

CERN/EF/EHS-CC/76-16
17 December 1976

EUROPEAN HYBRID SPECTROMETER (EHS)

Definition of CERN Contribution to Part A

For the construction and installation of the European Hybrid Spectrometer (EHS) Part A, in EHN1 at CERN, CERN will assume the project coordination, will specify the equipment supplied externally and will contribute the infrastructure, equipment and services for completion and commissioning of the whole system.

The sharing of work and supplies between CERN and the contributing laboratories is defined in the following papers:

- sharing between CERN and Rutherford Laboratory (RL) for the bubble chamber RCBC in CERN/EF/EHS-CC/76-15
- sharing between CERN and CEA (Saclay) for the magnet M1 in CERN/EF/EHS-CC/76-14
- sharing between CERN and NIKHEF/Vienna for the drift chambers D1-D6 in CERN/EF/EHS-CC/77-18 and in CERN/EF/EHS-CC/77-19.

The CERN contribution to EHS, Part A, consists of services and supplies in the frame-work of general assistance to experiments in EHN1, in particular:

- installation of huts for operation, data acquisition and maintenance:
 - 1 hut of 5 x 11 m² for 20 racks and control room
 - 1 hut of 5 x 11 m² for 30 racks of detector electronics
 - 1 hut of 4 x 11 m² for data acquisition
 - 1 hut of 4 x 11 m² for maintenance and repair
 - 1 hut of 4 x 10 m² for camera and film handling
- helium refrigeration for RCBC
- helium liquefaction for M1.

Furthermore, as part of the EHS budget, the following items will be provided by CERN:

1. Additional general installations in EHN1
2. Instrumentation and installation of RCBC
3. Instrumentation and installation of M1
4. Monitoring system, including computer
5. Data acquisition system, including computer

- 6. Construction and installation of 3 + 2 multi-wire proportional chambers
- 7. Installation of 6 drift chambers
- 8. Modification and installation of magnet M2.

A more detailed break-down of these items is attached as appendix.

APPENDIX TO CERN/EF/EHS-CC/76-16Detailed list of items provided by CERN to EHS, Part A

1. Additional general installations in EHN1

- internal equipment of five huts
- rack structure, 50 x
- battery backed 220 V/50 Hz supply (60kVA)
- special tools for handling of equipment
- alignment of equipment
- switchboards, cable trays
- resilient mounts of iron frame

2. Instrumentation and installation of RCBC

- He transfer lines
- Gas storage
 - Warm tanks, 50 m³, 10 bar, stainless
 - Battery stations
 - Corblin compressor, 6 m³/h, 250 bar, including control panel
 - Gas purifier
 - Distribution panel and instrumentation
 - Oil-free pump
- Pipework
 - Pump-outs
 - Filling + purge lines
 - Pump lines
 - Compressed air lines
 - Expansion system pipes
 - Camera pipework
- Vent lines
 - Warm vents
 - Cold vent
 - Check valves
 - Nitrogen purge
- Cabling
 - 220/380 V power
 - Measurements and controls
- Film handling hut (internal equipment)
- Hydrogen safety
 - Alarm system, 8 sensors, including electronics
 - Expansion system enclosure
 - Ventilated duct
 - Hydrogen room, ventilated

3. Instrumentation and installation of MI

- Cold equipment
 - Transfer lines
 - He dewar, 1000 l
 - Valve box, cold valves
 - Cold safety valves

- Instrumentation
 - Valves, actuators
 - Solenoid v., converters
 - Pressure transm., manometers
 - Manual v., reducing v.
 - Check v., safety v.
 - Panel mounting, synoptics

- Vacuum
 - Turbomolecular group
 - Purge group (Roots p.)
 - Pump-out group
 - Valves
 - Vacuum gauges, switches, etc.

- Power supply, discharge
 - 4000 A connections
 - Power supply, AC connect.
 - Dump resistors
 - Water purifier

- Pipework
 - Pump-out lines, panel
 - Purge lines, panel
 - Warm He recovery
 - Main pump line
 - Air supply
 - Cooling water
 - Dump resistor water system

- Cabling
 - Measurements and controls
 - 220/380 V power

- Control room instrumentation
 - Controlers
 - Heaters
 - Power supplies for sensors
 - Alarms, interlocks
 - Coil fault detection

- Test at Saclay

- Field map measurements

4. Monitoring system

- NORD-10 type computer, 48k, 10 M disc
- Computer terminals (2 printers, 2 VDU, 1 display terminal)
- Monitoring RCBC, M1
- Operating console, alarms, panels
- CAMAC crate + interface to monitoring computer
- Drift chamber monitoring
- MWPC monitoring
- Infrastructure for extension to Part B/C

5. Data acquisition system

- NORD-10 type computer, 96k, 10 M disc, 2 tape units
- Terminals (2 printers, 2 VDU, 1 display term., 1 printer/plotter)
- CAMAC crate + interface to computer
- Fast read-out from drift chambers (except DTR read-out controllers)
- MWPC read-out, trigger logic commands
- Infrastructure for extension to Part B/C

