

CERN/ISR/EXP/4
October 1972

EUROPEAN ORGANIZATION FOR NUCLEAR RESEARCH

PROGRAMME OF ACCEPTED EXPERIMENTS
CERN INTERSECTING STORAGE RINGS
October 1972

Table 1 : ISR Experiments running or accepted
Table 2 : ISR Experiments completed at 1.10.1972

K.M. Potter
ISR Co-ordinator.

NOTE: Figures of Intersections 1 - 8 not attached.
These will be added to the final version.

Table 1
ACCEPTED CERN ISR EXPERIMENTS

Area	Expt. Code	ISRC Reference Number	Description of Experiment	Present composition of group	Date of NPRC Acceptance	Status
I-1	R-103	CERN/ISRC/69-43, and Add.1	Search for Massive Dileptons	CERN-Columbia-Rockefeller: <u>Büsser</u> , <u>Camilleri</u> , <u>DiLella</u> , <u>Pope</u> , <u>A. Smith</u> , <u>Yoh</u> , <u>Zavattini</u> ; <u>Blumenfeld</u> , <u>Lederman</u> ; <u>Cool</u> , <u>L. Litt</u> , <u>Segler</u>	NPRC 85 5.11.1969	In Production
I-1	R-104T	CERN/ISRC/70-19, Add.1, 2	Search for High Energy multigamma events	Brookhaven-Grumman- Rome: <u>L.C.L. Yuan</u> ; <u>Ed. Amaldi</u> , <u>Borgia</u> , <u>Beneventano</u> , <u>Pistilli</u>	NPRC 98 4. 6. 1971	Parasitic on Experiment R-103
I-1	R-105	CERN/ISRC/72-13 and Add.1	To measure high transverse momentum charged particles	Saclay: <u>Banner</u> , <u>Cheze</u> , <u>Hamel</u> , <u>Matichard</u> , <u>Stirling</u> , <u>Teiger</u> , <u>Zaccone</u>	NPRC 110 30.8.1972	Installation during shut-down

T - Test experiment.

Table 1 (cont'd)
ACCEPTED CERN ISR EXPERIMENTS

Area	Expt. Code	ISRC Reference Number	Description of Experiment	Present composition of group	Date of NPRC Acceptance	Status
1-2	R-201	CERN/ISRC/69-5, and Add.1, 2, 3, 4 CERN/ISRC/69-9	Production of stable particles at small angles	CERN-Holland-Lancaster-Manchester-Coll. (CHLM): Albrow, Barber, Bogaerts, Bosnjakovic, <u>Erné</u> , <u>Sens</u> , Veen, Terwilliger, <u>Clegg</u> , <u>Locke</u> , <u>Lobinger</u> , <u>Gee</u> , (Kanaris), <u>Murphy</u>	NPRC 84 4.7.1969	In Production
1-2	R-202	CERN/ISRC/69-7, and Add.1	Study of particle production in high energy proton-proton collisions at medium angles	Argonne-Bologna: <u>Antinucci</u> , <u>Bussière</u> , <u>Bertin</u> , <u>Capiluppi</u> , <u>D'Agostino-Bruno</u> , <u>Giacomelli</u> , <u>Maroni</u> , <u>Rossi</u> , <u>Vannini</u>	NPRC 84 4.7.1969	1st Phase complete a), 2nd Phase in product.
1-2	R-203	CERN/ISRC/69-2 CERN/ISRC/69-3 CERN/ISRC/69-44 CERN/ISRC/71-9	a) Experiment to determine production spectra of π^{\pm} , K^{\pm} , p, d... etc. at large angles. b) Search for "Quarks" at large angles	The collaboration mentioned below and the Scandinavian Coll.: <u>Bjggild</u> , <u>Damgaard</u> , (Hansen), <u>Jarlskog</u> , <u>Jönsson</u> , <u>Klovning</u> , <u>Leistam</u> , <u>Lillethun</u> , <u>Lynch</u> , <u>Von Dardel</u> , <u>Korder</u> , <u>Weiss</u>	NPRC 84 4.7.1969	Installing high momentum mode
1-2	R-204	CERN/ISRC/69-3	Measurement of muons with large transverse momentum as a search for the intermediate boson	British Universities coll.: <u>Alper</u> , <u>Birge</u> (<u>Bulos</u>)(<u>Carro</u>), <u>Cence</u> , <u>Duff</u> , <u>Potter</u> , <u>Sharp</u> , <u>Sharrock</u> , (<u>Manning</u>), (<u>Heymann</u>), (<u>Quarriq</u>), (<u>Malos</u>), (<u>Booth</u>), <u>Prentice</u> (<u>Jackson</u>)	NPRC 84 4.7.1969	In Prod.

(. . . .) = participating in experiment but not now at CERN.

a) See Table of completed Experiments (Table 2).

