Isolation and Lock Out training – Combined training

Forico Isolation and Lock out Training

2021

Application of training

- Covers the skills and knowledge required to:
  - Work in accordance the Forico Isolation and Lock out Procedure
    - Understand and comply with all requirements of the Isolation system
- Applies to an individual or as part of a team/work group and working with other team members as appropriate.
- On completion of this unit personnel will have been trained and authorised by Forico to place their own Personal Lock to equipment that has been isolated.
- On completion of this unit and authorisation by the mill manager personnel will be able to act as Authorised Isolation Officers.

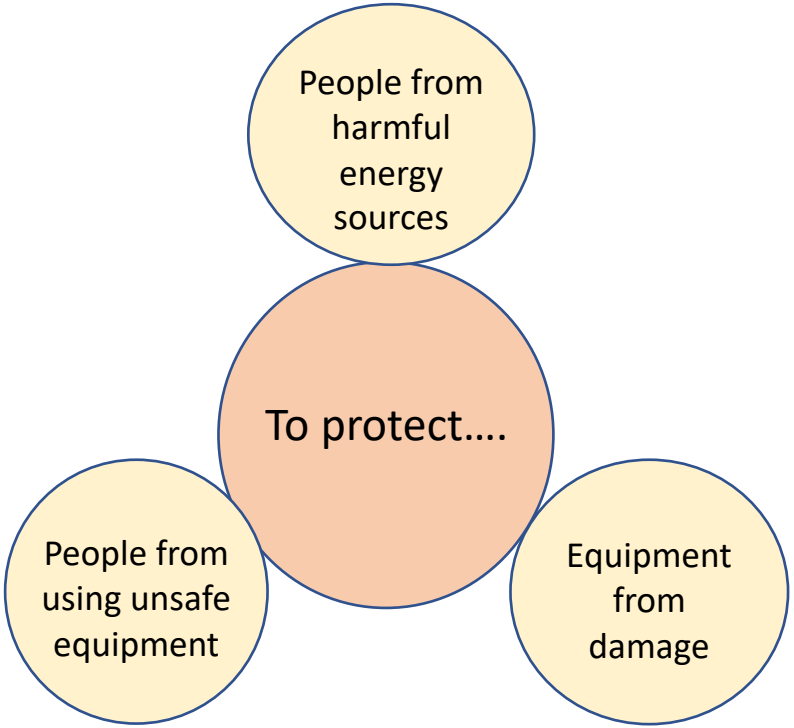
What this training will cover - Objectives

- Why we isolate
- Hazardous energy sources
- Roles and Responsibilities – personal lock holders and Isolation Officers
- Isolation points and tools
- Isolation process
  - Simple
  - Multiple
- Summary
- Assessment – quiz

Assessment Tasks

- Theory assessment
  - Complete a quiz consisting of multiple choice and short answer questions (this can be completed orally – please let your trained know if you prefer this option)

Why do we isolate?



Primary duty of care

- Reg 154 - Electrical work on energised electrical equipment – prohibited
  - Subject to this Division, a person conducting a business or undertaking must ensure that electrical work is not carried out on electrical equipment while the equipment is energised.
- Act section19. Primary duty of care
  - (1) A person conducting a business or undertaking must ensure, so far as is reasonably practicable, the health and safety of –
    - (a) workers engaged, or caused to be engaged by the person; and
    - (b) workers whose activities in carrying out work are influenced or directed by the person –
  - while the workers are at work in the business or undertaking.

Why do we isolate?

- Removal of an energy source
- To be able to safely conduct work on or near plant and equipment
- Uses tools such as locks, tags and permits

- What is an isolation?
- Temporary removal of energy sources and rendering equipment incapable of re-energisation without intentional means.

