, Hyams, Sauli, Zahniser, Bott-Bodenhausen, Stierlin, Rochester, Winstein, Tirlor	August 1972	Final analysis being prepared for publication
1-4	R-405	Neutron Production at small angles	CERN-Karlsruhe Collaboration: Engler, Flauger, Gibbard, Monnig, Schopper, Bartel, Schmidt	October 1972	Data analysis
1-5	R-601	p-p small angle scattering and total	CERN-Rome Collaboration: Allaby, Amaldi, Bartel, Biancastelli, Bosio, Coccini, Diddens, Dobinson, Matthiae, Wetherell	December 1972	Published: Physics Letters 43B, 231 (1973) and 44B, 112 (1973)
1-6	R-602	Measurement of the elastic scattering cross section beyond the Coulomb interference region. Search for "Quarks" at small angles	CERN-Aachen-Univ. Calif.-Genova-Harvard-Torino Collaboration: Baksay, Boehm, Bozzo, Di Zorzi, Ellis, Ferrero, Foeth, Maderni, Meyer, Naroska, Pilcher, Rubbia, Schlein, Sette, Staude, Strclin, Sulak, Trippe, Webb	Phase I. For Phase II see p.5.	Published

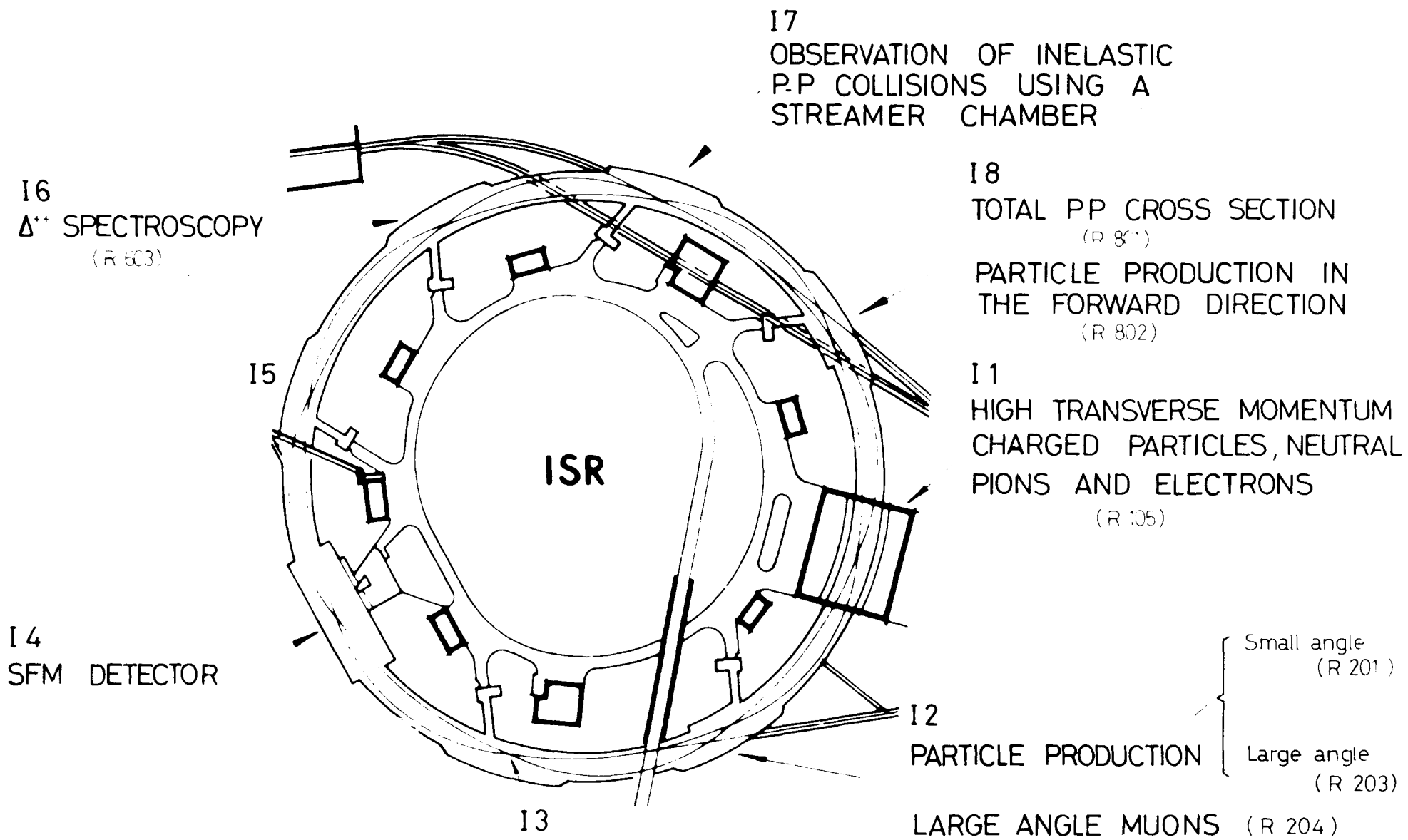
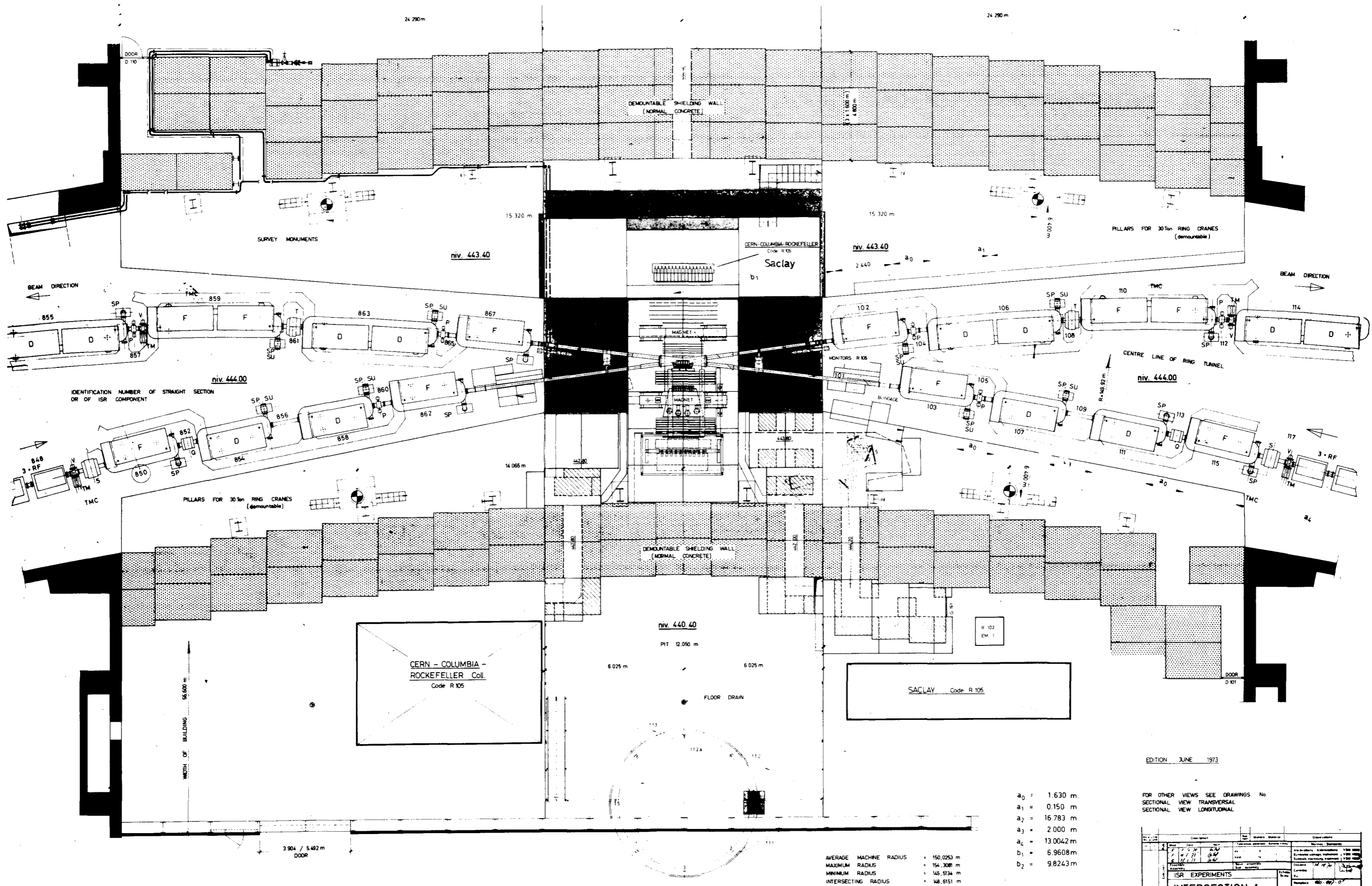


