



**FERMILAB  
Technical Division  
Superconducting Radio Frequency Development Department**

**PROCEDURE TO AUTHORIZE PERSONNEL TO  
OPERATE THE SRF CAVITY VACUUM FURNACE AT  
MP9**

**OP-464048**

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## 1. PURPOSE

This document describes the procedure to be followed to authorize personnel to operate the SRF Cavity Vacuum Furnace located in MP9.

## 2. GENERAL AUTHORIZED PERSONNEL REQUIREMENTS

Operating the Cavity Vacuum Furnace is restricted to personnel who have been authorized by the IB4 Cavity Vacuum Furnace Responsible Engineer. This authorization is contingent upon successful completion of the training that is listed in this procedure. The list of required training and associated documents are listed:

- Review of the following document with the MP9 SRF Cavity Vacuum Furnace Responsible Engineer: *“Operating Instructions for the SRF Cavity Vacuum Furnace at MP9”*, OP-464042, M. Wong
- Review of the following document with the CAF Responsible Engineer: *“Procedure to Authorize Personnel for SRF Cavity Handling at CAF”*, OP-333954, T. Arkan
- Review of the following document with the CAF Responsible Engineer: *“Procedures for SRF Cavity Handling at CAF”*, OP-333955, T. Arkan
- Review of the following document with the IB4 Cavity Vacuum Furnace Responsible Engineer: *“TD LOTO Procedure for the SRF Cavity Vacuum Furnace at MP9”*, Procedure Number TD512070, M. Wong

## 3. GENERAL SAFETY PRECAUTIONS

The following are general safety precautions recommended by the vendor of the SRF Cavity Vacuum Furnace at MP9. At a minimum, all personnel who will be trained to operate the furnace must understand and apply the recommended precautions during the training session.

- High voltage is used in this equipment, high enough to kill through electrical shock. Always break the primary circuit to the power supply before working on the system. Do not attempt to replace components or make adjustments on the unit with the high voltage turned on.
- Do not service or adjust this equipment alone under any circumstance. Always have someone present who is capable of offering assistance and rendering aid.
- Under no circumstance should personnel enter the vacuum chamber without first guarding against accidental entrapment inside the chamber (securing the door in the open position).
- Do not use flammable or explosive liquids, solids, or gases, or any material with the potential to become flammable or explosive, in or around the equipment.
- This vessel and its components are designed for vacuum and limited pressure service. It is not designed to be over-pressurized for testing or any other purpose. This could cause the vessel or its components to burst, possibly expelling sharp pieces at deadly speeds.
- Water used to cool the system can reach scalding temperatures. Touching or rupturing the cooling system can cause serious burns.

Further instruction and hazards are detailed in the document titled, "*Operating Instructions for the SRF Cavity Vacuum Furnace at MP9*" (OP-464042).

#### **4. SPECIFIC TASK RELATED TRAINING REQUIREMENTS**

This procedure explains the procedure for in-house training and qualifying new operators for the SRF Cavity Vacuum Furnace at MP9.

- New operator candidates shall contact the Responsible Engineer and/or the currently trained operator(s) to initiate a request for the training on the furnaces.
- The Responsible Engineer shall review the request of the candidate and shall decide if the request is feasible.
- If the Responsible Engineer approves the new operator candidate to be trained, the person will be notified to schedule the training period with the responsible engineer and the current trained personnel.
- New operator training will start with a short introduction about the general operating procedures of the furnace. The Responsible Engineer will walk through the procedure along with the safety and operating rules with the trainee. The trainee will then begin on-the-job training, while the daily furnace activities continue, working together with the current trained operator(s) to learn how to operate the furnace under the supervision of the Responsible Engineer.
- After adequate training time is spent, the Responsible Engineer will test the gained knowledge and ability of the trainee to operate the furnaces. The trainee must be able to operate the furnace with the knowledge of the operating procedures and safety rules.
- If the Responsible Engineer is satisfied with the knowledge level of the trainee, he will then qualify the trainee as a trained operator.
- The Responsible Engineer will then update the Authorized Personnel Form in Appendix A of this document.

#### **5. RECORDS**

The form shown in Appendix A showing a list of authorized personnel must be completed and maintained by the MP9 Cavity Vacuum Furnace Responsible Engineer. The document will be kept electronically in the TD/Process Engineering (OnBase) document database.



**6. APPENDIX A: AUTHORIZED PERSONNEL FORM**

**AUTHORIZED MP9 CAVITY VACUUM FURNACE OPERATORS**

The following personnel have been authorized to operate the SRF Cavity Vacuum Furnace in MP9. This authorization signifies that they have completed the above-listed training, that this training is current, and that they have demonstrated competence and understanding of the operation of the vacuum furnace to the satisfaction of the Responsible Engineer:

Name	Ext.	Signature	Date Completed

SRF Cavity Vacuum Furnace at MP9 Responsible Engineer: Mayling Wong

Date: 9 December 2011