



STANDARD OPERATING PROCEDURE

FOR

(Company)

**LOCK OUT TAG OUT – SAFE WORKING WITH LIVE
ELECTRICAL INSTALLATIONS**

Authorised By.....

DOCUMENT REVISIONS

ISSUE	DATE	PREPARED BY	REVIEWED	DESCRIPTION
1				
2				
3				

CONTENTS

	PAGE
1 SCOPE	3
2 OBJECTIVES	3
3 PERSONNEL	3
4 RESPONSIBILITIES	3
5 PROCEDURES	3
6 APPENDICES	5
7 REFERENCES	8

1.0 SCOPE

To establish a procedure to provide a safe work environment for employees and contract personnel during the service, maintenance or installation of equipment which prevents accidental or unauthorized release or contact with any form of uncontrolled hazardous energy.

This Procedure describes the method to be followed for safe working where there is presence of Live Electrical Supply. It details the safe Lock-off of equipment and panels in a controlled manner on various XXX Company sites.

2.0 OBJECTIVE

The purpose of this Procedure is to ensure that XXX employees and those working on behalf of XXX Group, are aware of the safe system of work involving tasks associated with live electrical energy control (including locking-off and tagging-off of equipment is in line with Company policy.

In all cases the electrical services installation shall comply fully with all current legislation/regulations, including the following:

- The Safety Health and Welfare at Work Act, 2005
- The Safety Health and Welfare at Work (General Applications) Regulations 2007-2016 (primarily Part 3 Electricity)
- Low Voltage Directive 2006/95/EC
- National Rules for Electrical Installations, Third Edition, ET 101/2000, by the Electro Technical Council of Ireland.
- ET 105/2000, by the Electro Technical Council of Ireland.
- The Building Regulations 1997, issued by the Department of the Environment,
- Requirements of the Electricity Supply Board,
- Code of Practice for Fire Detection and Alarm Systems for Buildings – System Design, Installation and Servicing, I.S.3218: 1989, by the National Standards Authority of Ireland.
- Code of Practice for Emergency Lighting, I.S. 3217: 1989, by the National Standards Authority of Ireland.
- Guidance-Note on Periodic Inspection and Testing of Electrical Installations required by the 2007 Safety Health and Welfare at Work (General Application) Regulations

3.0 PERSONNEL INVOLVED

- Contract Director
- Contracts Manager/Project Engineer
- Site Supervisor
- Electrician
- Client Contact Person / Representative

4.0 RESPONSIBILITIES

The Contracts Manager/Project Engineer is responsible for the effective operation of this procedure.

The Site Supervisor (Duty Holder for safe working practices) is responsible for ensuring that this standard operating procedure is adhered to. They will ensure that Electricians are aware of the safe system of work required for safe isolation (Lock out Tag Out) as detailed in this SOP.

XXX Electrician is responsible for ensuring that circuit is made safe (safely isolated / Locked Out tagged Out & appropriate test carried out)

Client Contact Person / Representative is responsible for providing safe access and relevant information to assist in safe access and the safe isolation of circuits / equipment. Provision of relevant information (Board Charts, Circuit Lists, drawings and any other relevant information to enable safe isolation).

All other responsibilities are defined within the procedure.

5.0 PROCEDURE FOR LOCK-OFF OF EQUIPMENT & DISTRIBUTION BOARDS

5.1 GENERAL

The XXX Site Supervisor is responsible for ensuring that all working, testing and commissioning is carried out with due regard to Health & Safety requirements, the electrical specification, relevant codes of practise, legislative requirements, manufacturer's requirements, client requirements, the fabric of the building, the main programme / schedule of works and possible impact on other trades, members of the public & building users. They must also ensure that the equipment is both safe mechanically and electrically to switch on.