FIG. 1

ISR EXPERIMENTS

JUNE 1973



- $a_0 = 1.630 \text{ m}$
- $a_1 = 0.150 \text{ m}$
- $a_2 = 16.783 \text{ m}$
- $a_3 = 2.000 \text{ m}$
- $a_4 = 13.0042 \text{ m}$
- $b_1 = 6.9608 \text{ m}$
- $b_2 = 9.8243 \text{ m}$

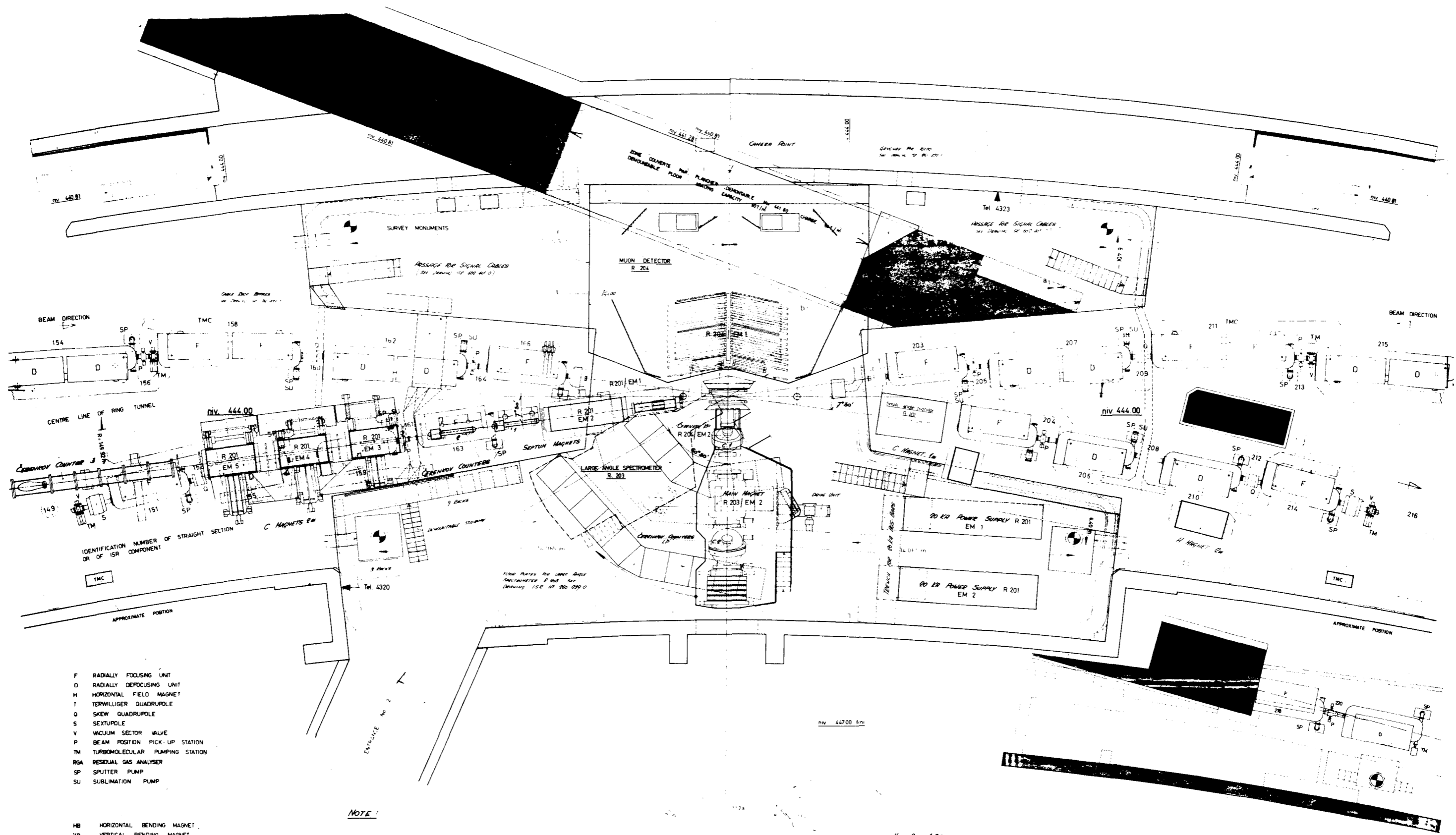
AVERAGE MACHINE RADIUS $\times 150.0253 \text{ m}$
 MAXIMUM RADIUS $\times 154.3081 \text{ m}$
 MINIMUM RADIUS $\times 145.9134 \text{ m}$
 INTERSECTING RADIUS $\times 148.6151 \text{ m}$