Table 1 (cont'd)
ACCEPTED CERN ISR EXPERIMENTS

Area	Expt. Code	ISRC Reference Number	Description of Experiment	Present composition	Date of NPRC Acceptance	Status
1-4	R-401	CERN/ISRC/69-14	Measurement of energy dependence of isobar excitation in proton-proton collisions	CERN-Hamburg-Orsay-Vienna(CHOV) Coll.: Aubert, Bartl, Broll, Coignet, Dibon, Favier, Flügge, Gottfried, Massonet, Neuhofer, Niebergall, Regler, Schmidt-Parzefall, Schubert, Schumacher, Smith, Vivargent, Winter	NPRC 83 4.7.1969	Expt. to be performed in Split-Field Magnet (Magnet Installation Jan. '73)
1-4	R-403 T	CERN/ISRC/70-5	S.F.M. Test and Survey Collaboration: (S.F.M. = Split Field Magnet)	S.F.M.: Charpak, Coignet, Fischer, Flügge, Gottfried, Minten, Sauli	NPRC 95 3.2.1971	Test Experiment in progress
1-4	R-404 T	CERN/ISRC/70-18 and add. 1, 2	Test of a proposal to search for Heavy Baryon Isomers	CERN-Hamburg-Vienna Coll.: Flügge, Gottfried, Neuhofer, Niebergall, Regler, Schmidt-Parzefall, Schubert, Winter	-	Test Expt. in progress

T = Test Experiment

Table 1 (cont'd)

ACCEPTED CERN ISR EXPERIMENTS

Area	Expt. Code	ISRC Reference Number	Description of Experiment	Present composition	Date of NPRC Approval	Status
1-4	R-406	CERN/ISRC/70-31 and Add.1 and 2	Search for fractionally charged or massive particles at the ISR	Bologna - CERN Coll:Basile,Bollini, Brunini, Fiorentino, Frabetti, Massam, Monari, Navarra, Palmonari, Zichichi	NPRC 110 30.8.1972	No time allocation yet
1-4	R-407	CERN/ISRC/71-30 and Add.1	To measure two-particle correlations in multiparticle events in the fragmentation region with the SFM spectrometer	Karlsruhe- CERN Collaboration:Moritz, Schmidt, Schneider, Schopper, Wegener	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	Charpak, Drijard, Dunwoodie, Fischer, Innocenti, Minten, Sauli	NPRC 110 30.8.1972	No time allocation yet
1-4	R-409	CERN/ISRC/71-36	A minimum-bias-trigger experiment using the SFM to study typical beam-beam events	Breidenbach, Fabjan, Gjesdal, Steinberger, Williams, Winstein	NPRC 110 30.8.1972	No time allocation yet
1-4	R-410	CERN/ISRC/71-37, 72-7 and Add.1	Study of particle correlations at large angles	MIT-Orsay-Scandinavian Collaboration: Becker, Busza, Cheng, Sadrozinski, Ting, Sau Lan Wu, Wu	NPRC 110 30.8.1972	No time allocation yet

Table 1 (cont'd)
ACCEPTED CERN ISR EXPERIMENTS

Area	Expt. Code	ISRC Ref. Number	Description of Experiment	Present composition of group	Date of NRC Acceptance	Status
1-6	R-601	CERN/ISRC/69-20, and add. 1, 2 CERN/ISRC/70-7, and add. 1, 2	The measurement of proton-proton differential cross section in the Coulomb interference region	CERN-Rome Coll.: Allaby, Bartel, Cocconi, Diddens, Dimcovski, Dobinson, Litt, J., Wetherell; U. Amaldi, Biancastelli, Bosio, <u>Matthiae</u>	NPRC 83 4.7.1969	In Prod.
1-6	R-602	CERN/ISRC/69-19, and add. 1, 2, 3	a) Measurement of the elastic scattering cross section beyond the Coulomb interference region. b) Search for "Quarks" at small angles.	CERN-Aachen-Genova-Harvard-Torino Coll.: Boehm, Foeth, Staude, Umbach; Jovanovich, Orito, Rubbia, <u>Strolin</u> , Bozzo, De Zorzi, Diambri, Sete, Ferrero, Maderni	NPRC 83 4.7.1969	Elastic Scattering measurements. In Prod.
1-6	R-603	CERN/ISRC/71-45 and add. 1	Δ^{++} Spectroscopy Studies	Aachen-UCLA-CERN-Harvard, Torino Coll.: Staude, Boehm, Drickey, Rabin, Rander, Schlein, Hansroul, F. Muller, Palazzi, Rubbia, <u>Strolin</u> , Pilcher, Sulak, Maderni	NPRC 104 2.2.1972	Install. after completion of R-602

Table 1 (cont'd)
ACCEPTED CERN ISR EXPERIMENTS

Area	Expt. Code	ISRC Ref. Number	Description of Experiment	Composition of group	Date of NPRC Acceptance	Status
1-7	R-701	CERN/ISRC/72-17	Observation of inelastic proton-proton collisions with streamer chambers	Aachen, CERN, Munich Collaboration: Eggert, Holder; Darriulat, Gygi, Schneider, Tittel; Derado, Eckardt, Schmitz, Seyboth, Mc Donald, Pugh	NPRC 110 30.8.1972	Installation during shut-down

Table 1 (Cont'd)
ACCEPTED CERN ISR EXPERIMENTS

Area	Expt. Code	ISRC Reference Number	Description of Experiment	Present composition of group	Date of NPRC Acceptance	Status
1-8	R-801	CERN/ISRC/69-12	Measurement of the p-p total cross section	Pisa-Stony Brook Coll.: Amendolia, Bellettini, Braccini, Bradaschia, Castaldi, Cerri, Ciancaglini, Del Prete, Finocchiaro, Foà, Giromini, Grannis, D. Green, Laurelli, Menzione, Mustard, Ristori, Sanguinetti, Valada, Thun	NPRC 83 4.7.1969	In Production
1-8	R-802	CERN/ISRC/71-41 and Add. 1 and 2	Particle Production in the forward direction	CERN-Rome Coll.: Allaby, Bartel, Cocconi, Diddens, Dimcovski, Dobinson, Litt, J., Wetherell; U. Amaldi, Biancastelli, Bosio, Matthiae	NPRC 107 3.5.1972	In Preparation, starting anticipated after shut-down

