

MACS Cask Development Summary 12/18/2003

The following is a two-week summary of the development activities for the MACS Cask subsystems ending 12/18/2003:

ICX

Little work took place on the ICX in the past two weeks. Further discussions took place with EC regarding the manufacturing process they recommend for building the collimators. George Harrison of EC feels that the best way to attain co-alignment is by making two sets of identical wedges, one for each collimator. He feels EDM is not an option due to the affect of water on the Gd₂O₃ coating. Also he prefers aluminum wedges over steel since it is critical that the wedges be identical. George would also like thicker side plates and we're looking into the need/possibility of doing this.

The current plan is to work on the RFQ for the collimators over the Christmas break.

VBA

Summary:

Documented guide rod / bearing test rig results and procedures.

Modified the beam-face B4C panel from 5mm to 7.5mm thickness. The change was made for additional bending strength in this, the only load bearing panel. Implemented necessary modifications to design. Had corresponding modifications made to machined HDPE slabs.

Identified three additional potential B4C suppliers. Completed drawings of B4C panel components. Released these drawings for quote. Two responses have been received of four RFQ's.

Implemented Ø1.25 inch guide rods. Updated the design of shaft supports and bearing housings appropriately.

Further investigated seal materials with adequate radiation performance. Polyurethane is identified as a strong candidate. Obtained polyurethane rod wipers. Identified a supplier of Polyurethane O-ring cord for additional sealing tasks.

Enlisted Joe Orndorff into investigating the electronics requirements of our rad hard stepper and resolver pairs. Appropriate indexers and resolver electronics modules are under study.

Continued machine drawings of shutter components.

DTS

1. Designed & Modeled DTS Motor Inside CASK
 - a. Using Empire Magnetics 34 frame: RH-33
 - b. Using CGI right angle gearhead with integrated spline
 - c. Captured bolts and lift point are integrated into the design for remote removal
2. Cable Carriers Chosen
 - a. Gortrac Stainless Steel Carriers
 - b. Using separators within carriers to ensure cable safety
3. DTS downstream support point was moved further downstream to minimize bench deflection resulting from the increased weight of the ICX (steel structure). The position was determined using FEA.

An internal DTS motor with right angle gearbox has been chosen as the baseline drive system based on the design mentioned above.

Cask Liner

Work continued on the design of the Cask liner. The desired volume for the liner was finalized. The locations of the two helium ports have been identified. Space for the electrical connections have been identified.

General

A presentation was created and presented on 12/16/03 to show the design developed for the internal DTS motor.

IDG Effort

The estimated IDG effort on MACS for the past two weeks is 170 hrs. Actual hrs billed for the month of November was 318.