EDITION JUNE 1973

FOR OTHER VIEWS SEE DRAWINGS No.
 SECTIONAL VIEW TRANSVERSAL
 SECTIONAL VIEW LONGITUDINAL

ISRAELI SCIENTIFIC RESEARCH		CERN	
Project	Task	Division	Reference
ISRAELI SCIENTIFIC RESEARCH	ISRAELI SCIENTIFIC RESEARCH	ISRAELI SCIENTIFIC RESEARCH	ISRAELI SCIENTIFIC RESEARCH
ISRAELI SCIENTIFIC RESEARCH			260-247-0

FIG. 2



- F RADIALLY FOCUSING UNIT
- D RADIALLY DEFOCUSING UNIT
- H HORIZONTAL FIELD MAGNET
- T TERWILLIGER QUADRUPOLE
- Q SKEW QUADRUPOLE
- S SEXTUPOLE
- V VACUUM SECTOR VALVE
- P BEAM POSITION PICK-UP STATION
- TM TURBOMOLECULAR PUMPING STATION
- RGA RESIDUAL GAS ANALYSER
- SP SPUTTER PUMP
- SU SUBLIMATION PUMP

- HB HORIZONTAL BENDING MAGNET
- VB VERTICAL BENDING MAGNET
- QD DEFOCALIZING QUADRUPOLE
- QF FOCALIZING QUADRUPOLE
- ST BEAM STOPPER
- D BEAM DUMP
- RP ROUGHING PUMP
- VK VERTICAL KICKER
- TMC TURBOMOLECULAR PUMPING STATION CONTROLS
- X SPECIAL DESIGN
- SEM SECONDARY EMISSION GRID FOR FIRST TURN OBSERVATION
- HK HORIZONTAL KICKER

- NOTE :**
- SMALL ANGLE SPECTROMETER R 201
 - LARGE ANGLE SPECTROMETER R 203
 - MUON DETECTOR R 204

See Bat. A 20

AVERAGE MACHINE RADIUS = 50.073 m
 MAXIMUM RADIUS = 54.308 m
 MINIMUM RADIUS = 45.513 m
 INTERSECTING RADIUS = 48.615 m

$a_0 = 1.630$ m
 $a_1 = 0.150$ m
 $a_2 = 16.783$ m
 $a_3 = 2.000$ m
 $a_4 = 13.0042$ m
 $b_1 = 6.9608$ m
 $b_2 = 9.8243$ m

