



## ISIEC – INITIAL SAFETY INFORMATION ON EXPERIMENTS AT CERN

### PURPOSE OF THIS TEMPLATE

This document shall be completed by the GLIMOS of an experimental collaboration, whenever it intends to bring new experimental apparatus, new test beams or make major modifications to experimental apparatus already operating at CERN.

The purpose of this document is to provide a summary description of the equipment that is to be brought to CERN and the activities that are to be carried out. This document will then allow the PH Safety Office (PH-SO) to perform an initial safety assessment; i.e. identification of the applicable safety requirements, control measures, etc.

This ISIEC document will serve as a basis for the safety information on an experiment. Further documentation may be requested to improve the understanding of safety hazards.

For each experimental apparatus, the following procedure applies:

- 1- The GLIMOS shall fill in chapters 1 to 4.
- 2- The GLIMOS shall submit this document (ISIEC form) to the PH Unit [sps.coordinator@cern.ch](mailto:sps.coordinator@cern.ch) and [dso-ph@cern.ch](mailto:dso-ph@cern.ch)
- 3- Recommendations and procedures will follow after the provision of this document. Note that if the experiment is considered to have major safety implications then the CERN HSE unit will become involved and their safety procedures will then be followed.
- 4- A Launch Safety Discussion may be called for by the PH-SO. This will take place on site with representatives of the experiment, PH-SO, the HSE Unit and other CERN Departments.
- 5- A formal 'Safety Clearance' of the experiment must be given prior to the experiment being allowed to start operating (for example to receive beam).

Please note that this form must be completed and sent to CERN prior to the arrival of the planned experiment. Work will not be allowed to start until this form, and any requested complementary information on safety hazards, has been completed and handed over as explained above.

*Please complete the following:*

NAME OF THE EXPERIMENT: CMS RPC GIF++ Ageing

Filled out by: Ian Crotty 164414

Date: 20 March 2015

## 1 INTRODUCTION

The purpose of this document is to provide a description of the experimental program/test beam to be carried out at CERN; i.e.:

- to identify the equipment brought to CERN;
- to identify activities to be carried out at CERN;
- to identify hazards associated to the equipment and activities and the measures to be implemented in order to eliminate, control or mitigate them.

Please enter the information in the empty cells of the tables below:

### 1.1 Organization of the Collaboration

| Role                  | Name                      | Phone/e-mail          |
|-----------------------|---------------------------|-----------------------|
| Spokesperson          | Tiziano.Camporesi@cern.ch | 160404                |
| Technical coordinator | Austin Ball               | 160408                |
| GLIMOS                | Niels du Pont             | 165186                |
| SPS Coordinator       | Henric Wilkens            | 16-3845 spsco@cern.ch |
| DSO-PH                | Mark Hatch                | dso-ph@cern.ch        |
| Liaison Physicist     | Gabriela Pugliese         | 164880                |
| TSO                   | Michael Jeckel            | 164710                |
|                       |                           |                       |
|                       |                           |                       |

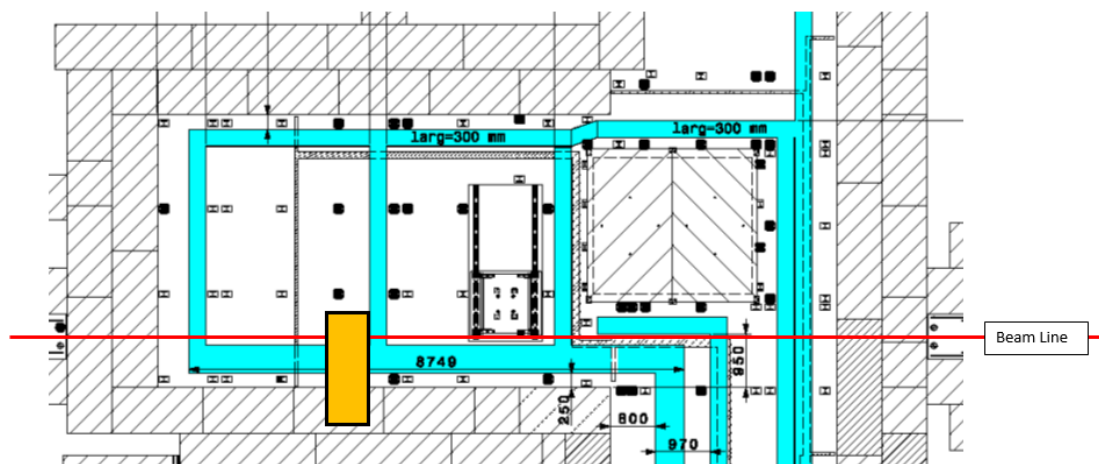
### 1.2 Schedule and location of the experimental apparatus or test beam

