How to access CNGS

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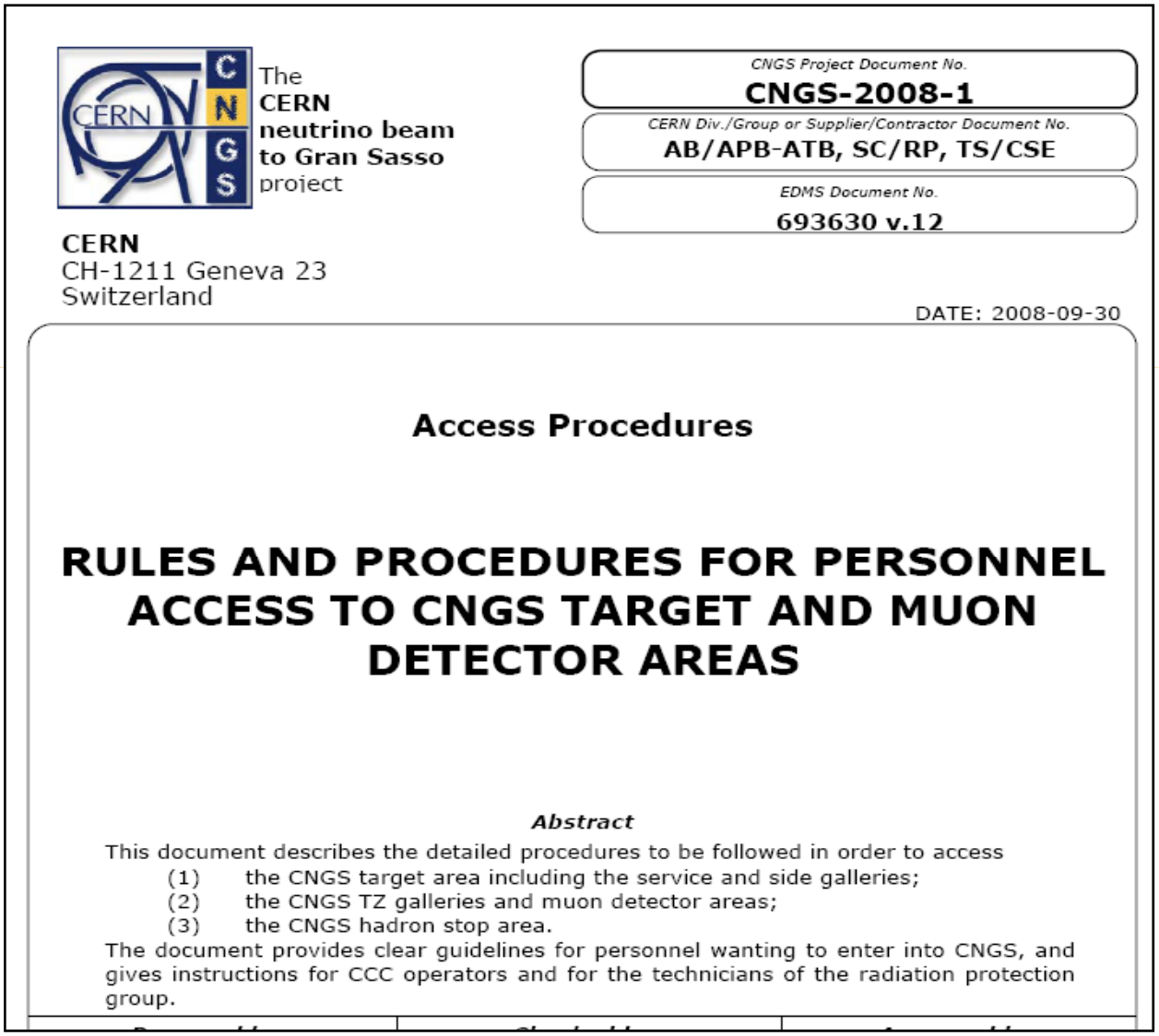
RADWG 3/4/2009

