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Summary of the CERN-VNIIEF Meeting on mechanical design development for ALVAREZ and RFQ-DTL prototype accelerators CERN, 6-7 December, 2005

present: VNIIEF: V.T. Punin, S.T. Nazarenko, D.V. Budnikov, V.S. Pavlov, N.I. Moskvin, S.M. Treskov, A.V. Punin. CERN: N. Alharbi, P. Bourquin, Y. Cuvet, R. Garoby, F. Gerigk, A. Lombardi, M. Pasini, K. Hanke, C. Rossi, M. Vretenar.

Technical Presentations:

1. Prototype of the RFQ-DTL accelerator (D. Budnikov)

- Design status
- Constructive and technological features of the basic units included in a structure of the prototype such as RFQ-DTL
- Mock-ups for developing the technology
- Nearest plans

2. Prototype of the ALVAREZ accelerator (V. Pavlov).

- Design status
- Constructive and technological features of the basic units included in a structure of the prototype such as ALVAREZ
- Sequence of mounting the acceleration section
- Copy of the slides on the web site: https://edms.cern.ch/document/687639/1

Summary of the technical discussions during the meeting:

The following points were agreed during discussion:

Copper plating CERN requires passivation of the galvanic plating. Additives for mirror shine can be added but are not required.

Vacuum equipment Vacuum pumps that will be used on the prototypes will be of the ion type, model Varian VacIon Plus, 300 or 500 l/s. Information on these pumps can be found on the Varian web site. http://www.varianinc.com/cgi-bin/nav?products/vacuum/pumps/ion/index&cid=INIJNOMNFJ .

RF coupler port for RFQ-DTL The RF coupler is designed by IHEP, and IHEP should provide dimensions for this component.

Multi-layer pipes CERN is using multi-layer pipes in the LHC experiments, but has no experience in their resistance to radiation at levels higher than 100 Gy. To simplify RFQ-DTL construction, CERN can accept the use of multi-layer pipes, which will stand the radiation level during RF conditioning. It has to be considered that if the structure will be used with beam in an accelerator, the multi-layer pipes will have to be replaced with stainless steel pipes.

Support for Alvarez-DTL A frame holding both the load-bearing beam and the tank is considered by CERN as an integrant part of the prototype. This frame could later on be extended by CERN to a full support, to be used during testing. The height of the beam axis, to be used for the design of the frame, is 1200 mm. Mechanical drawings of the RF coupler have been provided by CERN, to be used for the design of the frame.

Covers for Alvarez-DTL For use with the CERN beam line under construction, the input cover to the Alvarez prototype must be rigid (i.e. holding the vacuum). For the output cover, the proposed “thin” cover can be accepted, but must be provided by VNIIEF a temporary cover holding the vacuum, to be used for testing of the prototype.

Joints (gaskets) for Alvarez-DTL CERN advises to use wherever possible Helicoflex type gaskets, Aluminum type, round or rectangular. Details on these gaskets can be found on the Garlock web site: (http://www.helicoflex.com/, http://www.helicoflex.com/assets/pdfs/helicoflex.pdf). The joints have to be specified by VNIIEF, and then will be ordered by CERN and sent to Russia.

Minutes by M. Vretenar

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