|                            |                     |
|----------------------------|---------------------|
| Start date:                | 15June2015          |
| Completion date:           | Dec2015             |
| Building/experimental area | 887 GIF++           |
| Beam line/PPE door         | H4 PPE 154          |
| Lab/Counting room/Phone    | HNA 487 phone 78905 |

## 2 DESCRIPTION OF THE EXPERIMENTAL APPARATUS/TEST BEAM

### 2.1 General description of the experimental apparatus/test beam

Initial Test Trolley with one RPC shown in yellow. 2.2m x 1.1m x 2.20m in beam line up stream of the source.



## 2.2 Description of the installation

Complete the cells below and double click on the boxes and check as appropriate.

| Equipment  | Availability                                 | Design and manufacturing   |
|--|--|--|
| RPC RE2/2 from CMS   | <input checked="" type="checkbox"/> Existing | <input checked="" type="checkbox"/> To be used without any modification<br><input type="checkbox"/> To be modified   |
|  | <input type="checkbox"/> New                 | <input type="checkbox"/> Standard equipment supplied by a manufacturer<br><input checked="" type="checkbox"/> CERN/collaboration responsible for the design and/or manufacturing |
| CAEN main Frame SY1527<br>LV Module A1513A<br>HV module A1526N | <input checked="" type="checkbox"/> Existing | <input checked="" type="checkbox"/> To be used without any modification<br><input type="checkbox"/> To be modified   |
|  | <input type="checkbox"/> New                 | <input checked="" type="checkbox"/> Standard equipment supplied by a manufacturer<br><input type="checkbox"/> CERN/collaboration responsible for the design and/or manufacturing |
| Cabling  | <input checked="" type="checkbox"/> Existing | <input checked="" type="checkbox"/> To be used without any modification<br><input type="checkbox"/> To be modified   |
|  | <input type="checkbox"/> New                 | <input type="checkbox"/> Standard equipment supplied by a manufacturer<br><input checked="" type="checkbox"/> CERN/collaboration responsible for the design and/or manufacturing |
|  |  |  |

## 2.3 Hazards generated by the experimental apparatus/test beam

Identify the hazards associated to each part of the experiment and the associated equipment that is to be integrated in the experimental apparatus/test beam. Double click on the boxes and check as appropriate. Provide comments or values under the description.

| Domain                   | Hazards/Hazardous Activities                   |                                     | Description            |
|--------------------------|--|-------------------------------------|------------------------|
| <b>Mechanical Safety</b> | Pressure                                       | <input checked="" type="checkbox"/> | 1-2[mbar]; 6[l]        |
|                          | Vacuum   | <input type="checkbox"/>            | NA                     |
|                          | Lifting equipment                              | <input type="checkbox"/>            | NA                     |
|                          | Machinery / Machine Tools                      | <input type="checkbox"/>            | NA                     |
|                          | Mechanical energy (moving parts)               | <input type="checkbox"/>            | NA                     |
|                          | Mechanical properties (sharp, rough, slippery) | <input type="checkbox"/>            | Antico frame on Wheels |
|                          | Industrial Vehicles                            | <input type="checkbox"/>            | NA                     |
|                          | Hot Work (e.g. welding, grinding)              | <input type="checkbox"/>            | NA                     |
|                          | Hot/cold surfaces                              | <input type="checkbox"/>            | NA                     |
|                          | Vibration                                      | <input type="checkbox"/>            | NA                     |
| <b>Cryogenic Safety</b>  | Cryogenic fluid                                | <input type="checkbox"/>            | NA                     |
| <b>Structural</b>        | Shielding Walls                                | <input type="checkbox"/>            | NA                     |

