MINUTES OF THE "INITIAL SAFETY DISCUSSION" for AMS (RE1) (Alpha Magnetic Spectrometer)

Subject: Experiment: AMS installation in Bt.867
Meeting held: May 24th, 2006
Chairman: C. Detraz /PH
GLIMOS: J. Burger /PH
Minutes: B. Pichler /SC

Present: C.Detraz DSO-PH, J.Burger GLIMOS-PH, D.Schinzel /PH, R.Paucod (Architect), J.L.Denblyden /PH, M.Rebut /PH, O.Ullaland /PH, R.Becker /PH, A.Grechko /PH, T.Masson/AB, F.Corsanego /SC, J.Gulley /SC, R.Magnier /SC, A.Astone, B.Pichler /SC

Excused: P.Cennini /AB, G.Roy /AB, F.Szoncso /SC, T.Otto /SC, M. Losasso /PH-CSO
Cc: R.Trant /TIS, A.P.Bernardes /SC, A. Desirelli /SC, Gear Viertel

1) **Introduction:** C.Detraz /PH-DSO:
   - Introducing all present
   - Brief references to safety procedures at CERN (Safety guide for experiments) and Safety Code A5 (Safety of Experimental Apparatus).

   The aim of the meeting was to introduce the future installation of the experiment and to discuss different safety matters.

2) **Presentation of AMS experiment**: J. Burger (GLIMOS)
   Refer to the presentation in Annexe 2: *AMS (RE1) Experiment at CERN.pdf*.

   AMS is a particle physics experiment that will be mounted on the International Space Station.
   The "Detector" consists of a super conducting magnet, a silicon tracker and various particle detectors: these will be mounted and assembled in the Bt.867 and at a later stage probably be tested in the beamline of the EHN1-hall 887.

   - The foreseen Planning is: Mounting and assembly of a structural test article: end of 2006 (Dec./Jan.).
   - Detector mounting and assembly starting in 2007 and lasting through 2008.

   - Detector drawings: see presentation slides 3 to 7.
   - Assembly area: in Bt.867 located on the Jura side at the far end towards the Bt.904; see slides 11 and 12.

- Drawings and other details are (and will be) added to the Homepage of AMS: http://ams.cern.ch/AMS/ams_homepage.html

- ISIEC form: Annex 1.

3) Matters concerning Safety:

3.1 "mechanical safety" (A.Astone):

- Submit design layout of the installation, scaffolding (annex 2-slide15), rotation stands, etc.
- The interference with the overhead traveling crane must be examined and modified if necessary.
- Provide size and weight details of the AMS spectrometer, mass and structures, etc.
- **Action: J.Burger and R.Becker will contact A.Astone.**

3.2 "electrical safety" (F.Szoncso):

- Submit electrical distribution drawings.
- equipment, apparatus details (power, voltage, etc.): see Annex 2.
- Cabling: it is recommended to order most cables at CERN because they conform with the IS23-standards, otherwise provide the specifications.
- Grounding: installation of a ground-fault detection.
- Values for the magnetic fields employed: Gap field 0,86T. Stored energy ~5MJ. Current 460A (Annex2 Slide4ff).
- Provide "Operational instructions ".
- A final electrical reception must be organized.
- **Action: J.Burger will contact F.Szoncso.**

3.2 "gas and chemical safety" (J.Gulley):

- TRD Octagon: Xe:CO2 80:20 (Annex2 slide5,6).
- TCS: small quantity of ammonia (<1kg) and propylene(8x42g).
- CO2: Two pumped CO2 2-phase loops (Annex 2 slide8).
- Propylene: small quantity in closed circuit (8x42g).
- F1 and F2 forms are not necessary.
- No works will be performed in "confined spaces" (ex: vessels).
- All tubes and pipes must be labeled with standard colors.
- **Action: J.Burger provides drawings and other details to O.Ullaland and J.Gulley.**

3.3 "fire safety" (F.Corsanego):

- Define evacuation paths and emergency exits.
- Provide an inventory and calculations of the interactions of combustible materials: (ex: Mylar, Carbon vessel).
- **Action: J.Burger will contact F.Corsanego.**

3.4) "radiation safety" (T.Otto) :

- Sources are below the accepted level.
- **Action: J.Burger informs F.Corsanego.**

3.5) "laser safety" (R.Magnier) :

- **Action: J.Burger contacts R.Magnier before laser installations.**

3.6)" cryogenic" (G.Lindel):

- Principle scheme features: refer to Annex2 slide13 and 14.
- 2300 l vacuum vessel holds 2500l He.
- **Action: J.Burger will contact G.Lindell who will provide a list of recommendations.**

3.7)"contractor Safety" (C.Pividori)

- **Action: J.Burger will send the AOC to C.Pividori.**

3.8)"general safety" (B.Pichler):

- Risk of working on heights: install safety barriers with kick plates.
- Foresee sanitary facilities for men and women.
- Obtain the agreement from the DSO of the AB department for the utilization of the foreseen zone: **Action: J.Burger will contact (G.Roy or P.Cennini) .**
- A general safety inspection with a reception will be organized before the new installation will go into operation (with a safety report drawn up by the safety commission): **Action: B.Pichler.**

4) Final General remarks:

- The GLIMOS (or technical coordinator) informs all participants about all the risks .
- Provides operating procedures, (in case of breakdown, emergency, etc.) and a complete list of specialists with list of telephone numbers, etc.
- All participants for the experiment need to have attended the newcomer safety course.

ANNEX: 1.) ISIEC form (*ISIEC.pdf*)

2.) AMS (RE1) Experiment at CERN.pdf: *Presentation J.Burger*

3.) "AMS Safety Documentation" on the AMS homepage:
http://ams.cern.ch/AMS/CERNsafety/