Neutrino Platform	Cryogenics Commissioning		
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Summary of the safety and access conditions during the NP04 cryogenics commissioning phase

Abstract

This document summarises the safety and access conditions in the NP Hall (extension bld. 887) during the cryogenics commissioning period of the cryostat NP04.

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Distribution List

History of Changes

Date	Version	Changes/Comments	Authors
05.06.2018	1.0	First draft	
19.06.2018	1.1	Implementation of comments	

1 Introduction

This document summarises the safety and access rules inside the Neutrino Platform Hall (build. 887-1) during the commissioning period of the NP04 cryogenics from purge, cool down to the end of the filling period.

The detailed steps of cryogenics commissioning are provided in EDMS **1925105** – "NP04 General overview of the cryogenics process".

The associated detailed risks assessments of the purge, cool-down and filling phases are provided in EDMS **1976764** – "Risk assessment for the cryogenics commissioning phases of the NP04 cryostat in the Neutrino Platform Hall"

2 Access and Safety Rules:

2.1 General access and safety measures:

The general rules below apply during all cryogenics commissioning period from purge to end of filling phases:

1. The visits are not allowed during all the commissioning period. Access to the visitor platform is forbidden.

2. Access to the NP04 trench, the cryogenics platforms (NP04 and external cryogenics platform), the NP04 proximity racks region and the top of the NP04 cryostat are forbidden except to experts under special request and following a specific access and safety procedure (see paragraph 2.2 and 2.3).

3. During this period, all operations of detector control are performed from the detector control room (887/S-08); access to this barack is done via entrance door YSPBC 00592. All operations from cryogenics control are performed from cryogenics control room (887/1-Z04); access to this barack is done via entrance door YSPBC 00661, see Annex. Lausanne entrance door YSPBC 00594 is forbidden to use.

4. All other NP Hall regions for which access will be limited, will be fenced by safety perimeter and safety panels.

5. The personnel entering the NP Hall must have passed the SIR cryogenics safety training, on top of the other required safety trainings.

6. Working alone is forbidden.

7. Access outside normal working hours (20 pm to 7 am) is forbidden except to experts and under special request.

8. Any activity in the NP Hall must be declared and approved via IMPACT (https://impact.cern.ch/). All the activities in the limited access areas must be declared ponctually at daily level.

2.2 Specific access and safety measures – exceptional access in exclusion areas:

In case of need to access to the exclusion areas, additional specific safety measures applies. In particular to access:

- The top of the NP04 detector
- The NP04 trenches
- The NP04 proximity racks
- The NP04 platform

Specific risks assessments are performed and additional safety measures are provided for the team intervening.

At minimum, the following safety measures should be followed (on top of the ones in Chapter 2.1):

1. The accesses to the exclusion areas should remain exceptional and should be kept as short as possible (ALARA).

2. The cryogenics process is slowed down and a cryogenics expert is full time controlling the cryogenics process in the control room.

   In case of purge and cool down, the pressurisation is stopped and the gas inlet valve is closed.

3. The person accessing should wear a portable ODH and the rule of two persons working applies (one working person in the limited area and one person watching from outside at visible and audible contact).

4. The accessing persons are in permanent contact with the cryogenics expert in the control room who will warn them in case of any abnormal behaviour of the cryogenics system.

5. A safety person is present to assist the process.

In case of access to the external cryogenics platform, the safety rules are detailed in EDMS document **1983252**.

2.3 Specific access and safety measures – exceptional access in exclusion areas during test 200mbar – Purge & half filling:

During these two tests (done before the beginning of the purge and afterwards, once the cryostat is half full with argon), additional safety measures are taken (on top of 2.1 and 2.2):

- The NP hall should be emptied and made accessible only to a team of experts participating these tests.

- The personnel must:
  - respect the exclusion limit (materialised by fences).
  - access the hall done via the Saleve ramp entrance.
  - remain in the cryogenics control room (887/1-Z04).

- During this test, the strain gages and displacements sensors located on the cryostat warm structure are continuously checked in order to alert in case of any abnormal behaviour of the tank while pressure is increasing. The process of gas filling is stopped in case of any significant deviation from expected results from FEA calculations.

- In case of need to access the exclusions areas, 2.2 applies.

Annex: NP Hall Layout