Forico key documents

- Work Health and Safety Policy
- Risk Management Procedure
- Isolation and Lock Out Procedure
- Emergency Response Plans (site specific)
- Pre-Task Risk Assessment and Permit to Work system
- Isolation permit
- Isolation registers (site specific)
- Employee and contractor safety instruction handbooks

Energy types

- Energy sources are varied and can be dangerous
  - Electrical – power supply, batteries, capacitors
  - Mechanical – drives, valves, gearbox
  - Hydraulic – fluid under pressure
  - Pneumatic – air under pressure
  - Gravitational – booms, counter weights
  - Pressure – compressed air, vacuum
  - Chemical – reactive, explosive, corrosive
- Stored energy is most likely to be an issue during work activities

When to Isolate and lock out

Occasions for gaining access to hazardous areas or equipment:

- Planned maintenance.
- Unplanned work i.e clearing blockage, breakdowns that aremechanical or electrical.
- Production tasks requiring access to equipment.
- Equipment unserviceable due to condition or process change.
- Inspections
- Testing

Roles and responsibilities – personal lock holder

- Adhere to the requirements of the Isolation and Lock out procedure.
- Attend all required training.
- Never allow someone else to use your personal lock.
- Always use your own personal lock for any activity that requires you to ‘lock on’ to an isolation.
- Personal locks shall not be used for any other purpose other than as part of the isolation safe system of work.
- Raise any hazards or safety issues with the work group/team leader.

Isolation Officer - Responsibility/accountability

- Responsible for isolating and locking out plant or equipment.
- Must be trained, demonstrate competence and authorised by site manager.
- Know and understand required hazards and risks.
- Know and understand all isolation points.
- Know how to verify energy isolations.
- Manage isolation permit for multiple isolations when and if required.

Different Isolation Officer levels

- Level 1
  - Electrical isolations involving access to MCC panels or direct access to electrical infrastructure– only authorised site electricians holding a full electrical licence
- Level 2
  - Other isolations such as pneumatic, gravitational and including isolation using single point electrical switch NOT housed in the MCC – authorised workers

Note that competency training must be repeated every 2 years to continue as an authorised Isolation Officer

Role of Isolation Officer in any isolation activity

- Check and confirm all appropriate isolation points identified on Permit.
- Carry out isolation.
- Confirm isolation and sign Isolation Permit.
- Complete work task under Permit to Work.
- Ensure permit completed correctly for de-isolation.
- Remove isolation and confirm safe working condition.
- Sign off Permit.

Roles and responsibilities - others

- Principal person – usually also Permit holder.
  - Cannot be Permit to Work Issuing officer
  - Starts Permit system including Isolation permit
  - Supervises work task
  - Can work on the task (still need to lock and sign on)
- Permit to Work Authorising Officer
  - Authorised by Site manager
  - Signs to authorise start and completion of Permit to Work system.

Isolation points

- Points can be labelled and cross reference to site isolation plan
- Switches/circuit breakers
- Valves
- Energy sources as identified in permits to work and risk assessments such as JHA’s

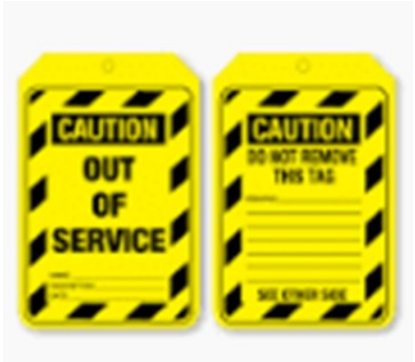
These are not isolation points

- Emergency stop button
- Pull wires
- Switches in control circuits
- Non return valves

If the isolation can be overridden it is not an isolation

Isolation tools

- Personalised/unique red locks
  - Each is uniquely keyed and issued to trained workers
  - Spares for contractors as needed
- Multi-clip/Hasp
  - Purpose built for plant isolation, prevents movement of isolation point and allows attachment of a number of locks.
- Out of Service tags
  - To be attached to any plant that has to be left in an unsafe condition before you remove the personal lock.



New Isolation permit

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Isolation Permit

Number: XXXX

Permit to Work/SOP No.		**Date**	
Task/Location			
Principal/Supervisor			

Method of Isolation							**Isolation Removal**			
Location/ Isolation type	**Isolation Point**	**Isolated by:**	**Signature**	**Date**	**Time**	**Isolation confirmation**	**Removed by**	**Signature**	**Date**	**Time**
i.e valve local 1/2	*ID No*	*Isolation Officer Name*				*Method*	*Isolation Officer Name*			

Worker's Sign On/Sign Off							
Name	**Sign On**			**Sign Off**			
	Signature	**Date**	**Time**	**Signature**	**Date**	**Time**	**Work Complete Y/N**