EDITION JUNE 1973

FOR OTHER VIEWS SEE DRAWINGS No
 SECTIONAL VIEW TRANSVERSAL
 SECTIONAL VIEW LONGITUDINAL

ISR EXPERIMENTS		No. 260-217-02	
INTERSECTION 2			
CERN CH-1211 GENEVE 23 DIVISION ISR			
260-217-			

FIG 3

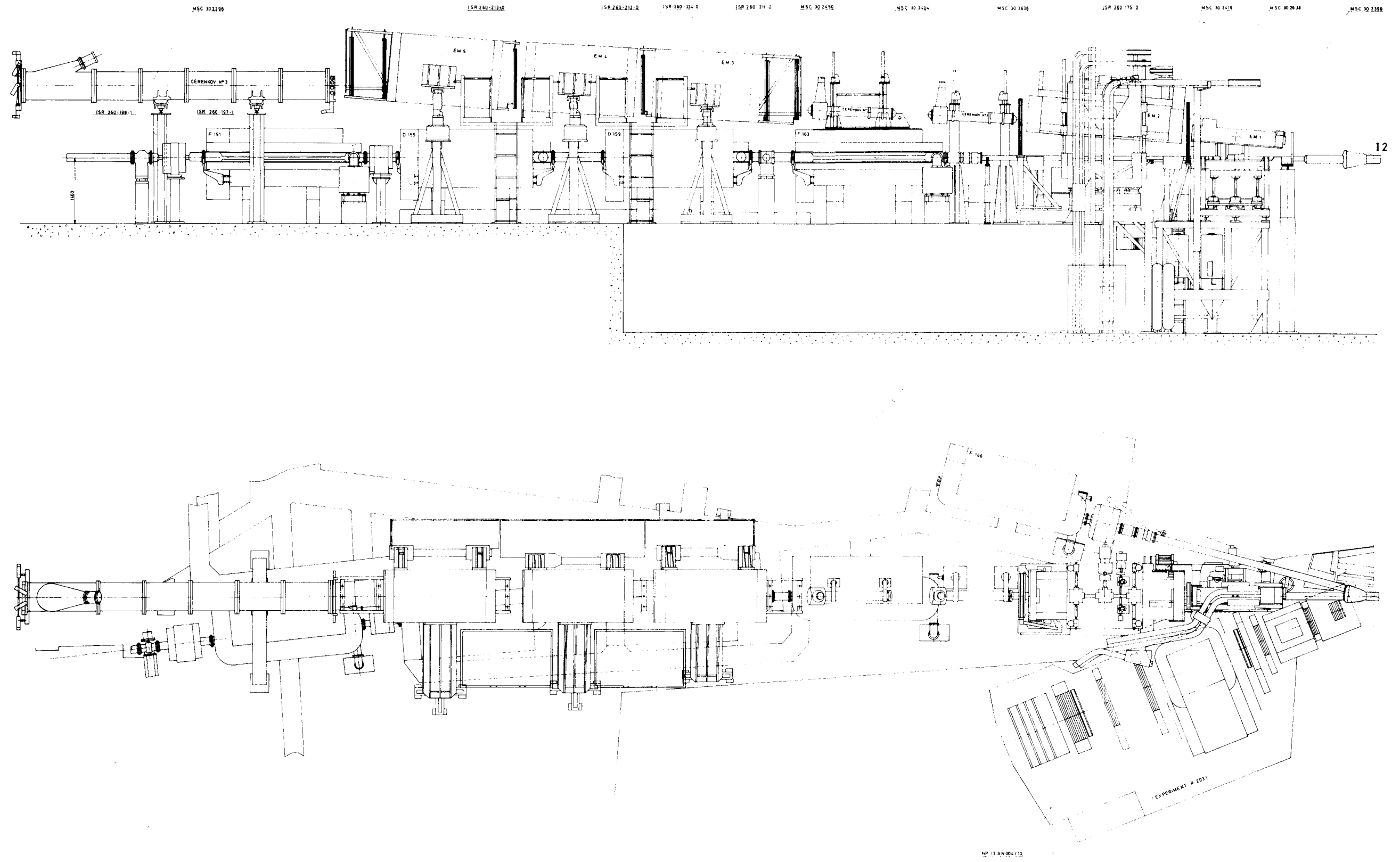
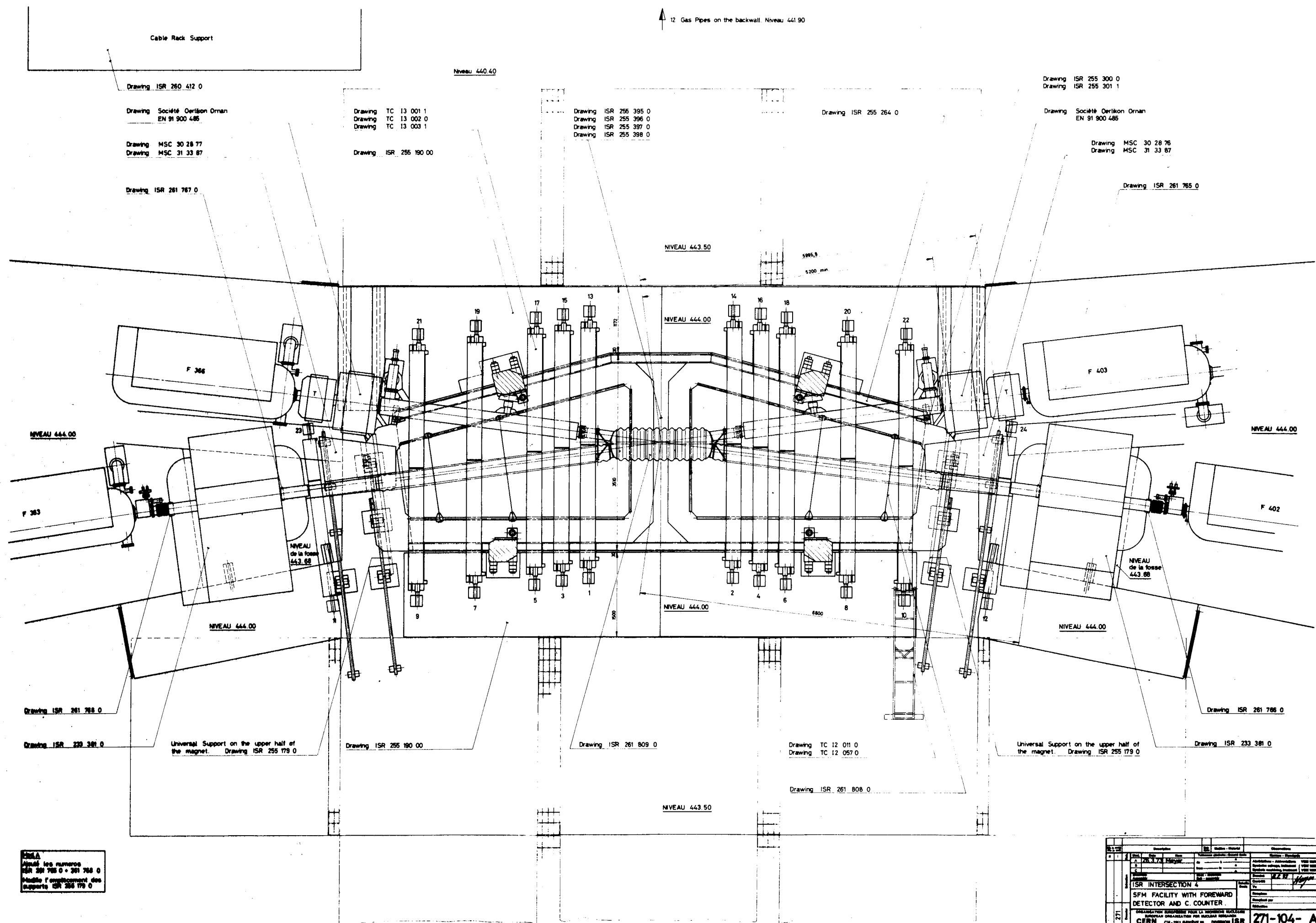