Table 2
ISR Experiments completed at October '72

Area	Expt. Code	Description of Experiment	Authors	Completion of Data-taking	Status
1-1	R-101	Emulsion Exposures giving:- a) Angular distribution of charged particles between 35° and 90° b) Stopping particles at 90°	CERN-Cracow-Bucharest-Tata emulsion collaboration: Annoni, Cordailat, Czyzewski, Friedländer, Gierula, Gurtu, Haiduc, Herz, Marin, Vicky, Wolter	September 1971	a) Published b) Submitted to Phys. Letters.
1-2	R-202	Study of positive particle production with a single arm spectrometer at medium angles	Argonne-Bologna-Michigan Collaboration: Ratner, Ellis, Vannini, Babcock, Krisch, Roberts	September 1971	Published (Study of negative particle production continuing. See Table 1).
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-Strasbg.: Banner, Cheze, Hamel Stirling, Teiger, Zacccone, Pansart; Bassompierre, Croissiau, Gresser, Morand, Schneegans, Riedinger	April 1972	Published
1-1	R-402	Search for fractionally charged particles	CERN-Munich Collaboration: Caldwell, Fabjan, Bruhn, Hyams, Sauli, Zahniser, Bott-Bodenhausen, Stierlin, Rochester, Winstein, Tirlor	August 1972	Submitted to Phys. Lett.
1-5	R-405	Neutron Production at small angles	CERN-Karlsruhe Coll.: Engler, Flauger, Gibbard, Mönnig, Runge, Schopper	October 1972	Completed

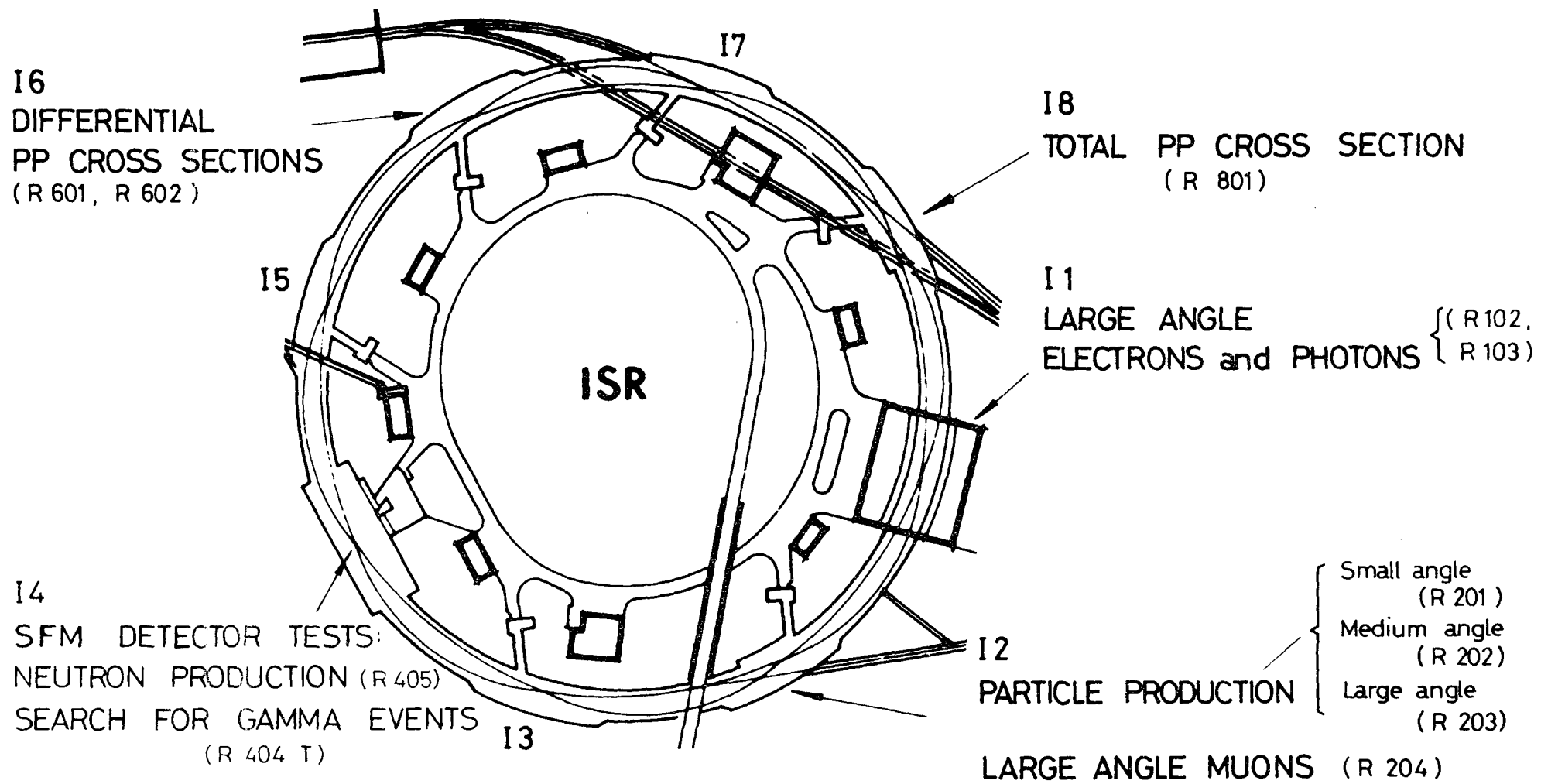
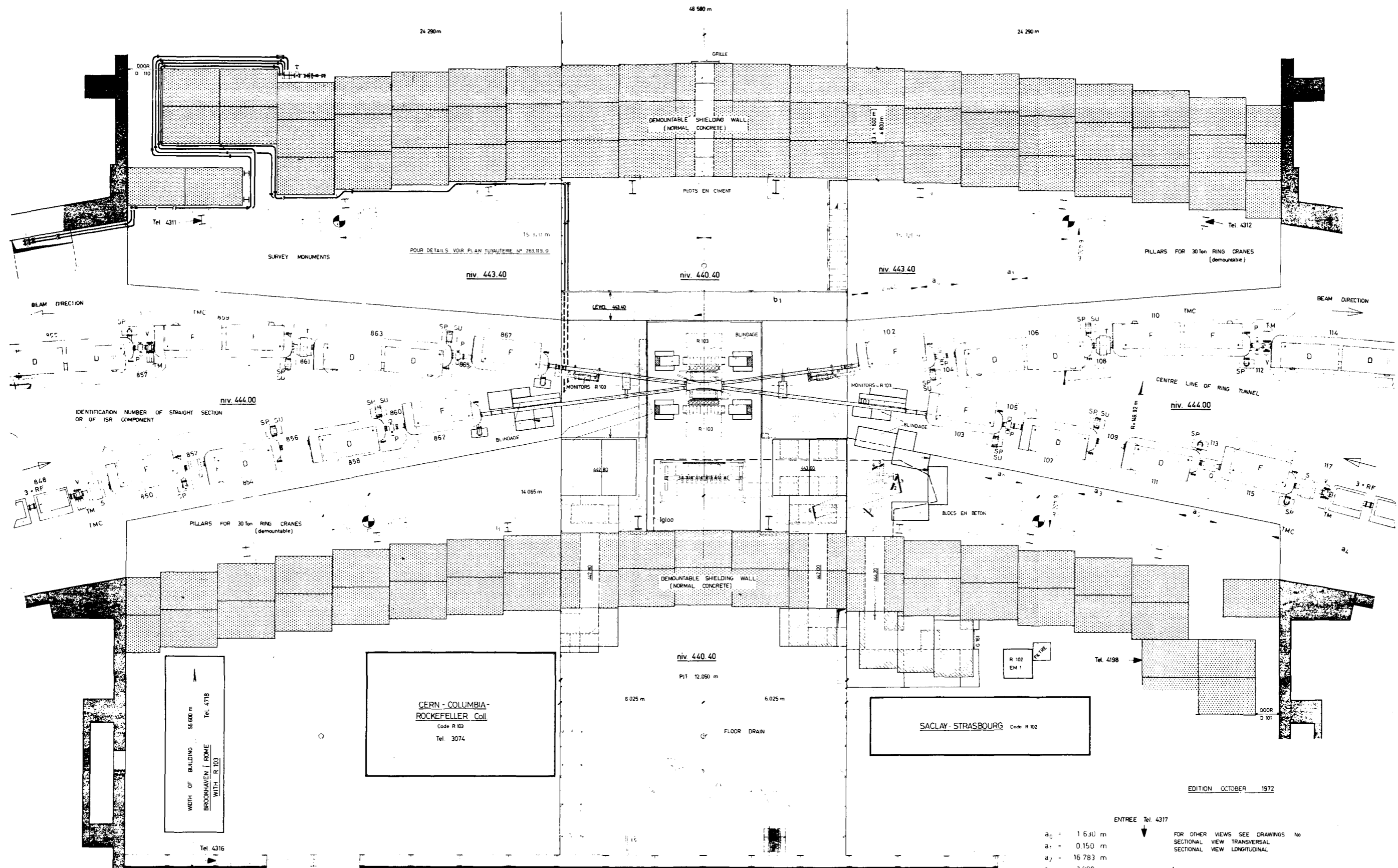