Work completed and ready for removal of Isolation:		
Date:	Time:	Name/ Signature (Principal/Supervisor)
Return to service – locks removed, equipment re-energised:		
Date:	Time:	Name/ Signature (Isolation Officer)

Completed Isolation permit

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Isolation Permit

Number: XXXX

Permit to Work/SOP No.	Permit 10000000	**Date**	12/12/21
Task/Location	repair of bracket on MC16		
Principal/Supervisor	S Spark		

Method of Isolation							Isolation Removal			
Location/ Isolation type	Isolation Point	Isolated by:	Signature	Date	Time	Isolation confirmation	Removed by	Signature	Date	Time
i.e valve,local 1/2	*ID No*	*Isolation Officer Name*				*Method*	*Isolation Officer Name*			
MCC/switch	45	B Power	B Power	12/12/21	0900	activate	B Power	B Power	12/12/21	1345

Worker's Sign On/Sign Off							
Name	Sign On			Sign Off			
	Signature	Date	Time	Signature	Date	Time	Work Complete Y/N
IVAN RIGHT	IVAN RIGHT	12/12/21	0910	IVAN RIGHT	12/12/21	1320	Y
JOHN CITIZEN	JOHN CITIZEN	12/12/21	0910	JOHN CITIZEN	12/12/21	1320	Y

Work completed and ready for removal of Isolation:			
Date: 12/12/21	Time: 1330	Name/ Signature (Principal/Supervisor)	S Spark SSpark
Return to service – locks removed, equipment re-energised:			
Date: 12/12/21	Time: 1347	Name/ Signature (Isolation Officer)	B Power B Power

Permit to Work form has been changed

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PRE-TASK RISK ASSESSMENT

Number: XXXX

(To be performed on the job)

Assessment lead by:	Date:	HIGHEST RISK RATED:	
Description of work:			
At site (Circle) SHM / LRM / NUR / RID / CORP/ OTHER Specific Work Area:	Work Order / Request No.	Insurance's current:	☐ YES ☐ NO
	Correct PPE for Task. ☐ YES ☐ NO	PPE Issued:	
Principal Person:	Company:		

PRE-TASK RISK ASSESSMENT DETAILS

(Completed by the assessment leader, in consultation with all person(s) working on the task)

Are there any risks of: Note - Inspect area(s) and discuss with personnel		Actions to Manage Risk + refer to Hierarchy of Control (Include who is accountable for action)	Final Risk Rating
Isolation	☐ YES ☐ NO	Isolation Permit Number: Consequence Likelihood	
Working at heights *(including live edge)*	☐ YES ☐ NO	Working at Heights Permit Number: Consequence Likelihood	
Object falling on a person. *(eg objects falling on you, or things falling onto others due to the work you are doing)*	☐ YES ☐ NO	Warning notices and/or barricades required? Yes / No Consequence Likelihood	
Machinery moving, or a person caught between moving objects.	☐ YES ☐ NO	Consequence Likelihood	
Contact with live electrical wires, *(including through excavation and "break in").*	☐ YES ☐ NO	Consequence Likelihood	
Hot Work. *(eg welding, gas cutting, plasma cutting, grinding, or any friction associated tasks)*	☐ YES ☐ NO	Is it a Total Fire Ban Day? Yes / No Hot Work Permit Number: Consequence Likelihood	
Injury from exposure to high noise levels OR disturbance of neighbours.	☐ YES ☐ NO	Consequence Likelihood	
Digging/excavation. *(eg risk of contact with underground or overhead services)*	☐ YES ☐ NO	Excavation Permit Number: Consequence Likelihood	
Hazardous Substances: *(including exposure to asbestos, chemicals, gases)*	☐ YES ☐ NO	Consequence Likelihood	
Manual Handling *(eg moving heavy or awkward objects).*	☐ YES ☐ NO	Consequence Likelihood	
Environmental issues. *(eg contamination, waste disposal or a change requiring regulatory approval)*	☐ YES ☐ NO	Consequence Likelihood	
Confined Space *(including entering a confined space OR person injured in, or trapped in a confined space).*	☐ YES ☐ NO	Confined Space Entry Permit Number: Consequence Likelihood	
Any other Safety / Environmental risks or instructions.	☐ YES ☐ NO	Issue/Instructions: Consequence Likelihood	