5.2 LOCK OUT TAG OUT IS REQUIRED:

- To lockout tagout equipment/systems (including associated hazard areas) to prevent re-energisation which could cause injury to persons proposing to conduct work on the equipment / system.
- To lockout tagout unsafe equipment/system which could cause harm if used (i.e. redundant equipment which will no longer be maintained, equipment which requires repair, equipment which is not operating correctly and is unsafe, etc.).

5.3 ELECTRICAL SAFETY

- Electrical equipment must be marked and provided with the relevant document to show conformance with electrical safety standards.
- Electrical systems and equipment must be designed, installed, commissioned, repaired and maintained in accordance with recognised standards and as defined in these procedures. Client will provide relevant information retained from previous installation works. New boards will be certified by supplier and relevant test information / certificates provided by supplier / manufacturer of equipment.

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- All electrical installation work must be inspected & tested in accordance with legal relevant standards, procedures and provided with suitable records of such.
 - The design and installation of electrical systems and equipment must provide adequate means of isolation and adequate working space, access and lighting to allow safe routine maintenance.
 - Electrical systems must be inspected, tested and maintained by competent persons in accordance with recognised standards or assessment. Client will ensure that relevant test records / certs are in place and confirm to XXX that installation is safe to work on. If XXX Electrician notes any defects in the existing system they will stop works and report the issue to the client. Client will then be responsible for ensuring the installation is safe for works.
 - Site Supervisor (An electrical qualified Duty Holder) is appointed to direct and guide electrical safety arrangements in the business unit.
 - This SOP is to be implemented to provide control of electrical systems/equipment and electrical installation and maintenance work.
 - XXX staff will complete a Task Specific Risk Assessment immediately prior to commencing work. Electrical work is risk assessed and suitable systems of work are implemented (including supervision, personal protective equipment, permits, tools and equipment, etc.).
 - XXX Supervisor will ensure that only competent Electricians will install or maintain electrical systems, equipment and appliances.
 - Live work on electrical systems and equipment is prohibited. Live testing is permitted where justified, it can be done safely and is authorised by an electrical qualified Duty Holder. (XXX Supervisor) This will be Risk Assessed (TSRA) and appropriate controls used to prevent any contact with live terminals / equipment. Examples include attaching Analysers, Monitoring Meters and Post Connect testing. XXX Supervisor will ensure that only competent and authorised Electricians will carry out these works and suitable precautions are taken.
 - During installation works XXX electrician will ensure that if any electrical system and equipment defect are observed then these must be reported, made safe and repaired in a timely manner. ETCI Safe Electric Guidance Note on Periodic Inspection and Testing states “All defects noted must be repaired promptly in order to prevent danger. Where a defect or an imminent threat to the person or building is identified, it should be rectified immediately by a qualified electrician. Such rectification works should be recorded and form part of a new certificate and a report of the test should be completed by the competent person carrying out the test...”
 - Electrical accidents, injuries or near misses must be recorded and investigated.

5.4 ELECTRICAL DISTRIBUTION BOARDS AND CONTROL PANELS

- All electrical switchboards/switchgear should have safe access. They should be accessible from the floor.
- If the board is inaccessible, then suitable safe access such as a work platform should be provided. If work platforms / ladders are used, they should be non-conductive.

5.5 LOCKING-OFF

The following information relates to the XXX Group procedure for the locking-off of main and sub-distribution equipment in a **new** installation.

- Once new distribution and MCC equipment is installed, all isolators are locked and tagged in the off position. Tags will indicate the reason for isolation *e.g. Awaiting Power On*
- Once sub distribution boards are installed and powered up all MCBs and RCDs are turned to the off position clamped with Circuit Breaker Clamps, Locked and Tagged. Tags will indicate the reason for isolation *e.g. Awaiting Power On*
- At no time are MCBs and/or RCDs to be in the off position and left un-locked or untagged. The taping off of these items is strictly not allowed.

5.6 MAIN & SUB-DISTRIBUTION EQUIPMENT

The following information relates to the XXX Group procedure for MCB electrical operations.