Fig. 1

ISR EXPERIMENTS

October 1972



IDENTIFICATION NUMBER OF STRAIGHT SECTION OR OF ISR COMPONENT

WIDTH OF BUILDING 56.600 m
BROOKHAVEN / ROMA
WIDTH R 103
Tel. 4718

CERN - COLUMBIA - ROCKEFELLER COIL
Code R 103
Tel. 3074

SACLAY - STRASBOURG Code R 102

AVERAGE MACHINE RADIUS = 150.0253 m
MAXIMUM RADIUS = 154.2098 m
MINIMUM RADIUS = 145.5334 m
INTERSECTING RADIUS = 148.6151 m

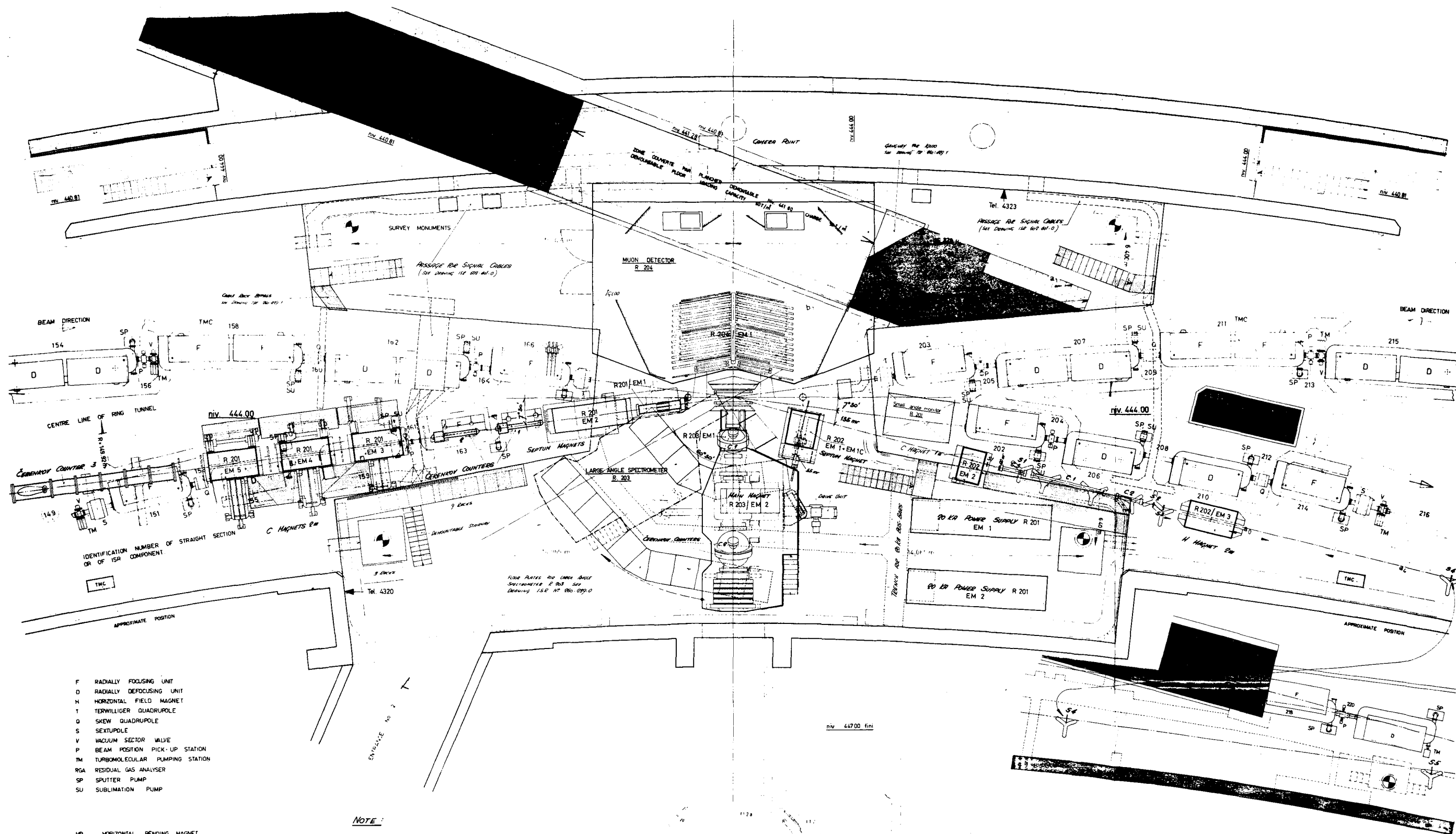
$a_0 = 1.640$ m
 $a_1 = 0.150$ m
 $a_2 = 16.783$ m
 $a_3 = 2.000$ m
 $a_4 = 13.0042$ m
 $b_1 = 6.9608$ m
 $b_2 = 9.8243$ m

EDITION OCTOBER 1972

ENTREE Tel. 4317

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

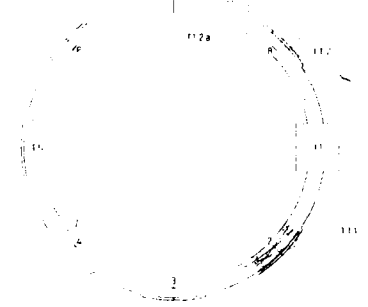
ISR EXPERIMENTS	
INTERSECTION 1	
CERN - DIVISION ISR 260-247-	



- 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
- OF FOCALIZING QUADRUPOLE
- ST BEAM STOPPER
- D BEAM DUMP
- RP ROUGHING PUMP
- VK VERTICAL KICKER
- TMC TURBOMOLECULAR PUMPING STATION CONTROLS
- S SPECIAL DESIGN
- SEM SECONDARY EMISSION GRID FOR FIRST TURN OBSERVATION
- HK HORIZONTAL KICKER

- NOTE :**
- SMALL ANGLE SPECTROMETER R 201
 - MEDIUM ANGLE SPECTROMETER R 202
 - LARGE ANGLE SPECTROMETER R 203
 - MUON DETECTOR R 204