|   |  |                                     |                          |
|---|--|-------------------------------------|--------------------------|
| <i>Safety</i>                                 | Specific actions/conditions                                      | <input type="checkbox"/>            |                          |
| <i>Electrical and Electro-magnetic Safety</i> | Electrical equipment and installations                           | <input checked="" type="checkbox"/> | 7[V], 1.5[A]             |
|   | High Voltage Equipment   | <input checked="" type="checkbox"/> | 10 [kV]                  |
|   | Magnetic field   | <input type="checkbox"/>            | [T]                      |
|   | Equipment in potentially explosive atmospheres                   | <input type="checkbox"/>            |                          |
| <i>Chemical Safety</i>                        | Hazardous chemical agent (HCA)                                   | <input type="checkbox"/>            |                          |
|   | CMR (carcinogens, mutagens and substances toxic to reproduction) | <input type="checkbox"/>            |                          |
|   | Toxic/Harmful  | <input type="checkbox"/>            | [fluid], [quantity]      |
|   | Corrosive  | <input type="checkbox"/>            | [fluid], [quantity]      |
|   | Oxidizing  | <input type="checkbox"/>            | [fluid], [quantity]      |
|   | Flammable  | <input type="checkbox"/>            | [fluid], [quantity]      |
|   | Potentially explosive atmospheres                                | <input type="checkbox"/>            | [fluid], [quantity]      |
|   | Irritant   | <input type="checkbox"/>            | [fluid], [quantity]      |
|   | Asphyxiant   | <input type="checkbox"/>            | [fluid], [quantity]      |
|   | Nanomaterial's   | <input type="checkbox"/>            |                          |
|   | Dangerous for the Environment                                    | <input type="checkbox"/>            |                          |
|   | Asbestos   | <input type="checkbox"/>            |                          |
|   | <i>Biological Safety</i>   | Legionella                          | <input type="checkbox"/> |
| Biological Agents                             |  | <input type="checkbox"/>            |                          |
| <i>Non-ionizing radiation Safety</i>          | Laser, class   | <input type="checkbox"/>            |                          |
|   | Radiofrequency   | <input type="checkbox"/>            |                          |
|   | Microwaves   | <input type="checkbox"/>            |                          |
|   | UV light   | <input type="checkbox"/>            |                          |
|   | Electromagnetic (Frequency & Field strength)                     | <input type="checkbox"/>            | Hz, Vm <sup>-1</sup>     |
| <i>Workplace</i>                              | Excessive Noise  | <input type="checkbox"/>            |                          |
|   | Temperature constraints (non-comfortable)                        | <input type="checkbox"/>            |                          |
|   | Insufficient Lighting  | <input type="checkbox"/>            |                          |
|   | Indoor Air quality (e.g. clean rooms)                            | <input type="checkbox"/>            |                          |
|   | Confined space   | <input type="checkbox"/>            |                          |
|   | Work at height   | <input type="checkbox"/>            |                          |
|   | Obstructions in passageways                                      | <input type="checkbox"/>            |                          |
|   | Lone working   | <input type="checkbox"/>            |                          |
|   | Falling objects  | <input type="checkbox"/>            |                          |

|                           |   |                                     |                              |
|---------------------------|---|-------------------------------------|------------------------------|
|                           | Internal Traffic (e.g workshops, experiments)   | <input type="checkbox"/>            |                              |
|                           | Slippery/unstable ground  | <input type="checkbox"/>            |                              |
|                           | Working outside normal working hours  | <input checked="" type="checkbox"/> |                              |
| <i>Environment</i>        | Usage/storage of potentially polluting substances (gases, liquids, solids)                          | <input checked="" type="checkbox"/> | R134a & SF6                  |
|                           | Emissions of substances into the atmosphere   | <input checked="" type="checkbox"/> | R134a & SF6                  |
|                           | Discharge of effluents to the site drainage (i.e. infiltration water, rain water, cooling water...) | <input type="checkbox"/>            |                              |
|                           | Discharge of effluents to sewage (i.e. sanitary water...)   | <input type="checkbox"/>            |                              |
|                           | Activated or radioactive soil   | <input type="checkbox"/>            |                              |
|                           | Polluted or contaminated soil   | <input type="checkbox"/>            |                              |
|                           | Emission of noise harmful for the environment   | <input type="checkbox"/>            |                              |
|                           | Vibrations harmful for the environment  | <input type="checkbox"/>            |                              |
|                           | Odours  | <input type="checkbox"/>            |                              |
|                           | Waste generation  | <input type="checkbox"/>            |                              |
|                           | Significant consumption of resources (e.g. water, electricity gas, fuels, ...)                      | <input type="checkbox"/>            |                              |
|                           |   |                                     |                              |
| <i>Worksite</i>           | Construction & dismantling activities   | <input checked="" type="checkbox"/> | All work done outside bunker |
|                           | Co-activity   | <input checked="" type="checkbox"/> | With other experiments       |
|                           |   |                                     |                              |
| <i>Fire Safety</i>        | Hot works   | <input type="checkbox"/>            |                              |
|                           | Combustible Materials   | <input type="checkbox"/>            |                              |
|                           | Ignition sources  | <input type="checkbox"/>            |                              |
| <i>Ionizing Radiation</i> | Target material   | <input type="checkbox"/>            |                              |
|                           | Beam particle type  | <input checked="" type="checkbox"/> | Muons                        |
|                           | Beam intensity  | <input checked="" type="checkbox"/> | 10 <sup>4</sup> /spill       |
|                           | Beam energy   | <input checked="" type="checkbox"/> | <100GeV                      |
|                           | Source  | x                                   | Cs 137                       |