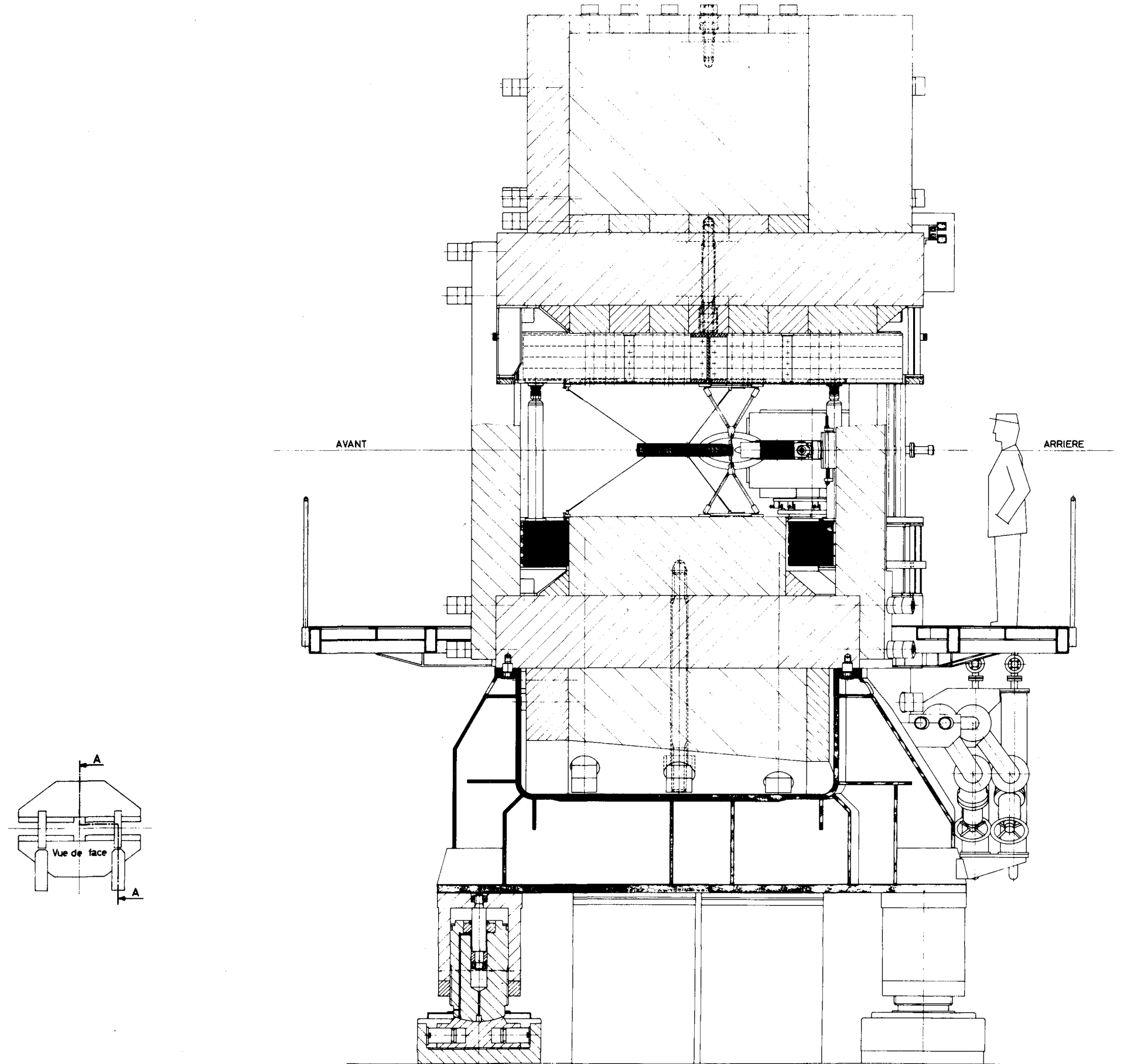
FIG. 4



RELA
 Avoir les numéros
 ISR 261 765 0 - 261 766 0
 à côté l'emplacement des
 supports ISR 255 179 0

NO	Description	ES	Statut - Révisé	Commentaire
1	ISR INTERSECTION 4			
2	SFM FACILITY WITH FORWARD DETECTOR AND C. COUNTER			
3	ORGANISATION RESPONSABLE POUR LA SECURITE NUCLEAIRE			
4	CERN - CH-1211 GENÈVE 23 - SWITZERLAND			
5	271-104-A			

FIG. 5



Description		Révision		Date	
1	Spit field magnet				
2	Coupe A-A				
DIRECTION GÉNÉRALE POUR LA RECHERCHE NUCLEAIRE COMPLEXE EUROPEEN DE RECHERCHE NUCLEAIRE CERN - CH-1211 GENEVE 23 - SUISSE					
					255-396-