- Any isolations required for pre-installed MCBs or RCDs do not require a switching or isolation request.(see XXX Isolation Record) Once turned off the locking procedure will be as above however the tag will indicate the reason for disconnection with authorising persons signature
- Only the authorised person can remove locks and tags from the MCBs or RCDs for powering back on
- All isolations of main and sub distribution equipment are accompanied by “XXX Isolation Record” this is a formal, written request which must indicate the following
- This request is completed by the person requesting that the equipment / board is to be powered down. XXX Supervisor will be responsible.
- For equipment installed in the field *e.g. pumps, machinery etc*, the request comes from the system owner to the authorised person within XXX Group. **Note:** Isolation point must be locked out locally with tag in place. No bare ends are allowed. If equipment is removed or accessory not installed at final circuit then suitable connectors must be used & placed inside a connection box (Knockout Box / Coffin Box). This box must be labelled with circuit number and Distribution Board number
- Once the request for disconnection is received the Electrician powers down the appliance in line with the lock out tag policy outlined below

5.7 LOCK-OUT & TAG-OUT

The following information relates to the XXX Group procedure for electrical operations and applies to all installations, maintenance, repair, etc. that require working on or near electrical equipment and Distribution Boards.

The following procedure is adhered to when operating on machinery / appliances prior to installation, maintenance, repair or modifications.

- Risk assessment carried out prior to start (TSRA)
- Lock Out Tag Out Permit filled out.
- Identify the energy source.
- Confirm supply is present (use calibrated voltage tester)
- De-energize the appliance / switch to off position
- Identify any potential back feeds and ensure they are isolated.

- Lock off the isolator using approved locks and tags. Note: each person working on the circuit will then apply their own personal lock. This means that the circuit cannot be inadvertently switched on unless all persons are in agreement and have removed their locks. See Power Return below)
- Tag the lock using the high visibility tags supplied
- Tags must clearly identify the type of work being conducted and the authorized person involved
- Test to ensure that the system is dead (use calibrated voltage tester)
- This procedure is strictly controlled and monitored by the site supervisor/foreman
- The site supervisor/foreman is the only one who will authorize the locking off tagging and working on electrical equipment

5.8 POWER RETURN

The following information relates to the XXX Group procedure for electrical operations and applies when power returns (switched back on) to electrical equipment.

- Locks and tags are removed by the person who applied them (including Personal Locks applied by all relevant persons)
- If the supply switch on request is from outside XXX Group, A formal (written) request for connection is applied for in line with this procedure.
- For all sub circuits, the authorised person is the only one tasked with removal of the locks and tags
- All apparatus / equipment / board terminations is checked by this person before switching back on to ensure that the appliance or circuit is safe to be energised
- Pre-and Post-Connect testing will be carried out (in line with the current edition of the ETCI Regulations).
- Calibrated Test kit will be used by a Competent Electrician
- Pre-Connect testing will be carried out to ensure that the circuit / equipment is safe to switch back on.
- Post Connect testing will be carried out on live circuit and will confirm that the circuit is safe to use.
- Test Record sheets will be completed by XXX Group to capture pre and post connect test results. Copy retained for inspection.
- If test record is not in line with ETCI regulations, then the circuit is immediately locked out Tagged out with reason applied pending fault finding. It will not be switched on until safe to do so.
- Distribution Board - Once supply has been switched on, then appropriate signage must be in place at Distribution Board to indicate it is now Live.

