

## 1 Scope/Application

This work is to be carried out in accordance with the requirements of CP306 – Fitting Manual procedures of work. Where the manufacturer's maintenance instructions are available, they should also be referred to.

It is also important that any type-specific defects are checked for and if necessary put right during maintenance. Defect reporting and recording is described in detail in CP305, it is also important that any modifications associated with the switchgear be completed in line with plant modification requirements

This work is to be carried out in compliance with the requirements of the Distribution Switchgear, General Procedure FM6/001 and FM6/021

## 2 Safety Information

	<b>WARNING: Live Electrical Systems – Use Live Work Techniques/Procedures/PPE for those activities carried out or near equipment that could be live.</b>		
	<b>MANDATORY: Work shall be carried out in accordance with General Requirements in Section 1. Approved mandatory PPE and work wear shall be in accordance with General Requirements in Section 1. Additional Approved PPE and work wear required to complete this task are specified below.</b>		
	LV Insulated Gloves		Hard Hat
<p>The task covered by this procedure has significant hazards associated with it identified by the symbol and text <b>WARNING:</b> </p> <p>This procedure details the risk control measures that <b>Shall</b> be applied when carrying out the task. If the risk control measures in this procedure are implemented the risks will be controlled. This procedure also forms the method statement for the task.</p>			

## 3 Approved Equipment

Refer to Section 10 of this Manual for approved tools and equipment.

## 4 Risk Assessment



**The Point Of Work Risk Assessment (POWRA) shall be carried out for this work and shall detail what mitigation has being put in place regarding the hazards as detailed in Section 5 of this document. A copy of POWRA can be found on the Electricity North West Limited website (Volt) within the HSE Section.**

<b>Risk:</b>	Work in confined spaces. Work adjacent to dead/live systems. Working at Height where the control box is above the Anti Climbing Device. Use of hand tools, use COSHH regulated substances.
<b>Risk Level:</b>	Low
<b>Control Measure:</b>	<ul style="list-style-type: none"> <li>• Training and autherisation for electrical fitting works.</li> <li>• Issue of safety documentation.</li> <li>• Correct PPE used (i.e) safety glasses, gloves, Arc resistant coveralls &amp; steel toe boot.</li> <li>• Working at height heirachy and correct access equipment, trained techniques including emergency rescue procedures and PPE used.</li> </ul>

## 5 Method

From a telemetry perspective there are 2 types of GVR control cabinet installed on the network. The older type GVR control cabinet (referred to as Retro GVRs) and the newer style (referred to as New GVRs).

Retro GVRs contain separate lithium-ion batteries for the Polarr relay (15V) and GVR (96V). Retro GVR installations have no battery monitoring or charging facility.

New GVRs use either a 60V or 72V lead acid battery depending on the year of manufacture. New GVRs contain a battery charger and battery monitoring device which provides GVR battery low alarm when battery defects are detected during a weekly automatic battery test, instructed locally or via Telecontrol.

Sulphur hexafluoride (SF<sub>6</sub>) gas pressure checks must be carried out before any work is carried out.

If the Brush SF<sub>6</sub> pressure tester indicates a value lower than detailed in CP306 FM6/021 Section 5.4, a defect report shall be submitted. The Network Management HUB and System Operations shall also informed.

GVR and Polarr relay maintenance activities can continue if the SF<sub>6</sub> pressure is low.

## 6 GVR and Polarr relay battery replacement process

### 6.1 Process

- Identify the site where batteries are to be replaced, and battery type required with the central telemetry team.
- Contact the Network Management HUB and request FLISR is disabled.
- Check SF<sub>6</sub> gas pressure and proceed accordingly.
- Open the inner door to the Remote Terminal Unit (RTU) and remove the fuse to the 60V / 72V / 96V GVR battery and 15V Polarr relay battery if necessary.
- On the “New GVR” only - Remove the fuse to the 240/60V AC-AC transformer on the right-hand side of the enclosure.
- Remove the RTU batteries to allow access to the GVR batteries. Replace these batteries if required (check with the central telemetry team).
- Remove any battery support frames.
- Test polarity of batteries and battery voltage.
- Using a flat bladed screwdriver remove the wiring for the GVR batteries from the connector block.
  - Retro GVRs contain 15V Polarr relay battery and the 96V GVR battery.
  - New GVRs have either a 60V or 72V battery - note polarity and identification on the cables.
- Remove the old battery and install the new battery.
- Reconnect the wiring into the connector block as noted.
- Test polarity of batteries and battery voltage, ensure polarity as previously tested.
- Replace the fuses on the 60V / 72V / 96V GVR battery and if fitted 15V Polarr relay battery.
- On the “New GVR” only - Replace the fuses on the 240/60V AC-AC transformer.
- Reinstall the RTU batteries.
- Perform a GVR battery test if applicable, either locally or via Telecontrol.
- Contact the Network Management HUB and request FLISR is enabled.
- Update the central telemetry team with the new battery details.

**NOTE:**

Once the GVR battery has been replaced and the fuses inserted, the GVR battery charger will start the boost charge cycle ensuring the battery full charged.