Outline

- Access rules and procedures for personnel access to CNGS
- DIMR - Dossier d'Intervention en Milieu Radioactif
- Waiting time before access
- Radiation levels in TCV4 & TSG4
- Template to be filled out prior of installation of equipment
- General information and RP rules

Access Rules



The CERN neutrino beam to Gran Sasso project

CERN
CH-1211 Geneva 23
Switzerland

CNGS Project Document No.
CNGS-2008-1

CERN Div./Group or Supplier/Contractor Document No.
AB/APB-ATB, SC/RP, TS/CSE

EDMS Document No.
693630 v.12

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Access Procedures

RULES AND PROCEDURES FOR PERSONNEL ACCESS TO CNGS TARGET AND MUON DETECTOR AREAS

Abstract

This document describes the detailed procedures to be followed in order to access

(1) the CNGS target area including the service and side galleries;
(2) the CNGS TZ galleries and muon detector areas;
(3) the CNGS hadron stop area.

The document provides clear guidelines for personnel wanting to enter into CNGS, and gives instructions for CCC operators and for the technicians of the radiation protection group.

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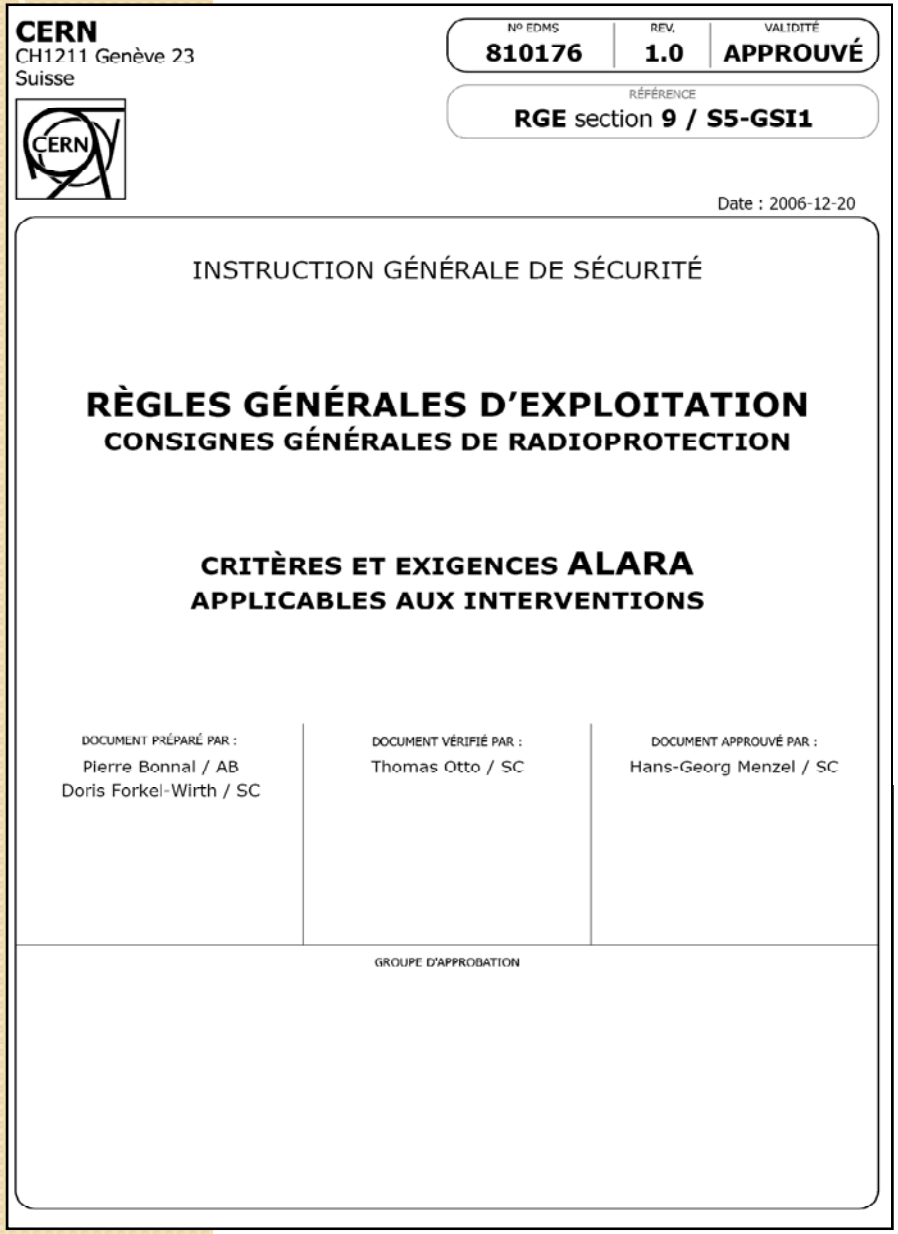
Short summary of access procedure