Note when working on /or near electrical equipment ensure the following

- Only Competent (Trained, Experienced & Knowledgeable) Electricians to carry out works where there is a presence of Live electrical services. XXX Group Apprentices must not be allowed to work on live circuits / distribution boards.
- Never wear conductive material i.e. watches, rings, belt buckles jewellery
- Always use properly insulated tools and equipment
- Never allow substances such as swarf etc build up in the area that may contribute to a short circuit or electrical arcing.
- When working on live equipment while fault finding always use the one hand rule

5.8.1 EMERGENCY PROCEDURES

- Should a person contact live service – Call for help / raise the alarm prior to going to their aid.
- Disconnect the supply if safe to do so. If unable to disconnect the supply, then use a non-conductive item to push the person away from the source.
- Once the person has been safely removed from the supply ensure that medical assistance is given.
- If they are not breathing then an AED can be used by a qualified first aider and CPR carried out.
- Note that contact with electricity may result in burns to skin so first aider to carefully treat these in line with medical guidance.
- Keep the person conscious and be aware of emotional shock as well as Electric shock. They may feel sudden coldness following shock, ensure they are kept warm, Do not put pressure in burn injuries.
- Eye damage from flashovers / arcing are a common injury sustained. Again, a qualified first aider or trained responder must ensure that the injured person does not rub eyes or attempt to open them if closed.
- Wait for ambulance / advanced medical care giver to provide assistance / take over.

5.9 VERIFICATION, TESTING AND CERTIFICATION – EXISTING & NEW INSTALLATIONS

- In order to comply with the SHWW, (General Application) Regulations, 2007 - 2016 and the ETCI National Rules, ET 101 :2000, every electrical installation has to be inspected, tested and certified, before being put into service and periodically, to ensure that it still complies with the National Rules. Because of this, and to allow the original record data to be verified, the following is required:
- Completed National Rules for Electrical Installations ‘Test Record Sheets’ should always accompany the National Rules for Electrical Installations ‘Completion Certificate’ and ‘Sub-System Completion Certificate’ (See samples in ET 101:2000), all of which, should be handed over to the ‘Project Supervisor Construction’ for inclusion in the ‘Project Safety Manual’ on completion of the project.
- All tests should be made with suitable testing equipment that have up to date calibration certificates.
- The exact location of all test points, should be recorded on the ‘Test Record Sheet’, and the physical location should be identified and labelled locally.
- The exact location of the main earthing and bonding points of conductive parts in a building (metal pipes for water, gas, oil etc., structural metal parts, HVAC systems etc.,) should be recorded on the ‘as-built’ electrical floor plan layout drawings, and be physically marked locally, by a proprietary metal tag, in compliance with the National Rules. In the event that the point is hidden behind a panel for example, then a suitable label should be posted where it can be easily seen. The above is necessary to facilitate periodic safety inspections of all earthing points, to physically check that they are in good order.