FIG. 6

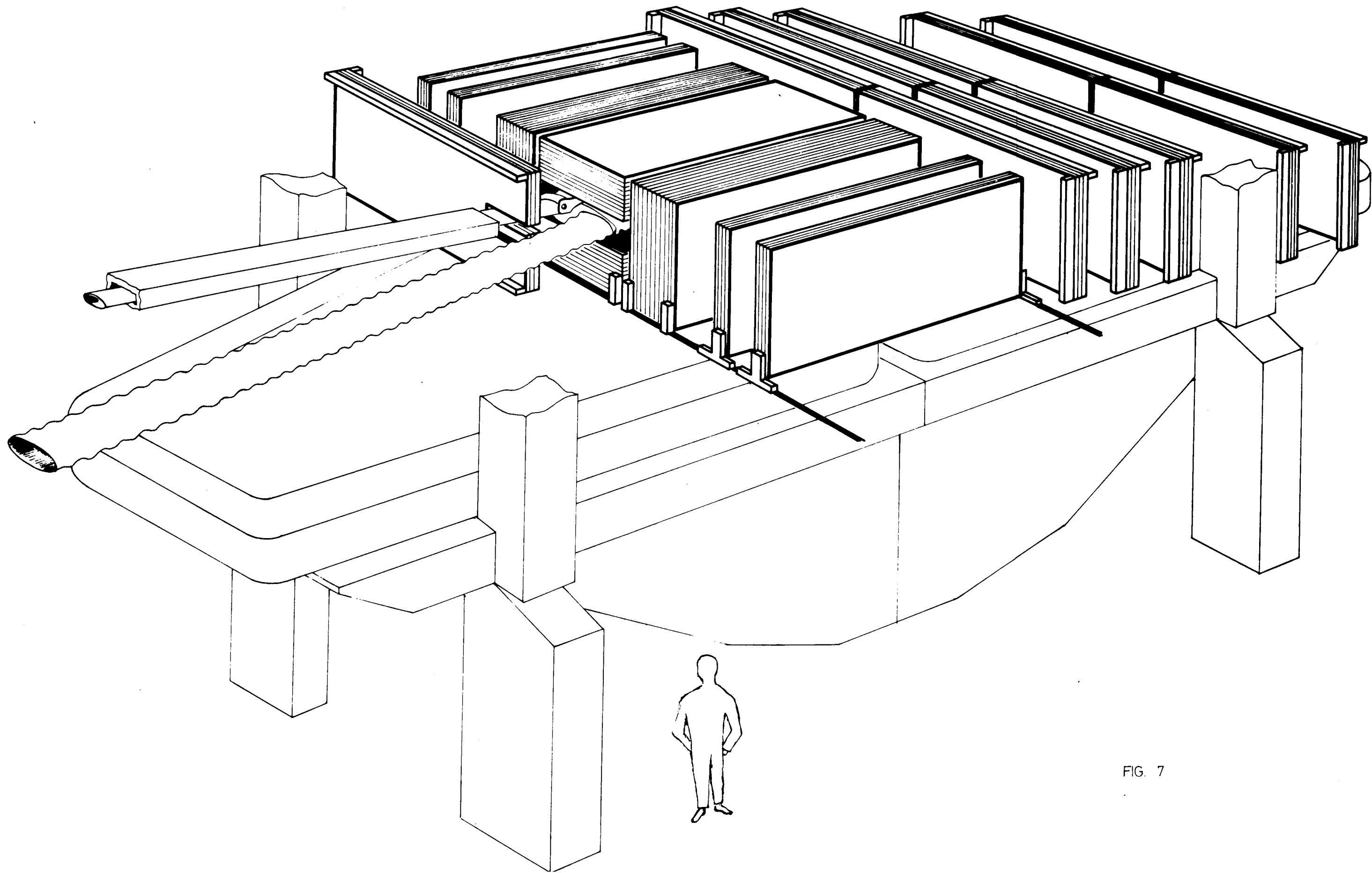
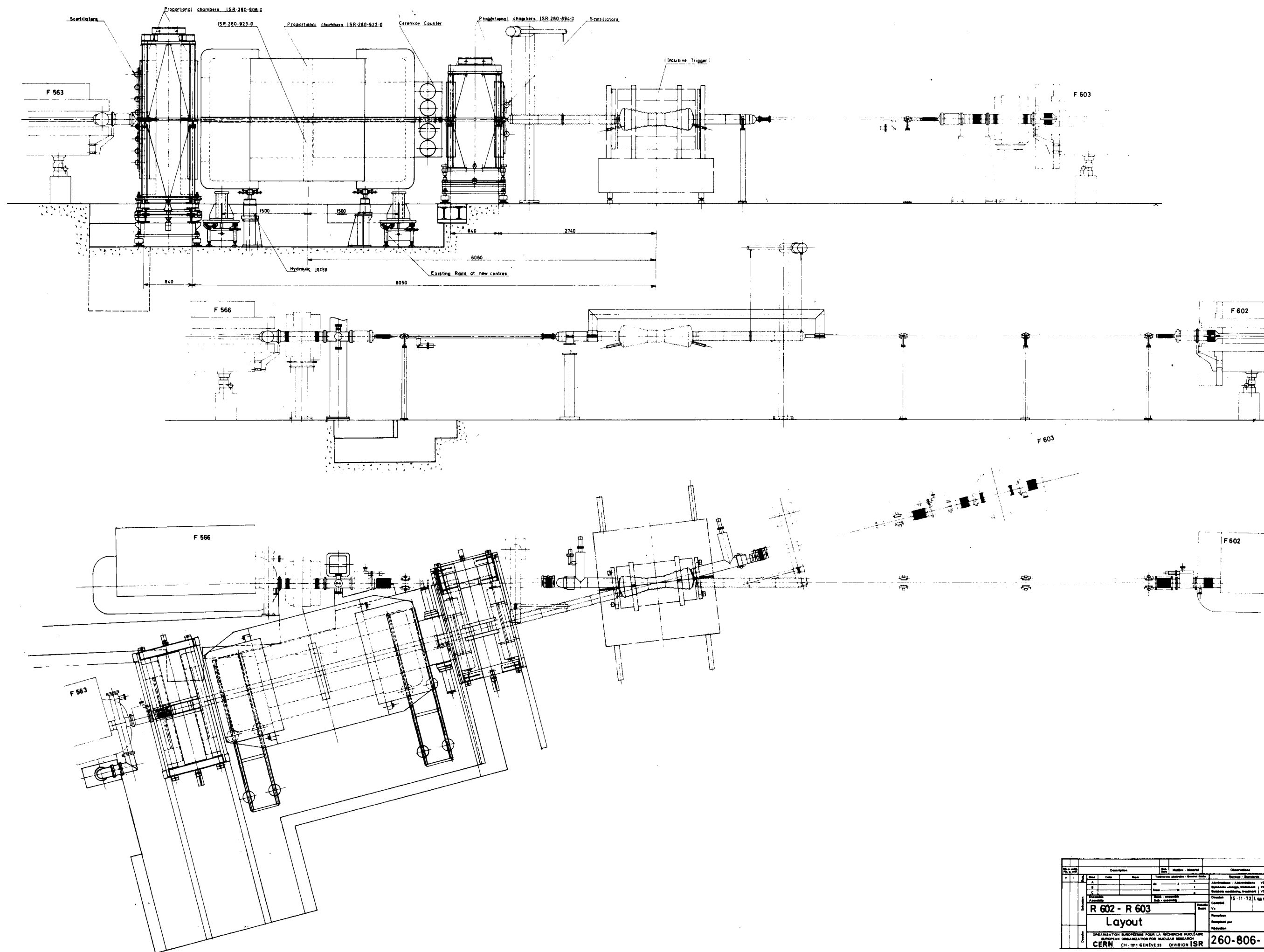
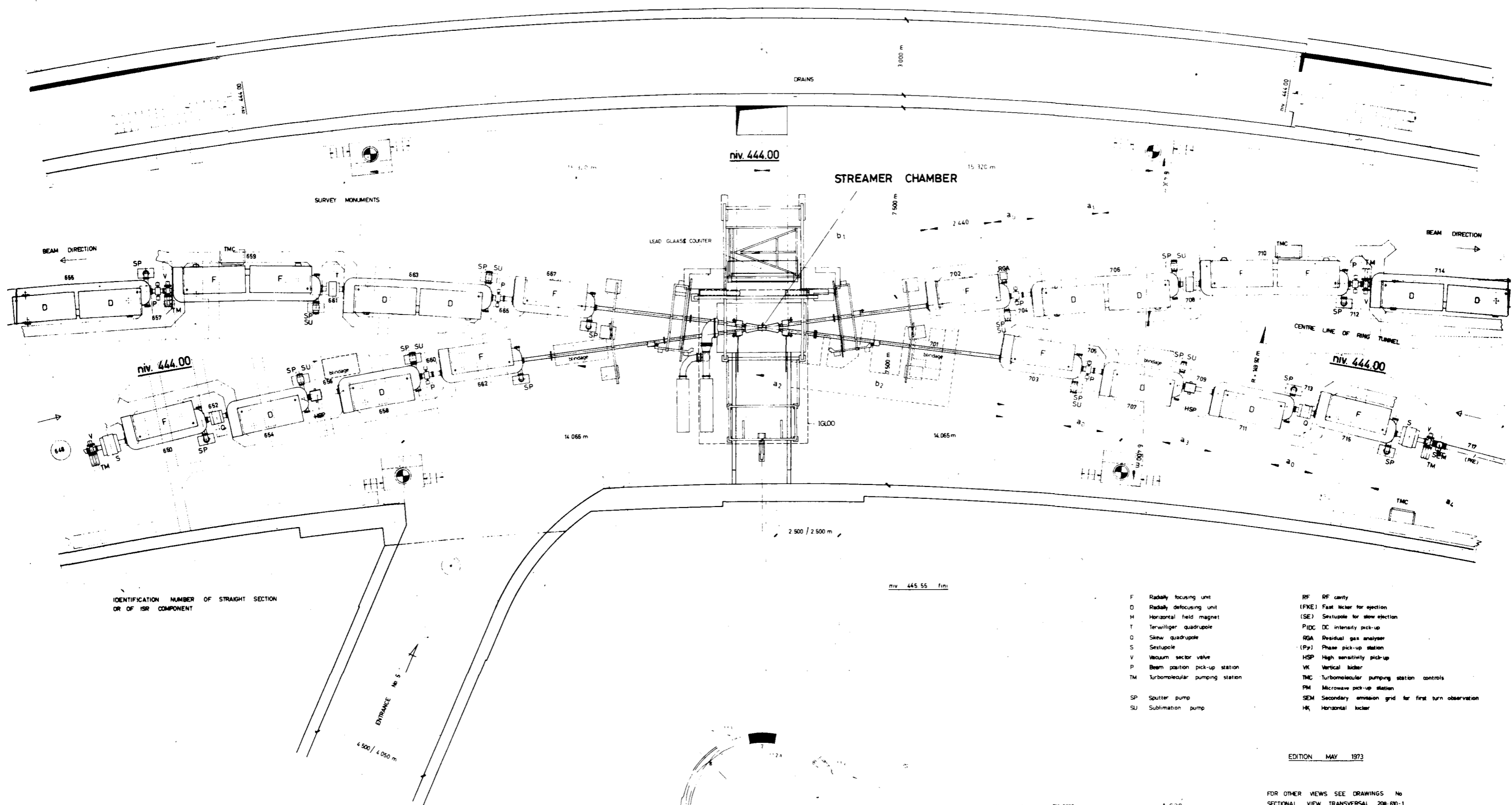