Max. Det. A 90

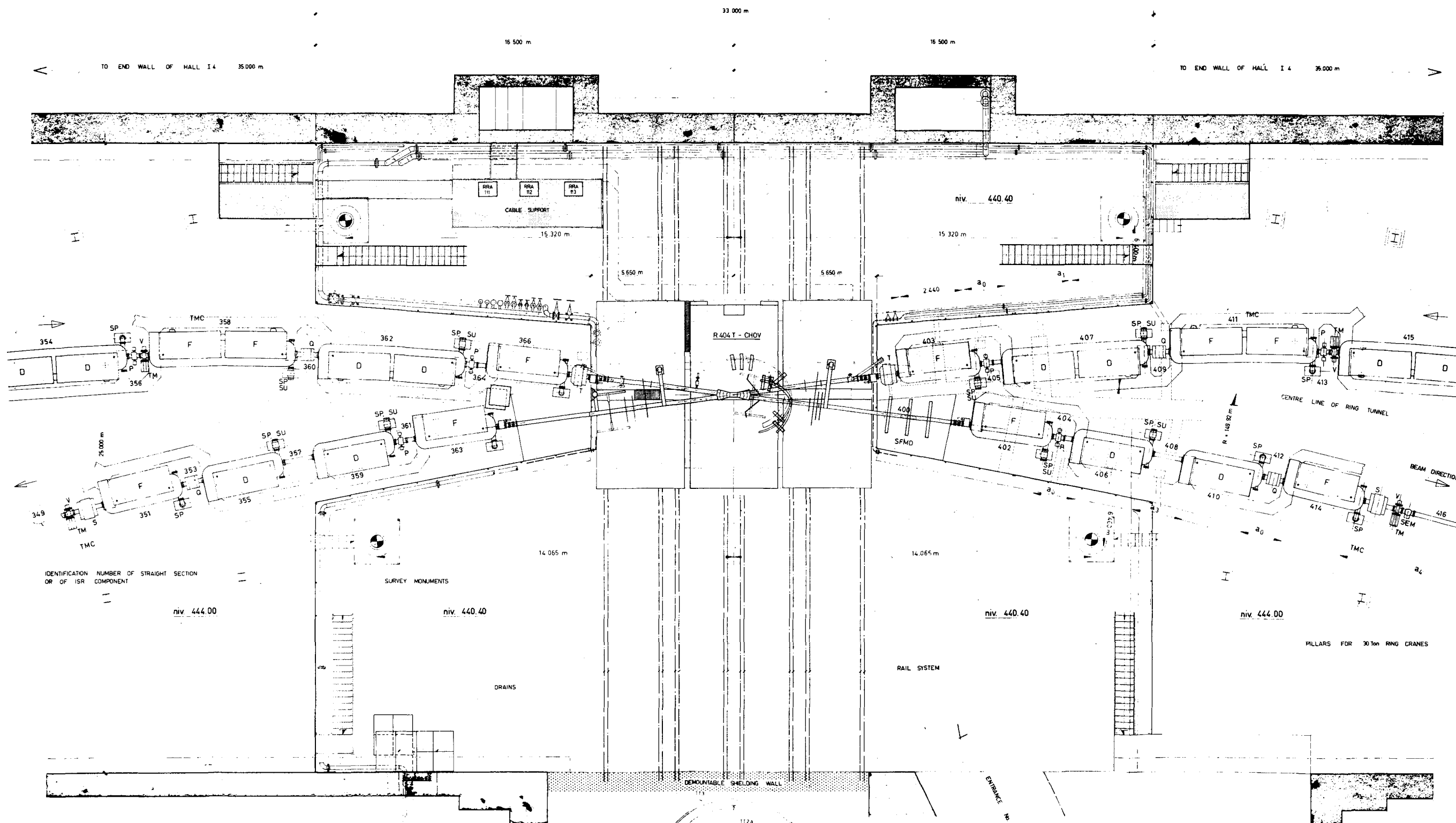
AVERAGE MACHINE RADIUS = 50.0253 m
 MAXIMUM RADIUS = 64.3981 m
 MINIMUM RADIUS = 145.5134 m
 INTERSECTING RADIUS = 148.6151 m

$a_0 = 1.630$ 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 OCTOBER 1972

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

ISR EXPERIMENTS	
INTERSECTION 2	
CERN	CH 1211 GENEVE 23 DIVISION ISR
260-217-	



IDENTIFICATION NUMBER OF STRAIGHT SECTION OR OF ISR COMPONENT

- | | | | |
|-----|--------------------------------|-----|--|
| F | Radially focusing unit | HB | Horizontal bending magnet |
| D | Radially defocusing unit | VB | Vertical bending magnet |
| H | Horizontal field magnet | QD | Defocalizing quadrupole |
| T | Tetrapole | QF | Focalizing quadrupole |
| D | Sawtooth quadrupole | SF | Beam stopper |
| S | Sextupole | D | Beam dump |
| V | Vacuum sector valve | G | Getter pump |
| P | Beam position pick-up station | VK | Vertical kicker |
| TMC | Turbomolecular pumping station | TMC | Turbomolecular pumping station controls |
| C | Cryopump | * | Special design |
| SP | Sourter pump | SEM | Secondary emission grid for first turn observation |
| SU | Sublimation pump | HK | Horizontal kicker |

