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REFERENCE XXX-EQCOD-EC-XXXX

Date: 2019-08-26

ENGINEERING CHANGE REQUEST

Improvement of the shielding for the high intensity hadron operation of M2

BRIEF DESCRIPTION OF THE PROPOSED CHANGE(S):

The Drell-Yan operation of AMBER Phase 1 experiment, which has been approved by SPSC for operation in EHN2 hall, requires a hadron beam of higher intensity to be delivered to M2. The current request describes the shielding modification needed to make the high intensity beam operation compatible with the requirements of the Radiation Protection.

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DOCUMENT SENT FOR INFORMATION TO:

EATM members
IEFC members

SUMMARY OF THE ACTIONS TO BE UNDERTAKEN:

- Installation of additional shielding walls and access door around AMBER target
- Definition of the access procedures to the AMBER target area

Note: When approved, an Engineering Change Request becomes an Engineering Change Order.

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1. EXISTING SITUATION AND INTRODUCTION

M2 beam line is world's longest beam line for a fixed target experiment, with an overall length of 1138 m. it has been designed to deliver high intensity polarized muon beams to the EHN2 hall (see Fig 1.), in which currently the COMPASS experiment is located, but is also capable of delivering a high intensity hadron beam.



Figure 1: A scheme of TT84 tunnel containing M2 beam line, leading to EHN2 hall.

The hadron beam has been requested by the follow-up experiment of COMPASS called AMBER, which has been approved for test runs and operation during LHC Run 3 period. It is envisaged to operate the beam line with an increased intensity of 4.8×10^8 hadrons of 190 GeV energy per spill at the location of AMBER target in EHN2. In order to ensure that this high intensity operation is compliant with the regulations of Radiation Protection, a study has been performed in the framework of Physics Beyond Colliders Conventional Beams Working Group. The results of the study and the proposal for the shielding layout modification are described in the current document.