6. Construction and installation of multi-wire proportional chambers

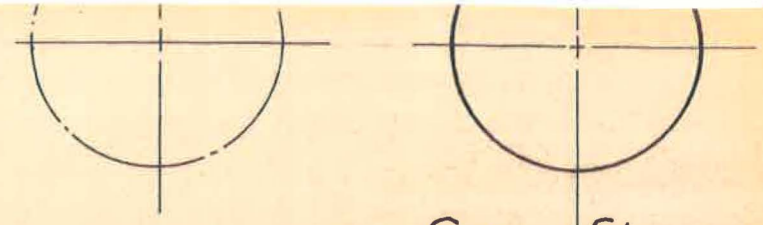
- W_0, W_1 - Chambers + electronics 4000 wires
- Small beam definition MWPC 400 wires
- Supports, survey facilities
- Gas station

7. Installation of drift chambers

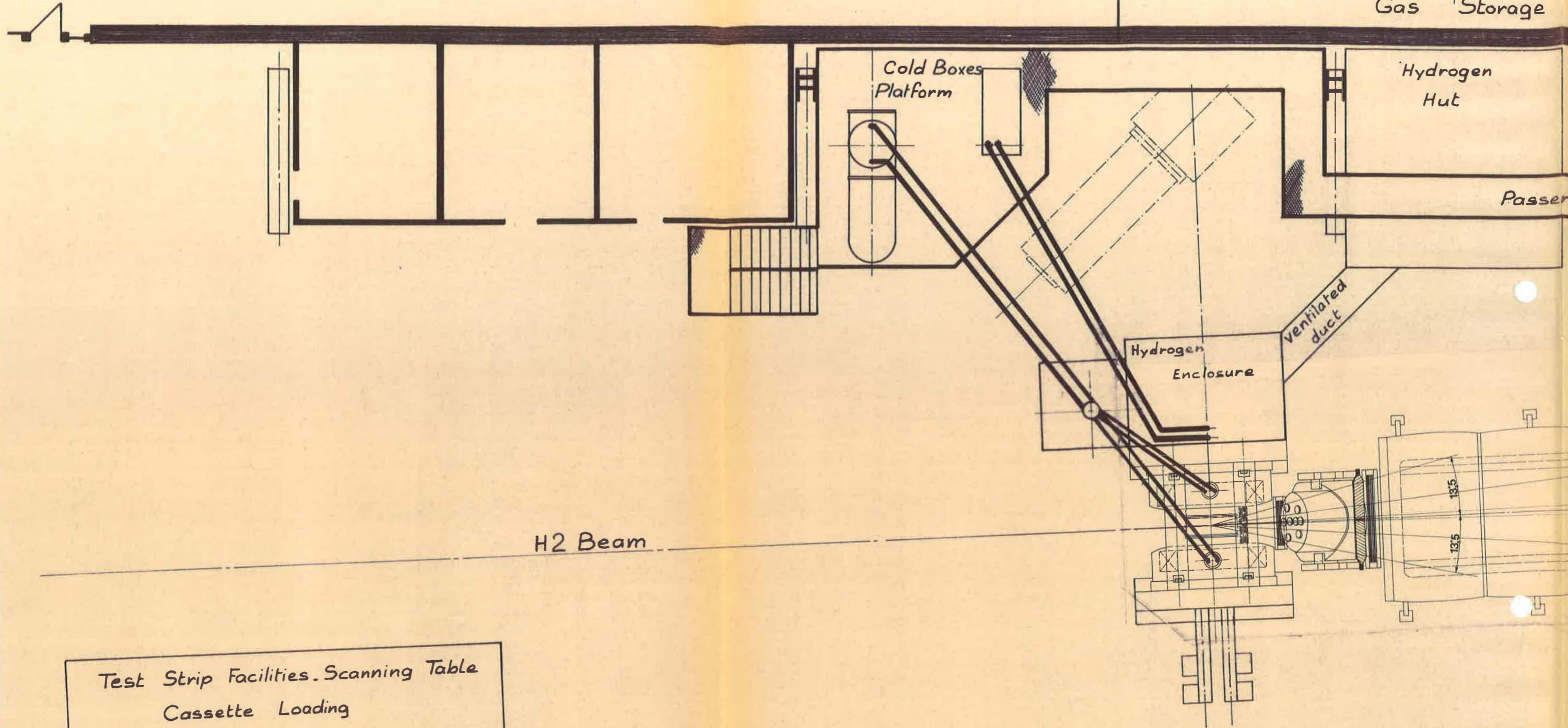
- Supports, survey facilities
- Gas station