Prior to allowing the access to these areas

1. the user must present the planned intervention in the EATC and ABOC (necessary to launch the procedure described in Ref. [8])
2. the user must inform the radiation protection group about the access requested to these areas, justifying the intervention - details of the intervention including a time estimate have to be provided. As a general rule, an access must be requested at least 24 hours in advance
3. for the assessment of the risk level, the RP technician must check that the radiation levels on all fixed monitors (RAMSES) are sufficiently low - this check must be repeated prior to an access
4. the radiation protection group estimates the risk level and decides on the procedures to be followed (no special procedure, written request leading to work permit and work procedure, formal approval by ALARA[10] committee)
5. the RSO of the AB department gives the final approval for the intervention to go ahead, following the recommendation of the radiation protection group
6. all other procedures as in 3.1 (for access) and as described in Ref. [9] concerning electrical safety.

DIMR - Dossier d'Intervention en Milieu Radioactif



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810176	1.0	APPROUVÉ

RÉFÉRENCE
RGE section **9 / S5-GSI1**

Date : 2006-12-20

INSTRUCTION GÉNÉRALE DE SÉCURITÉ

RÈGLES GÉNÉRALES D'EXPLOITATION
CONSIGNES GÉNÉRALES DE RADIOPROTECTION

CRITÈRES ET EXIGENCES ALARA
APPLICABLES AUX INTERVENTIONS

DOCUMENT PRÉPARÉ PAR :	DOCUMENT VÉRIFIÉ PAR :	DOCUMENT APPROUVÉ PAR :
Pierre Bonnal / AB Doris Forkel-Wirth / SC	Thomas Otto / SC	Hans-Georg Menzel / SC

GROUPE D'APPROBATION

2. CRITÈRES

2.1 CRITÈRE DE DÉBIT DE DOSE

Débit d'équivalent de dose prévisionnel ($\dot{H}$) dans la zone d'intervention :

	50 µSv·h^{-1}	**2 mSv·h^{-1}**	
niveau I	niveau II		niveau III

2.2 CRITÈRE DE DOSE INDIVIDUELLE

Équivalent de dose prévisionnel individuel (H_i) pour l'intervention, ou pour l'ensemble des interventions de même nature lorsque celles-ci sont répétées plusieurs fois sur une année :

	100 µSv	**1 mSv**	
niveau I	niveau II		niveau III

2.3 CRITÈRE DE DOSE COLLECTIVE

Équivalent de dose prévisionnel collective (H_c) pour l'intervention, ou pour l'ensemble des interventions de même nature lorsque celles-ci sont répétées plusieurs fois sur une année :

	500 µSv	**10 mSv**	
niveau I	niveau II		niveau III

2.4 CRITÈRE DE CONTAMINATION ATMOSPHÉRIQUE

Activité aérienne spécifique CA :

	5 CA	**200 CA**	
niveau I	niveau II		niveau III

2.5 CRITÈRE DE CONTAMINATION SURFACIQUE

Activité surfacique spécifique CA :

	10 CS	**100 CS**	
niveau I	niveau II		niveau III

Tableau 1 — Synthèse des exigences.