FIG. 7



Description		Rev.	Modific. / Intervent.	Observations
1	1			
2	1			
3	1			
4	1			
5	1			
6	1			
7	1			
8	1			
9	1			
10	1			
11	1			
12	1			
13	1			
14	1			
15	1			
16	1			
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88	1			
89	1			
90	1			
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92	1			
93	1			
94	1			
95	1			
96	1			
97	1			
98	1			
99	1			
100	1			

FIG. 8



IDENTIFICATION NUMBER OF STRAIGHT SECTION OR OF ISR COMPONENT

DISTANCE No 5
4.500 / 4.050 m

Average machine radius = 150,0253 m
Maximum radius = 154,3081 m
Minimum radius = 145,5134 m
Intersecting radius = 148,6151 m

- F Radially focusing unit
- D Radially defocusing unit
- H Horizontal field magnet
- T Terwilliger quadrupole
- S Sextupole
- V Vacuum sector valve
- P Beam position pick-up station
- TM Turbo-molecular pumping station
- SP Sputter pump
- SU Sublimation pump
- RF RF cavity
- (FKE) Fast kicker for ejection
- (SE) Sextupole for slow ejection
- P(DC) DC intensity pick-up
- RGA Residual gas analyser
- (Pp) Phase pick-up station
- HSP High sensitivity pick-up
- VK Vertical kicker
- TMC Turbo-molecular pumping station controls
- PM Microwave pick-up station
- SEM Secondary emission grid for first turn observation
- HK Horizontal kicker

