**STANDARD OPERATING PROCEDURE**

**ELECTRICAL Plant Isolation, Lockout and Tag Removal**

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<tr>
<th>Doc ID</th>
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**SOP Prep By:** Gary Woods, Janelle Hobbins, Harvey Baldwyn

**Authorised By:** Harvey Baldwyn – Manager Operational Services

**Applicable:** All QUT Staff and Contractors

Alternate contractor procedures are acceptable only if equivalent in practice and standards.

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**Date of Issue:** 1/11/13

**Task description & scope:**

This procedure applies to situations requiring electrical isolation of plant or equipment (after load side of main switch). Electrical energy, as the most common hazard of engineered plant systems, is the only risk addressed in this procedure. All other hazards specific to plant e.g.: chemicals, other energy sources or physical/mechanical hazards must be risk assessed in addition, prior to isolation proceeding and any additional physical controls implemented.

For specific items of plant requiring a particular shutdown practice or isolation sequence, a unique SOP should be developed for use by QUT personnel and include manufacturers or installer recommendations.

**PPE : Minimum requirements -**

**Mandatory - * Indicates standard for all electrical operations**

- Safety Eyewear with Sideshields (if required)
- Insulated Gloves (if required)
- *Safety footwear

- *100% Cotton or Wool Socks
- *100% Cotton Industrial Long Sleeve Shirt and Long Trousers or cotton overalls suitable for electrical work.

**Training and Certification**

Only those staff and contractors who hold the following competency and are trained in the following as a minimum, should undertake isolations on QUT equipment.

- QUT FM Electrical Safety Management plan and procedures
- QUT FM Plant Isolation Procedure
- Understanding of the Electrical Safety Act, Regulations and Codes of Practice
- Queensland Electrical Work Licence for an Electrical Fitter and or Mechanic (or equivalent) or
- Queensland Restricted Electrical Work Licence (Refrigation/Air Conditioning, Plumbing/Gas)
- Switchboard Rescue and CPR certification is current

**Health & Safety**

Ineffective isolation practices may cause serious injury or death to maintenance staff or contractors working on the plant system through inadvertent start up or contact with still energized components.

**Further advice may be sought from FM Maintenance Manager, FM Engineering Manager or FM Electrical Team Leader on specific electrical safety concerns.**
### Environment
Nil

### Quality: Key aims -
- The electrical isolation is effective, with no risk of electrocution of persons working on or in the plant system.
- The responsible supervisor ensures that all personnel are trained and competent in these procedures.
- Electrical systems is returned to a safe condition before release back to full service.

### Tools and Equipment
- Tag and lock kit – including Danger Tags, Out of Service tags, locks with individual keys, indelible pens
- Electrical test equipment currently in test (meter)
- Appropriate task lighting (torch)

### Referenced Documents
- FM ESMP PLN805_015 A & B Electrical Safety Management Plan Vol 1 & 2
- FM SOP805_016 – Live work testing (Single person)
- FM SOP805_022 – Live work testing (With safety observer)
- FM PRC805_034 – General Plant Isolation Procedure (Lockout, Danger and Out of Service Tags)
### A. Applying Isolation, Lock out and Personal Danger Tags (PDT)

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<thead>
<tr>
<th>Step</th>
<th>Who</th>
<th>Action</th>
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</table>
| 1. Identify all power or energy sources | Staff or contractor | - Ensure safe access and egress to isolation points and sufficient lighting to view isolation points e.g.: switchboards  
- Find all isolation points – not just one  
- “Whole of current isolation” shall be used.  
- Check for alternate power supplies e.g.: photovoltaic cells; generators; Uninterrupted Power supplies (UPS) which may automatically start if power is turned off. |
| 2. Apply lock out device to all isolation points | Staff or contractor | - Emergency stop buttons or other control isolation points must not be used as isolation points.  
- Apply whole of current isolation by turning off circuit breaker, switches or remove fuses to isolate circuit, then  
  - For circuit breaker and switches fit breaker / switch lockout and padlock;  
  - For fuses – physically remove fuse.  
- Where more than one person is working, a multi padlock hasp may be used on common control points.  
- Each person must have their own lock, key and tag. **One lock- one key**, no duplicate keys for any lock. |
| 3. Apply personal danger tag (PDT) to all isolation points | Staff or contractor | - Every person working on isolated equipment must apply their own personal danger tag applied to each lock or multi-hasp device if used.  
- Each PDT must be filled out fully accurately, dated and signed, with the mobile phone number and details of the person who placed it clearly and legibly written on them. |
| 4. De-energise all stored energy | Staff or contractor | - Reduce inertia in mechanical parts, parts likely to move by gravity, electrical capacitors, accumulators, springs and pressurized fluids. |
| 5. Check and test the isolation for effectiveness | Staff or contractor | - Test that supply has been isolated  
- Ensure that test device is operating correctly before and after the isolation test.  
- Attempt to start the plant item, without exposing the tester or others to risk of injury. |
| 6. Identify the safe areas of | Staff or contractor | - Check, barricade or restrict access to work |
### B. REMOVAL of Isolation Lock out and Personal Danger Tags (PDT)

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<tr>
<td>1. At the end of the job, day or work period, each person is to remove their lock and personal danger tag (PDT).</td>
<td>QUT Staff or Contractor</td>
<td>Only the person(s) who placed the lock or PDT tag must remove it. This should not inconvenience most electrical work, as most jobs are completed within 1 full day or work period. In some situations, where this is not done, the lock out/isolation may need to remain in place overnight. The PDTs attached to these locks or isolations must be removed. An Out of Service tag must be attached in place of the removed PDT, and remain in place if the work is incomplete and equipment remains unsafe to use until work resumes.</td>
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<tr>
<td>2. In situations where a PDT has not been removed at end of work period or day. 2.a Confirm that the person who placed tag is definitely not on site</td>
<td>Contractor, Project Co-ordinator, Supervisor</td>
<td>Check that the person is physically unable to remove tag or lockout because they are injured, off site and /or can’t be contacted in any way. The senior FM positions (2b) will confirm the safety of the situation with/without the person on site, before authorising removal of the remaining isolation lock and/or tag. Request Security to contact one of the above positions (2b) for assistance with removal of any remaining lock and tag.</td>
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**Interference with electrical locks or tags, misuse or unauthorised removal by persons or contractors will result in disciplinary action by the University including dismissal or cancellation of contract.**

Please refer to FM- PM800-PRC805_034 - General Plant Isolation System (Lockout, Personal Danger
and Out of Service Tag Procedures) for more detailed system information.