Type d'intervention		répétitives / génériques			ponctuels / unitaires		
Niveau de risque		I	II	III	I	II	III
Dosimétrie individuelle		●	●	●	●	●	●
Dosimétrie opérationnelle sans alarme		●			●		
Dosimétrie opérationnelle avec alarme			●	●		●	●
Dossier de sécurité	Docts. descriptifs		○	○			○
	Docts. justificatifs		○	●			●
	Docts. d'exploitation		○	○			○
Analyse de risques radiologiques		●	●	●	●	●	●
Calculs radiologiques / codes simples				●			●
Calculs radiologiques / codes élaborés				●			●
Justification par analyses multi-critères			○	●		○	●
Prise en compte du retour d'expérience		●	●	●	●	●	●
Dossier d'intervention en milieu radioactif	DIMR de niveau I	●			●		
	DIMR de niveau II		●			●	
	DIMR de niveau III			●			●
Cartographie dosimétrique		○	●	●	○	●	●
Relevé de décisions du comité ALARA				●			●
Fiche d'écart / Retour d'expérience		○	○	○	○	○	○

● required
○ recommended

Some information about waiting times

- After beam stop:
  - minimum waiting time before changing from beam to access ventilation mode: 2 h
  - minimum time in access ventilation mode (no access allowed): 4 h
- After minimum 6 hours:
  - Radiation survey (including contamination & air control) in TAG41, TCV4, TSG4 upstream, TCC4/TSG4 (air control - remotely).
  - Grounding of horn and reflector
  - Radiation survey (including contamination checks) in TSG4 (downstream)
- → Minimum waiting time before 'user' can access CNGS:

  2h (after beam stop)

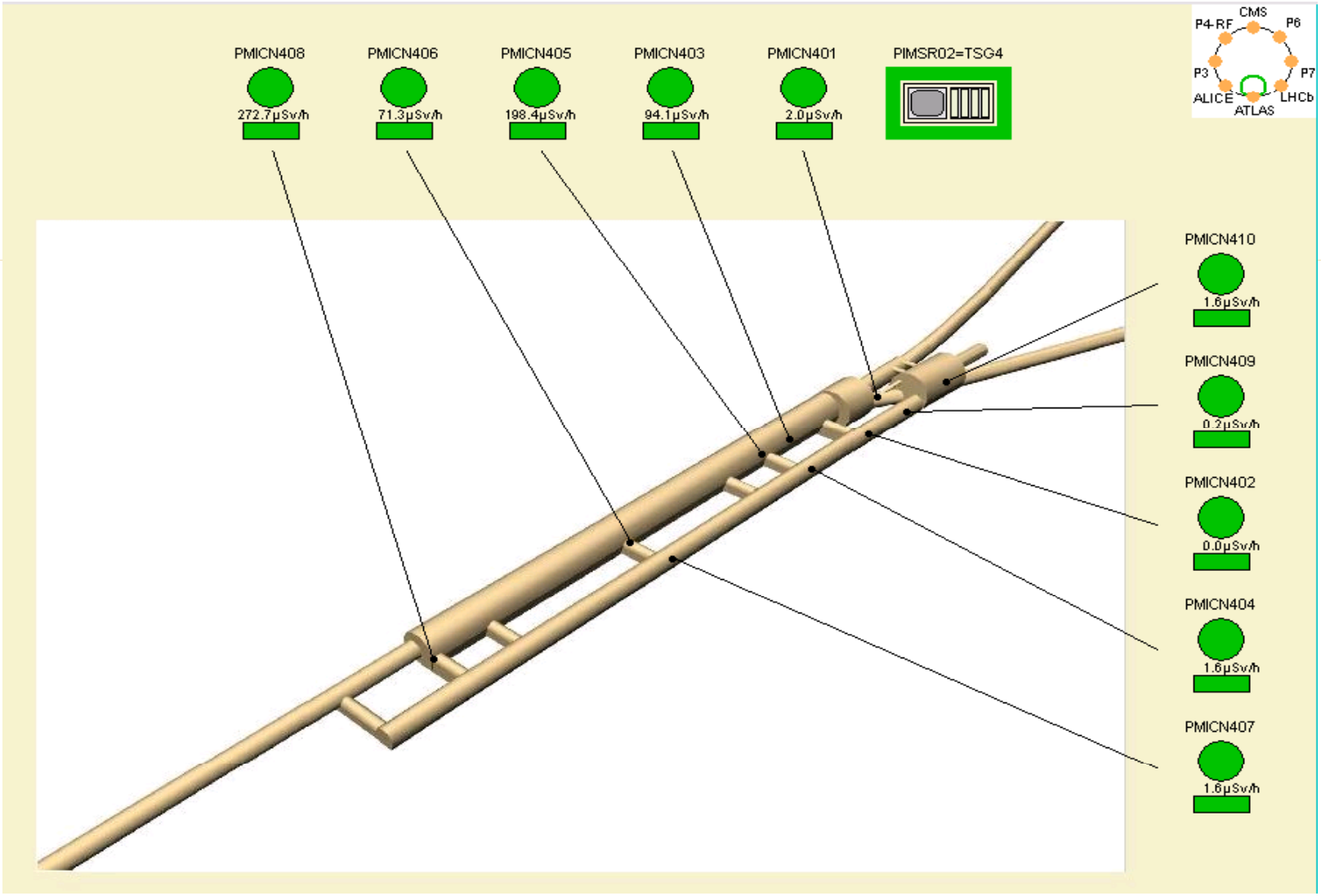
  4h (access ventilation mode)