Table 1 - Hazard identification



## 5 ROLES AND RESPONSABILITIES

### 5.1 GLIMOS

According to the § 5.4 of the Safety Policy at CERN (SAPOCO): *“For Safety matters, an experiment or test is represented by a Group Leader in Matters of Safety (GLIMOS), who is responsible for Safety, with the necessary authority, from the design stage and subsequently throughout the development, construction, and operational stages of the equipment until it is finally dismantled and correctly disposed of”*.

In the absence of an appointed GLIMOS, all his duties and responsibilities fall automatically on the Technical Coordinator or, if one does not exist, to the Spokesperson.

### 5.2 HSE Unit

According to the § IV of the Mandate of the Occupational Health & Safety and Environmental Protection Unit (HSE):

*“The HSE Unit provides Safety clearance for activities, special equipment, installations, experiments and projects with **major Safety implications** prior to design, operation or dismantling activities”*.

For experiments less than 3 weeks duration, and if there are no major safety implications, then the PH-SO procedure will be followed (the ISIEC form and formal safety clearance by PH-SO).

### 5.3 TSO

According to the Safety Guide for experiments at CERN the task of Territorial Safety Officers is to watch over the safety of and in the region or building(s) under their responsibility, thereby ensuring that no part of the CERN site(s) escapes safety surveillance. However, the character of the various regions differs considerably, and consequently also the roles of the TSOs. We shall in this guide limit the considerations to those TSOs that are responsible for either experiment areas or buildings housing experiment support labs/workshops.

## 6 SAFETY CLEARANCE

The procedure for the safety clearance will depend on the type and duration of the experiment and whether or not there are major safety implications. In all cases a formal safety clearance is a requirement before an experiment can start operating

## 7 PS/SPS PHYSICS COORDINATOR

The PS/SPS physics coordinator establishes the AD/PS/SPS user schedules, represents the users at the different scientific and technical committees, being the contact person for both the accelerator groups and the experimental users. He also reports to the CERN management.

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## ANNEX

### Terms and abbreviations in English

|               |  |
|---------------|--|
| <b>CSHS</b>   | Special Health and Safety Committee                            |
| <b>CSO</b>    | Cryogenic Safety Officer                                       |
| <b>CSOC</b>   | Cryogenic Safety Officers' Committee                           |
| <b>DSO</b>    | Departmental Safety Officer                                    |
| <b>DSOC</b>   | Departmental Safety Officers' Committee                        |
| <b>FGSO</b>   | Flammable Gas Safety Officer                                   |
| <b>FGSOC</b>  | Flammable Gas Safety Officers' Committee                       |
| <b>GLIMOS</b> | Group Leader In Matters Of Safety                              |
| <b>HSE</b>    | Occupational Health & Safety and Environmental Protection Unit |
| <b>PH-SO</b>  | Physics Department Safety Office                               |
| <b>RSO</b>    | Radiation Safety Officer                                       |
| <b>SAPOCO</b> | SAfety POlicy COmmittee  |
| <b>SLIMOS</b> | Shift Leader In Matters Of Safety                              |
| <b>TSO</b>    | Territorial Safety Officer                                     |