8. Modification and installation of magnet M2

- Modification and installation of two RL magnets



Gas Storage



Cold Boxes Platform

Hydrogen Hut

Passer

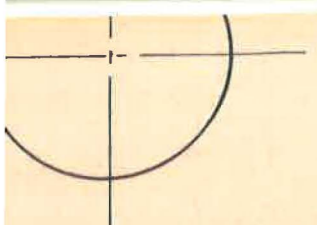
Hydrogen Enclosure

Ventilated duct

H2 Beam

Test Strip Facilities. Scanning Table
Cassette Loading

H4 Beam



Gas Supplies
for ISIS

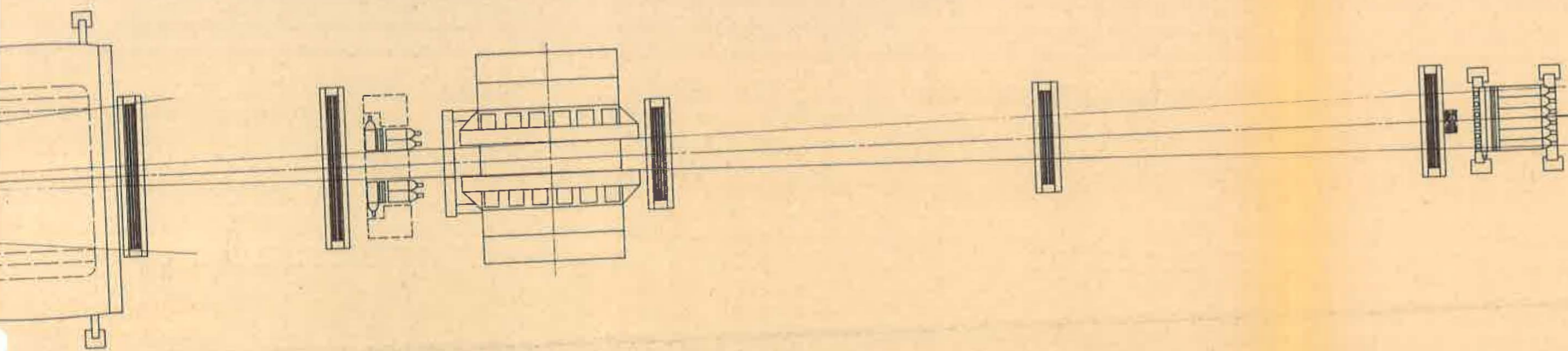
1st floor: Counting Room

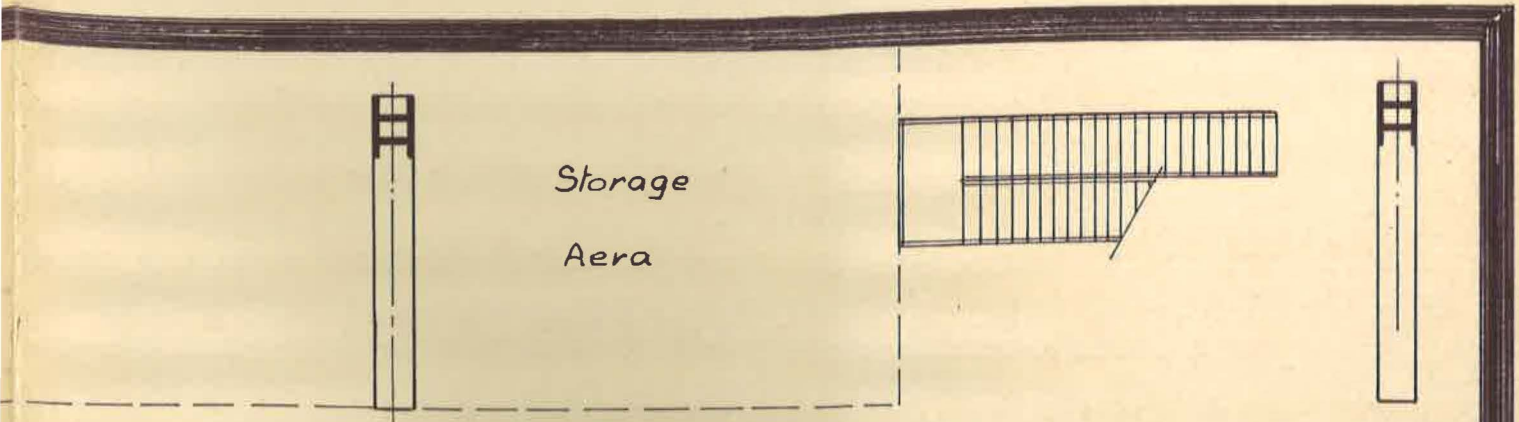
Grd floor: Control Room


1st floor: Data Acquisition

Grd floor: Maintenance and Repair

Working space
for
external group





ENSEMBLE <i>E_H_S</i>		S. ENSEMBLE		NOM	DATE
<i>E_H_S_Général LAY-OUT</i>		ECHELLE SCALE	DESSINÉ <i>Veillet</i>	20.12.76	
			CONTRÔLÉ		
			REMPLE		
			REMPLE PAR		
			RÉDUCTION		
	ORGANISATION EUROPEENNE POUR LA RECHERCHE NUCLEAIRE EUROPEAN ORGANIZATION FOR NUCLEAR RESEARCH				INDICE
	CERN Lab	TEL. : (022) 41 98 11 TELEX: GENEVE 2 36 98			