  6 to 8h (for surveys, grounding)

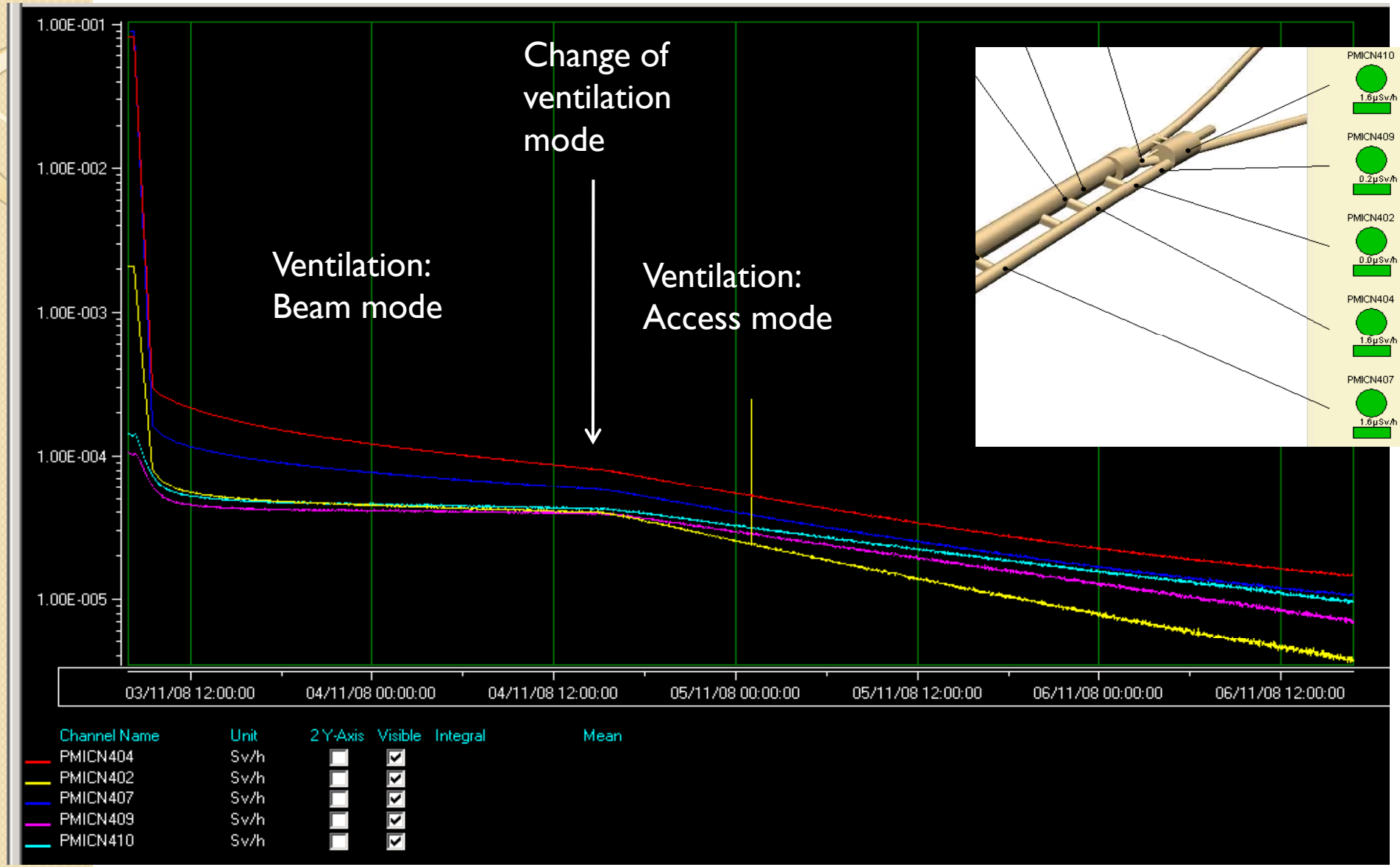
  = 12 to 14 hours

In the past, we always had longer waiting times in order to reduced dose to the environment and also to the people performing a task in CNGS i.e. According to ALARA principles (**A**s **L**ow **A**s **R**easonably **A**chievable).