6.0 APPENDICES

Appendix 1. Risk Assessment

Appendix 2. XXX Lock Out Tag Out Permit

7.0 REFERENCES

ETCI Regulations



APPENDIX 1 – RISK ASSESSMENT

Hazard/Risk Workshop Activity		Risk Rating Before			Controls Introduced by Company	Risk Rating After																																															
Who's at Risk: Electrical Contractors, General building users		L	S	RR		L	S	RR																																													
Activity: Non-Compliance with the above guidelines Hazards: <ul style="list-style-type: none"> • Electrocution, Burns, Fire, injury to person / Death • Workers unfamiliar with protection systems in place • Systems not compatible with others systems • Hardware not facilitating safe practices for LOTO etc. • Future works incompatibility • Maintenance work at heights issues 		3	3	M	1. All works should be planned in accordance with this document. 2. Works carried out in accordance with this specification will ensure that systems within the site are compatible with existing systems, that future works can be carried out with minimal disruption, and that trades men working on the systems are familiar with the methodology used. 3. This SOP allows for electrical works within XXX GROUP to be carried out in accordance with LOTO procedures, and thus ensures the safety of the tradesmen working on the systems in future. 4. Only Competent and Authorised Electricians to carry out works involving Live Electrical servicers. 5. Suitable and calibrated test equipment used to verify presence and absence of voltage by Qualified Electrician. 6. Survey works prior to commencement. Identify circuits to be worked on. 7. Task Specific Risk Assessment to be carried out prior to any works involving safe isolation of supply. 8. Appropriate nonconductive equipment used. (tools and work platforms) 9. Emergency plan in place to include raising the alarm / call for help. Identify a means of disconnecting the Supply form the Person or the Person from the Supply. Do not touch the person while they are in contact with live circuit / equipment. Identify the location of First Aid and AED if available.	1	3	L																																													
Likelihood (L) Categories	Severity (S) Categories	Risk (R) Matrix			Risk Acceptability																																																
5 <i>Certain or Near Certain</i> 4 <i>Very Likely</i> 3 <i>Likely</i> 2 <i>Somewhat Likely</i> 1 <i>Unlikely</i>	5 <i>Multiple Fatalities</i> 4 <i>Permanent Total Disability, Single Fatality</i> 3 <i>Major Injury, Lost Time Injury</i> 2 <i>Minor Injury, Restricted Workday Case</i> 1 <i>Slight Injury, First Aid</i>	Risk (R) Matrix	<table border="1"> <thead> <tr> <th colspan="2"></th> <th colspan="5">SEVERITY</th> </tr> <tr> <th colspan="2"></th> <th>5</th> <th>4</th> <th>3</th> <th>2</th> <th>1</th> </tr> </thead> <tbody> <tr> <th rowspan="5">LIKELIHOOD</th> <th>5</th> <td>High</td> <td>High</td> <td>High</td> <td>Medium</td> <td>Low</td> </tr> <tr> <th>4</th> <td>High</td> <td>High</td> <td>Medium</td> <td>Medium</td> <td>Low</td> </tr> <tr> <th>3</th> <td>High</td> <td>High</td> <td>Medium</td> <td>Low</td> <td>Low</td> </tr> <tr> <th>2</th> <td>High</td> <td>Medium</td> <td>Medium</td> <td>Low</td> <td>Low</td> </tr> <tr> <th>1</th> <td>Medium</td> <td>Low</td> <td>Low</td> <td>Low</td> <td>Low</td> </tr> </tbody> </table>							SEVERITY							5	4	3	2	1	LIKELIHOOD	5	High	High	High	Medium	Low	4	High	High	Medium	Medium	Low	3	High	High	Medium	Low	Low	2	High	Medium	Medium	Low	Low	1	Medium	Low	Low	Low	Low	High (H) Unacceptable, must reduce. Communicate Residual Risk if applicable. Med (M) Tolerable, assuming risk has been reduced as far as “Reasonably Practicable”. Communicate Residual Risk Low (L) Tolerable. Communicate Residual Risk.
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Appendix 2 – XXX Group LOTO Permit

DCS-SF-024

DCS Group SOP 001	Attachment I
Isolation Record	Page 1 of 1

Isolation Record

Name of System/Equipment affected		Associated Work Order Number			
Type of Hazardous Energy					
Electrical	NO/YES	Hydraulic	NO/YES		
Pneumatic	NO/YES				

Isolation device ID	Tagged position		General Location	Lockout/Tagout completed by;		Restoration completed by;	
	Open	Closed		Sign	Date	Sign	Date
	<input type="checkbox"/>	<input type="checkbox"/>					
	<input type="checkbox"/>	<input type="checkbox"/>					
	<input type="checkbox"/>	<input type="checkbox"/>					
	<input type="checkbox"/>	<input type="checkbox"/>					
	<input type="checkbox"/>	<input type="checkbox"/>					
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	<input type="checkbox"/>	<input type="checkbox"/>					
	<input type="checkbox"/>	<input type="checkbox"/>					

Equipment start-up attempted:	<input type="checkbox"/>	YES	NO	Print Name	Signature	Date
Line energy released downstream of isolation:	<input type="checkbox"/>		
Originator.....	System Owner.....	Date...

Lockout/Tagout Handover Details:

Isolation verified by	Date	Tests to be carried out/ Comments

Sig.....

Completed by:.....
 Date:.....

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