

# Use of High Voltage Preparation and Restoration Instructions

## Summary

This procedure supports the Power System Safety Rules and its requirements assembled under:

- Operate LV/MECH Apparatus – Category 4.3;
- Operate HV Air insulated switchgear – Categories 5.5, 6.5; and
- Operate HV Gas insulated switchgear – Category 5.6.

It defines when a HVPRI is required to be used and sets down procedures to be adopted by authorised persons when carrying one out.

## Document Control

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## 1. Overview

### 1.1. Purpose

This procedure shall be used to manage the use of high voltage preparation and restoration instructions.

### 1.2. Policy Base

Document no	Document
D2012/15325	Power System Safety Rules

### 1.3. Reference Documents

Document no	Document
D2004/7794	Operating Process for Access to High Voltage Apparatus
D2012/14549	Operating Process for Access to Gas Insulated Switchgear

### 1.4. Scope

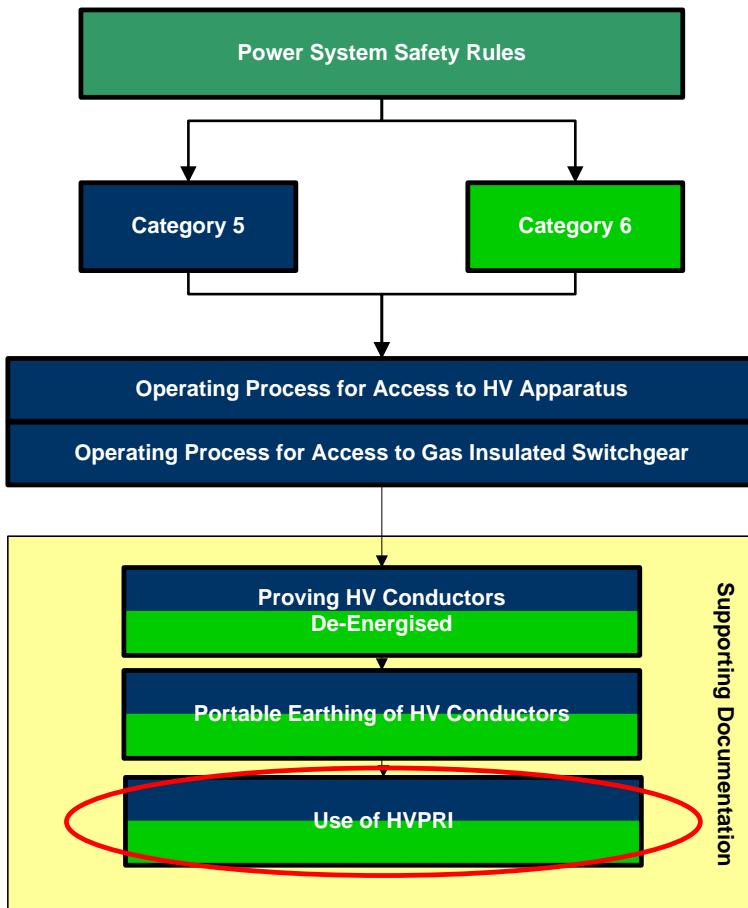
This procedure defines when a HVPRI is required to be used and sets down procedures to be adopted by authorised persons when carrying one out.

### 1.5. Accountability

Responsible person	Responsibility
Manager, Health, Safety and Environment	Ownership of this procedure
Power System Safety Rules Manager	Maintenance of this procedure
Manager – Training	Implementation of training programs associated with this procedure
Authorised persons	Comply with this procedure

## 1.6. Document Location

Block diagram showing location of document in relation to others.



## 2. Introduction

When planning and performing a High Voltage Preparation & Restoration Instruction (HVPRI) the safety of persons in the electrical station, including the authorised person performing the switching, is of the utmost importance, as is the prevention of damage to high voltage equipment and maintaining reliability of supply. With these aims, this procedure defines when a HVPRI is required to be used and sets down procedures to be adopted by staff when carrying one out.

### 3. Use of HVPRI

HVPRI shall be prepared in accordance with OM 973 and shall only be prepared and checked by persons authorised 2.3.

HVPRI shall only be carried out by persons authorised:

- Operate LV/MECH Apparatus – Category 4.3;
- Operate HV Air insulated switchgear – Categories 5.5, 6.5; and
- Operate HV Gas insulated switchgear – Category 5.6.