Induced activity monitors (PMI) at CNGS

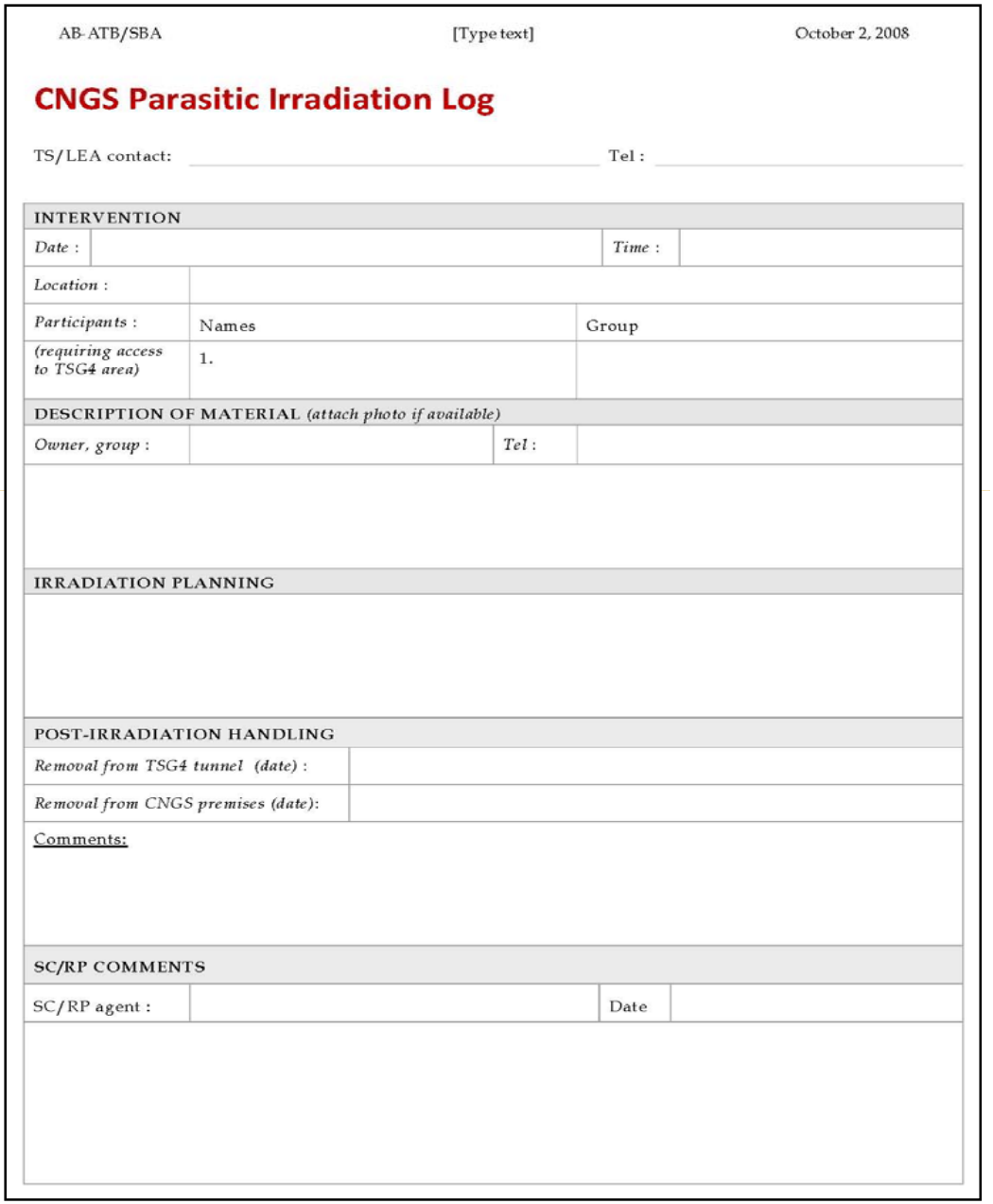


Ambient dose equivalent rate – beam stop 3/11/08 at 8h



Template to be filled out prior to installation prepared by AB-ATB:

EDH form available in the future (?)



AB-ATB/SBA [Type text] October 2, 2008

CNGS Parasitic Irradiation Log

TS/LEA contact: _____ Tel : _____

INTERVENTION			
Date :		*Time :*	
Location :			
Participants :	Names	Group	
(requiring access to TSG4 area)	1.		

DESCRIPTION OF MATERIAL *(attach photo if available)*			
Owner, group :		*Tel :*	

IRRADIATION PLANNING

POST-IRRADIATION HANDLING	
Removal from TSG4 tunnel (date) :	
Removal from CNGS premises (date):	

Comments:

SC/RP COMMENTS			
SC/RP agent :		Date	

General information & RP rules*

- Every person who enters CNGS has to wear his personal dosimeter AND an operational dosimeter. Further, safety shoes, biocell, helmet+headlight.
- Access only together with RP.
- Check your equipment before entering CNGS (is it working as expected?). Do not foresee making any modification of equipment down in CNGS. All equipment should be ready to be installed.
- Do not bring any 'unnecessary' tools or items to CNGS. Risk of contamination.
- Write down the 'starting' dose from the electronic dosimeter before entering CNGS into the 'logbook' and write down the 'end' dose after leaving CNGS. The 'logbook' is placed next to the entrance to CNGS in ECA4.
- Access into TCV4 requires the use of personal protection equipment (PPE) like, overshoes, overall and gloves. To be put on before entering TCV4.
- Practical training course on how to use PPE will be arranged by RP. Everybody who wants access to CNGS shall follow the course (~2h).
  - We need to know how many people are interested?
  - Date/time: to be discussed.

* in addition to the rules presented in the talk 'Handling of radioactive material and waste' by M. Magistris