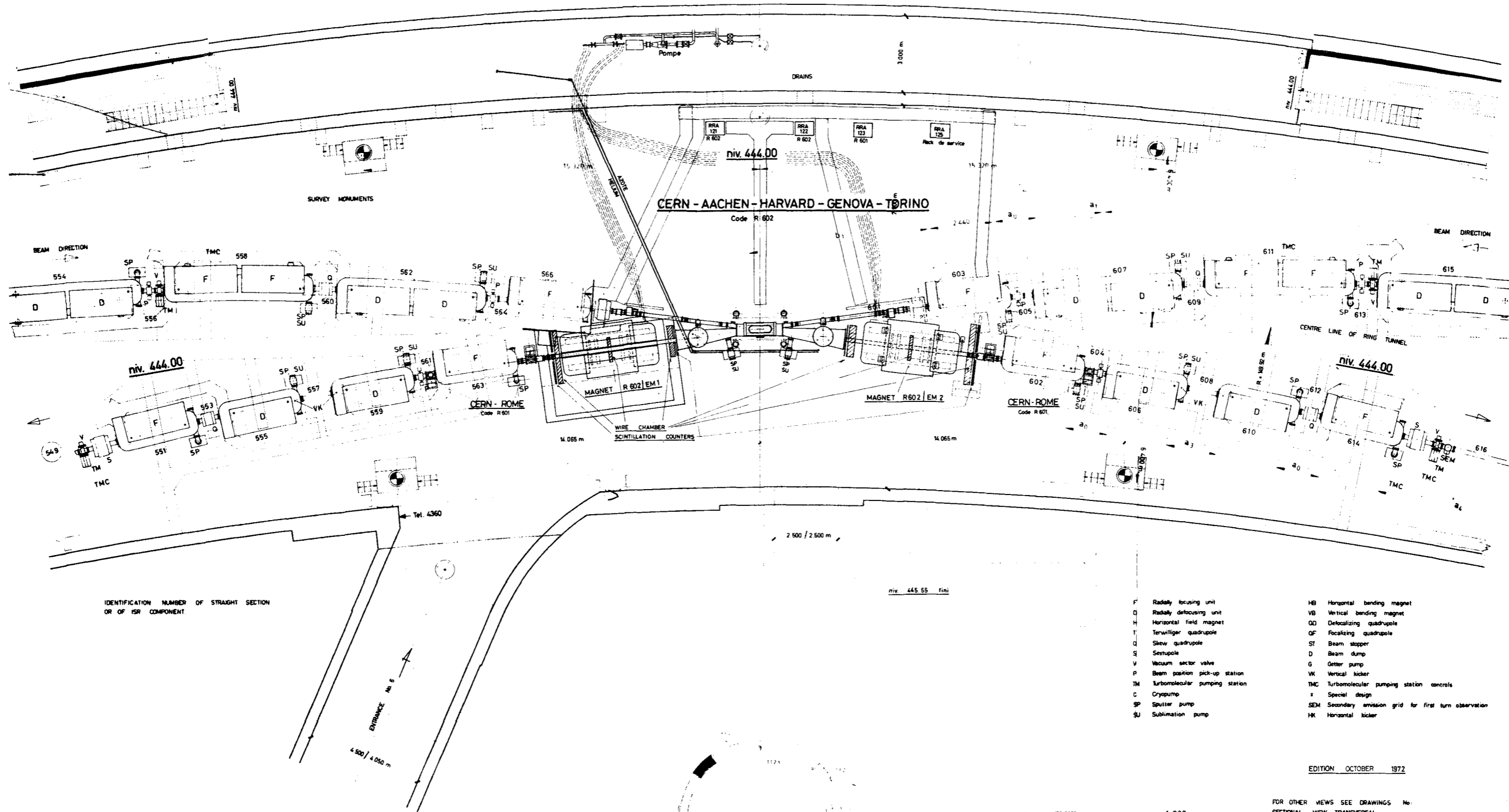
Average machine radius = 150,0253 m
 Maximum radius = 154,3081 m
 Minimum radius = 145,5124 m
 Intersecting radius = 148,8151 m

$a_0 = 1,630$ 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

FOR OTHER VIEWS SEE DRAWINGS No. 1
 SECTIONAL VIEW TRANSVERSAL
 SECTIONAL VIEW LONGITUDINAL
 EDITION OCTOBER 1972

Rev.	Drawn	Checked	Material	Quantity	Observations
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ORGANISATION EUROPEENNE POUR LA RECHERCHE NUCLEAIRE
 EUROPEAN ORGANIZATION FOR NUCLEAR RESEARCH
 CERN - CH-1211 GENEVE 23 - DIVISION ISR 260-432-