When an Access Authority is to be issued in accordance with an approved Request for Access (RFA), the required HVPRI shall be carried out by an appropriately authorised person. A written, checked HVPRI issued to the Authorised Person assigned to carry out the switching shall be followed.

#### 3.1. Preparation for Use of HVPRI

##### 3.1.1. Field copies delivered by electronic transmission

Field copies of HVPRI may be sent to the locations where they are to be used by facsimile transmission (FAX) or may be printed from the local computer printer.

##### 3.1.2. Checking of field copy of HVPRI before use

The authorised person carrying out the switching shall:

- (a) Check completeness and correct collation of the HVPRI just before use, ensuring that all pages are present and in the correct order;
- (b) Check that the HVPRI to be used matches the task to be performed; and
- (c) When issue of an Access Authority is involved, that the copy of the Request for Access (RFA) held by the working party exactly matches the RFA attached to the HVPRI and referred to in it. If there is a discrepancy in this regard, or if it is considered that there is a discrepancy between the safety conditions for the working party required by the Safety Rules and those provided by the HVPRI, the matter shall be referred to the controller for resolution.

#### 3.2. Communication Between Authorised Person and Controller

Oral communications regarding a HVPRI must be precise and accurate, otherwise errors and inaccuracies might develop in the transmission and receipt of operating messages and lead to incorrect switching. Where clear transmission of instructions is prevented by poor quality communication channels, alternative methods shall be pursued by the controller and the authorised person until a method is found that allows clear communication.

To confirm that the correct HVPRI is being used, parties shall identify all three of the following:

- Its unique number
- The equipment specified in the heading
- The number of pages in the switching.

Before commencing a switching operation, the Controller shall spend a few moments discussing with the Authorised Person the objectives of the switching, plus other significant operational factors. This might include:

- Whether any customer load might be left radial by the outage
- Any similar work that may be planned for the same day
- Whether the equipment being switched has already been off-loaded from its remote end (so no current flow would be expected)
- Significant prevailing weather conditions
- Any other information that may be of assistance to the authorised person in discharging his duties.

This preamble shall be kept brief, but shall be sufficient to ensure that all parties involved with the switching have a “big picture” overview. If the Authorised Person is still unclear, further information shall be requested before commencing switching.

Where a step of a HVPRI requires advice to be given or accepted, the Controller and the Authorised Person shall quote the step number and clearly state the specific action that is to be undertaken or that has been completed.

The Controller shall approve or request only one group of switching steps to be carried out at one time by the authorised person.

A typical verbal exchange between a Controller and an Authorised Person who is required to carry out a group of switching steps shall be similar in form to the following:

**FROM**            **MESSAGE**

Controller: (Name), Controller/South speaking, on HVPRI No. 1234 for 132kV No. 2 Bus Coupler. The switching instruction shall contain six pages., Be aware that this outage will leave some customer feeders radial. Weather is expected to be fine throughout this outage. It is important that this outage is restored before 1600 hrs this afternoon due to high forecast peak demands. I am giving you clearance to carry out steps No. SE22 to No. SE31 to isolate the 132kV No. 2 bus coupler. The time for step No SE22 is 1015 hours.

Auth. person: I confirm that I have HVPRI 1234 relating to no.2 bus coupler, which has six pages. I understand that I have clearance to proceed with HVPRI No. 1234, steps SE22 to SE31 to isolate the 132kV No. 2 Bus Coupler, at 1015 hours.

Controller: That is correct, please contact me again at step No. SE31.

Auth. person: I expect the switching will take about half an hour to complete. Will contact you at step no. SE31

Auth. person: (Identify self and location), the 132kV No. 2 Bus Coupler is isolated only and I am advising you that I am down to step No. SE31 on HVPRI No. 1234.

**Controller:** (Identify self and location) I understand that the 132kV No. 2 Bus Coupler is isolated only at (location) and that you are down to step No. SE31 on HVPRI No. 1234. The time is now 1040 hours.

**Auth. person:** That is correct, 1040 hours for step No. SE31.

If the Controller loses contact with the Authorised Person at any time (e.g. there is no ring back within a reasonable period after the estimated time for a series of switching steps), then an attempt shall be made to contact the Authorised Person. If the call is not answered, emergency action shall be initiated to verify that the authorised person has not been injured.