EDITION MAY 1973

FOR OTHER VIEWS SEE DRAWINGS No
SECTIONAL VIEW TRANSVERSAL 208-610-1
SECTIONAL VIEW LONGITUDINAL 208-611-0

ISR EXPERIMENTS		OPERATIONS	
INTERSECTION 7			
CERN		260-978-A	

FIG. 9

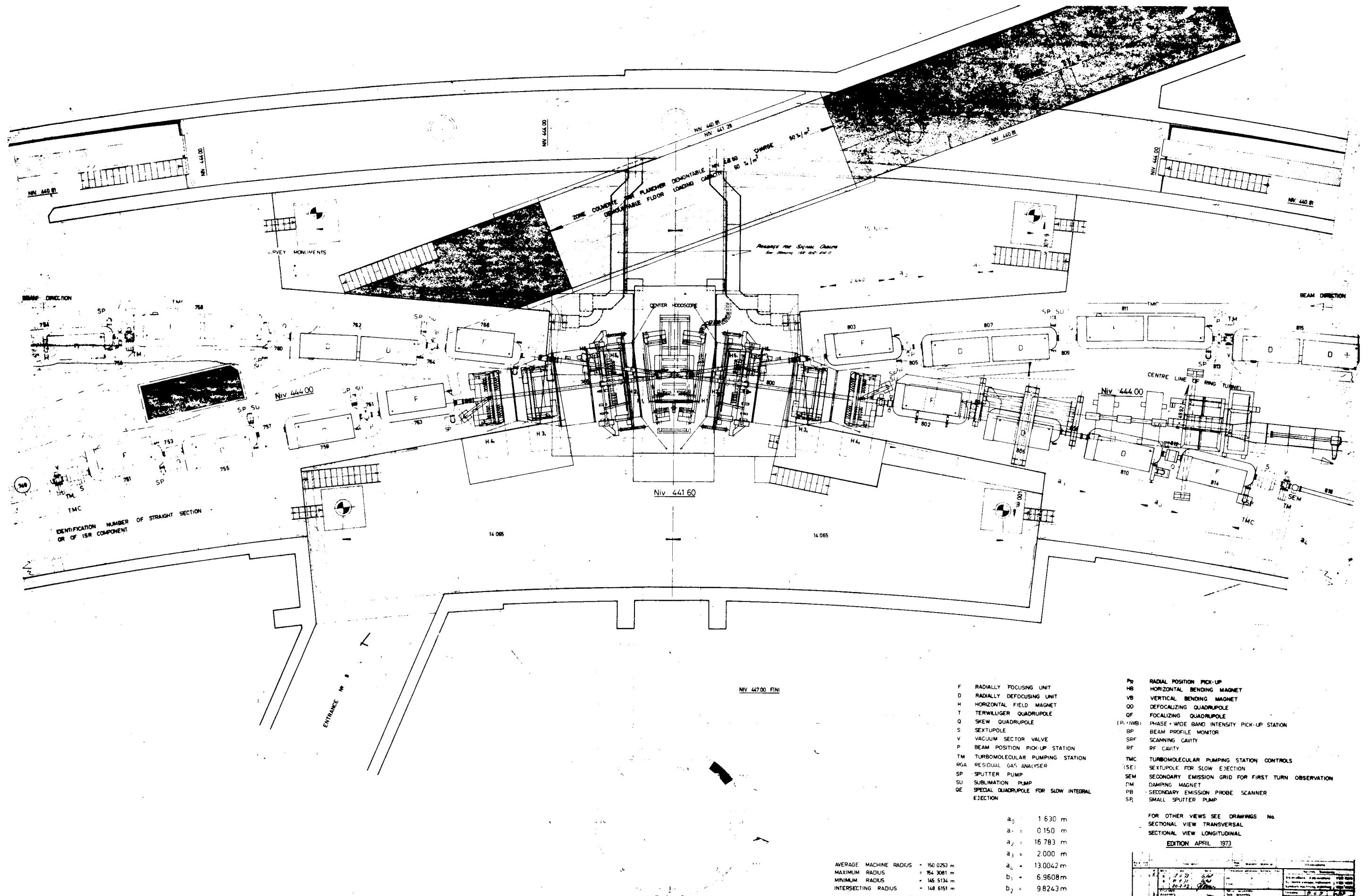
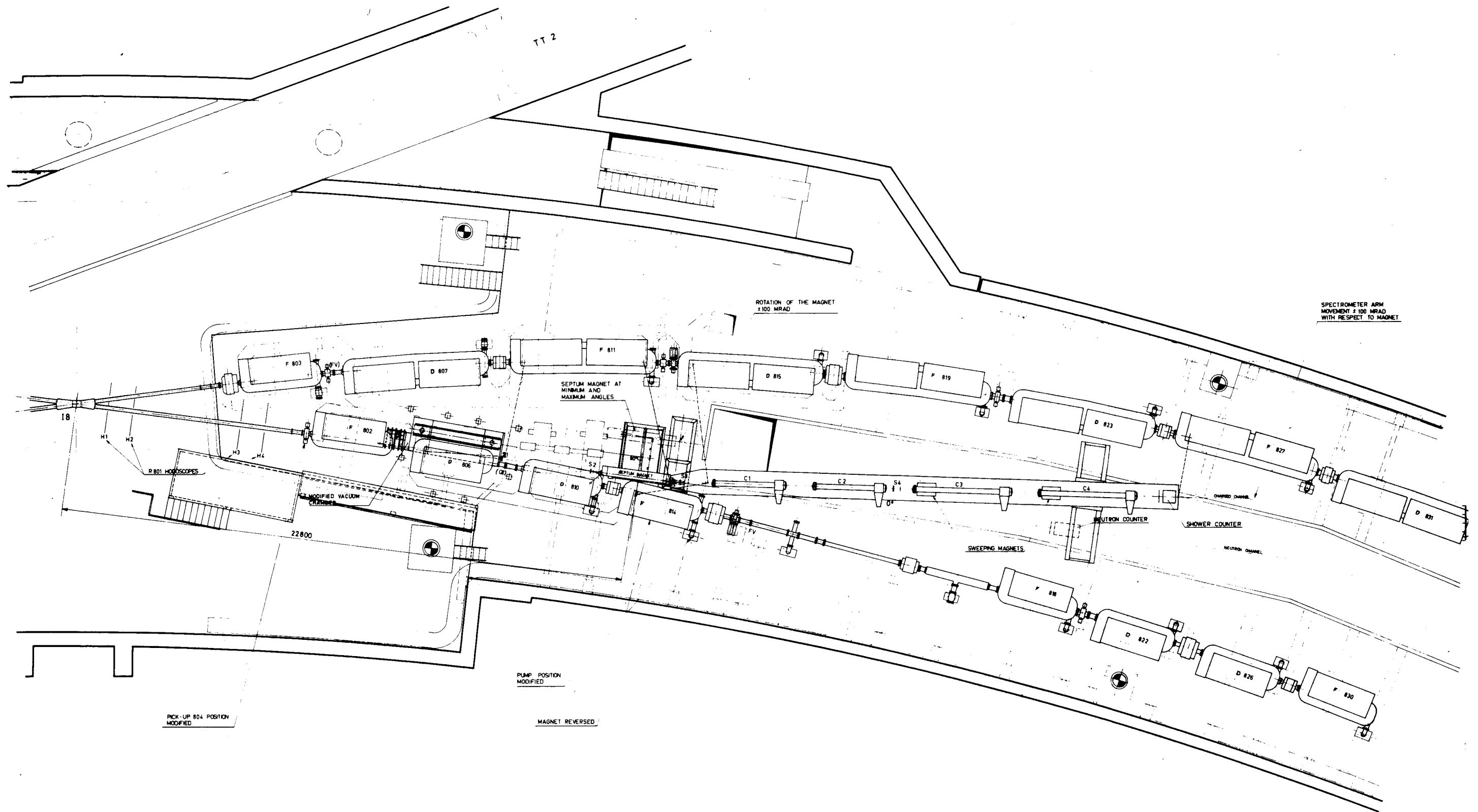


FIG. 10

ISR EXPERIMENTS		260-450	
INTERSECTION 8		260-450	
CERN CH 1211 GENÈVE 23 SWITZERLAND		260-450	



Description		Date		Signature	
A	Ajusté les détails de R 802	Lauri			
B	Modifications des chambres	Lauri			
C	Ajouté: Passerelle	Lauri			

R 802 EXPERIMENT		CERN - ROME	
Layout in I8			
ORGANISATION EUROPÉENNE POUR LA RECHERCHE NUCLEAIRE EUROPEAN ORGANIZATION FOR NUCLEAR RESEARCH			
CERN		CH - 1211 GENEVE 23 DIVISION ISR	
		260-711-c	