IDENTIFICATION NUMBER OF STRAIGHT SECTION
OR OF ISR COMPONENT

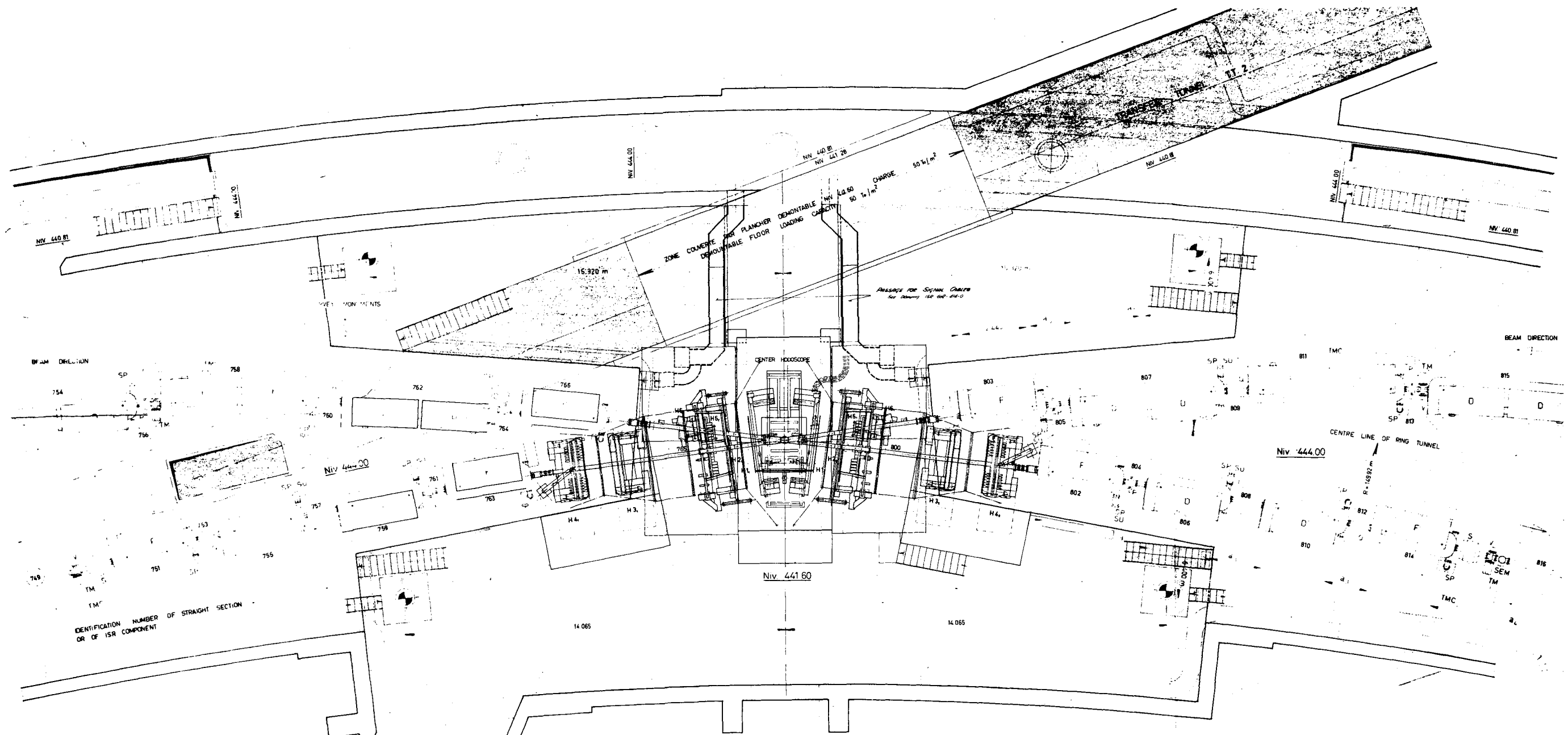
- | | | | |
|----|--------------------------------|-----|--|
| F | Radially focusing unit | H8 | Horizontal bending magnet |
| D | Radially defocusing unit | VB | Vertical bending magnet |
| H | Horizontal field magnet | QD | Defocusing quadrupole |
| T | Terwilliger quadrupole | QF | Focusing quadrupole |
| Q | Skew quadrupole | ST | Beam stopper |
| S | Sextupole | D | Beam dump |
| V | Vacuum sector valve | G | Getter pump |
| P | Beam position pick-up station | VK | Vertical kicker |
| TM | Turbomolecular pumping station | TMC | Turbomolecular pumping station controls |
| C | Cryopump | X | Special design |
| SP | Sputter pump | SEM | Secondary emission grid for first turn observation |
| SU | Sublimation pump | HK | Horizontal kicker |

EDITION OCTOBER 1972

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

- | | | | |
|------------------------|--------------|----------------|--------------|
| Average machine radius | = 150,023 m | a ₀ | = 1,630 m. |
| Maximum radius | = 154,3081 m | a ₁ | = 0,150 m |
| Minimum radius | = 145,5134 m | a ₂ | = 16,783 m |
| Intersecting radius | = 148,8151 m | a ₃ | = 2,000 m |
| | | a ₄ | = 13,0042 m. |
| | | b ₁ | = 6,9608 m. |
| | | b ₂ | = 9,8243 m |

ISR EXPERIMENTS		INTERSECTION 6	
CERN - CH 1211 GENEVE 23 DIVISION ISR 260-251-			



IDENTIFICATION NUMBER OF STRAIGHT SECTION OR OF ISR COMPONENT

AVERAGE MACHINE RADIUS = 150 0253 m
 MAXIMUM RADIUS = 154 2081 m
 MINIMUM RADIUS = 145 9134 m
 INTERSECTING RADIUS = 148 8151 m

$r_0 = 1530$ m
 $r_1 = 0.150$ m
 $r_2 = 16783$ m
 $r_3 = 2.000$ m
 $r_4 = 130042$ m
 $r_5 = 6.9608$ m
 $r_6 = 98243$ m

- F RADIALLY FOCUSING UNIT
- D RADIALLY DEFOCUSING UNIT
- H HORIZONTAL FIELD MAGNET
- T TERWILGER QUADRUPOLE
- Q SKEW QUADRUPOLE
- S SEXTUPOLE
- V VACUUM SECTOR VALVE
- P BEAM POSITION PICK-UP STATION
- TM TURBOMOLECULAR PUMPING STATION
- GA GAS ANALYZER
- SP SPUTTER PUMP
- SU SUBIMATION PUMP
- QE SPECIAL QUADRUPOLE FOR SLOW INTEGRAL EJECTION
- Pr RADIAL POSITION PICK-UP
- HB HORIZONTAL BENDING MAGNET
- VB VERTICAL BENDING MAGNET
- QD DEFOCALIZING QUADRUPOLE
- QF FOCALIZING QUADRUPOLE
- (P, WBI) PHASE-WIDE BAND INTENSITY PICK-UP STATION
- BP BEAM PROFILE MONITOR
- SRF SCANNING CAVITY
- RF RF CAVITY
- TMC TURBOMOLECULAR PUMPING STATION CONTROLS
- (SE) SLOW EMISSION SLOW EJECTION
- SEM SECONDARY EMISSION GRID FOR FIRST TURN OBSERVATION
- DM DAMPING MAGNET
- PS SECONDARY EMISSION PROBE SCANNER
- SP SMALL SPUTTER PUMP

FOR OTHER VIEWS SEE DRAWINGS No
 SECTIONAL VIEW TRANSVERSAL
 SECTIONAL VIEW LONGITUDINAL
 EDITION OCTOBER 1972

ISR EXPERIMENTS	
INTERSECTION 8	
CERN	260-450