### 3.3. HVPRI and the Switching Process

#### 3.3.1. General Considerations:

- (a) The Authorised Person and the Controller shall ensure they have access to the HVPRI at all times.
- (b) The steps must be executed in order, unless agreed between the Authorised Person and the Controller.
- (c) If any errors are found in the course of the switching, these shall be immediately reported to the Network Control Manager by either the Controller or Authorised Person and amended as required.
- (d) If any of the HVPRI steps are not or cannot be completed in the anticipated manner, the Authorised Person and the Controller shall discuss this before deciding whether to proceed. Steps shall not be repeated without this discussion taking place.
- (e) Before commencing each agreed group of steps, the Authorised Person shall discuss with the Controller the probable duration. By doing this,
  - The Controller will be able to assess whether the switching is proceeding according to plan
  - The Controller will not disturb the Authorised Person unnecessarily by requesting the status of progress
  - If the Authorised Person is overdue, the Controller will know when it is an appropriate time to raise the alarm

In the event that the Authorised Person considers that they cannot perform the HVPRI or groups of steps in the HVPRI in the estimated time they shall advise the Controller.

- (f) All HVPRI steps shall be carried out carefully and without undue haste. All staff involved in the switching process need to be aware of potential and actual distractions and interruptions and adopt strategies to avoid these affecting their switching performance.
- (f) If at any stage either party (Authorised Person or Controller) is not happy to proceed, then switching shall be suspended until the problem is resolved. This could be for safety, operational or personal factors all of which are acceptable reasons for suspending the switching and preferable to incurring a switching error.
- (g) Initiating and blocking steps are required to have the time noted on the HVPRI.

Steps shall be crossed off by drawing a non-obliterating line through the whole step and only after all the required actions are completed. In the case of a multi-action step the individual action parts

may be crossed off as each is completed ahead of crossing off the whole step. It is not necessary to cross off initiating and blocking steps.

### 3.3.2. Actions to be Taken by Authorised Person

At each step of the HVPRI the Authorised Person shall apply a disciplined approach to ensuring the HVPRI step is completed correctly. The following 8-step method is suitable:

1. Read the HVPRI step
2. Take the HVPRI to the point of operation
3. Check the equipment description against the HVPRI
4. Prepare to perform the required actions
5. Check again the equipment description and required actions against the HVPRI
6. Perform the required actions
7. Check device has operated and all actions completed correctly
8. Cross off the step in the HVPRI

Where a second Authorised Person is to take over switching, the first Authorised Person shall complete the HVPRI to the next suitable blocking step so that the second Authorised Person has a clear and logical starting point. Before continuing, the Authorised Person taking over switching shall review the actions taken in previous steps and ensure that they are familiar with all relevant conditions existing at the time of taking over switching.

On completion of the last step of the HVPRI, the Authorised Person will advise the Controller accordingly and place the completed HVPRI in the on-site file, where it is to be retained for 12 months.

## 4. Attachments

Nil

## 5. Definitions

Nil

## 6. Change history

Revision no	Approved by	Amendment
1	GM/System Operations	<ul style="list-style-type: none"> <li>• Updated in line with Safety Rules Revision 3.</li> </ul>
2	N Smith GM/System Operations	<ul style="list-style-type: none"> <li>• Reformatted</li> <li>• Revised in line with Power System Safety Rules V5</li> </ul>
3	K McCall, Manager/Health Safety and Environment	<p>All significant new additions and alterations to Revision 3 have been highlighted in this version by a vertical sidebar. The following have been altered:</p> <ul style="list-style-type: none"> <li>• Categories of authorised persons revised to permit Category 4.3 to operate LV/MECH apparatus via steps on a HVPRI, for example, intertrip links.</li> </ul>



4	K McCall, Manager/Health Safety and Environment	No significant content changes. Document reviewed and minor editorial changes and updates to position titles made.
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## 7. Implementation

This procedure is part of a package of documents explaining how to implement the Power System Safety Rules. It will be included as part of the training for persons authorised to Categories 4.3, 5.5, 5.6 and 6.5.

## 8. Monitoring and Review

The Power System Safety Rules Manager is responsible for the ongoing monitoring and review of the documents associated with the Power System Safety Rules. This can include but is not limited to:

- Requesting regular feedback on the effectiveness of procedures and work instructions. Appropriate feedback tools include focus groups and online assessments;
- Where a change has occurred in our processes; and
- Recommendations arising from incidents.