ENSURE ALL PERMITS HAVE BEEN COMPLETED
(RISKS RATED AS MEDIUM REQUIRE A PERMIT TO WORK – SEE OVERLEAF)
RISKS RATED ABOVE MEDIUM REQUIRE A JOB HAZARD ANALYSIS (JHA)
ALL JHA RESIDUAL RISKS STILL RATED AS HIGH OR EXTREME CANNOT PROCEED – SEE SITE MANAGER

PERMIT to WORK

Relating to Risk Assessment with risk profile greater than or equal to **Medium*** (overleaf) and issued to the 'Principle Person'

Number: XXXX

AUTHORITY TO COMMENCE & PERIOD OF WORKS (START/FINISH) *(Completed by person issuing the permit)*

I am satisfied the works described in the risk assessment (overleaf) can be completed safely, and that all people undertaking the scope of work understand the risks and control measures detailed on the assessment.
I authorise this work to be carried out during the nominated period (right):

Name: _____ Signature: _____

Date: ___/___/___
Authorised start time: ___:___
Authorised stop time: ___:___

SIGN ON/OFF *(Completed by every person working on the task)*

I understand the scope of work, the associated risks and their control measures detailed overleaf.
I understand the safety and other requirements and will abide by them.

		Sign on			Sign off		
	Name:	Signature	Date	Time	Signature	Date	Time
Principal Person							
Principal Person handover							
All others							

WORK COMPLETION *(Completed by Principal Person)*

I am satisfied the above work has been completed to the agreed specification and the equipment is safe to use.
(If not, note "NOT COMPLETE" in the comments section and specify any condition(s) and provide reasons explanation)

Name: _____ Signature: _____ Date: ___/___/___ Time: ___:___

Comments:

WORK FINALISATION STATUS *(Completed by the person issuing the permit)*

	Yes	No
Job completed; equipment fully functional, safe to use and no follow up action required. Maintenance/Production signature: _____ Date: ___/___/___ Time: ___:___		
Permit issuer satisfied that job completed; equipment fully functional, safe to use and no follow up action required. Permit issuer signature: _____ Date: ___/___/___ Time: ___:___		
If 'No' provide follow up notes, including whether a further Permit to Work is required for a later period:		

Hierarchy of Control

When managing the risks of an activity always consider the highest possible protection

WAIT

- Don’t jump in too quickly
- Assess all risks
- Isolate all sources of energy
  - Use SOP and/or isolation register to identify all points
  - For complex work check isolation register and appropriate staff
  - Can also be identified as part of risk assessment process
- Test the system to ensure the isolation is effective
- If the isolation is not effective **do not** start work, this will need to be checked and managed.

Summary to date

- Role of personal lock holder –sign on and lock on to work
- As the Isolation Officer you should be thoroughly familiar with the safety procedures for the task/activity.
- Ensure that the equipment has been de-energized.
- Ensure that the equipment remains de-energized by using an isolation device in conjunction with a yellow Isolation Officer lock.
- Verify the isolation
- Record all information of the isolation on the Isolation Permit
- Keep a safe distance from energised parts.

Isolation types

- Simple
  - Single isolation point only
  - One or more workers on task
- Multi-point
  - More than one isolation point involved
  - One or more workers on task

Simple/single point isolation – personal lock holder

Start of work task:

- Request isolation via Permit system.
- Confirm isolation is safe and remember to continue monitoring for hazards. Stop work if isolation is not safe.
- Add your personal red lock to the multi-clip that the Isolation Officer has used to lock off the isolation point using a yellow isolation lock.
- Sign onto the Isolation Permit including date and time.
- Start work on the task/activity.
- Monitor work and work area for hazards that could occur and report changes as soon as practicable.
- If you leave before work completed sign off Permit and remove your lock.

Isolation officer role

- Confirm isolation point is correct on Permit
- Release stored energy for isolation point
- Apply multiclip or other isolation device and lock with yellow Isolation Officer lock
- Complete Isolation Permit details and attach Permit to Isolation point
- Confirm isolation

Single point isolation - example

Sign on to Isolation Permit

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Isolation Permit

Number: 0004

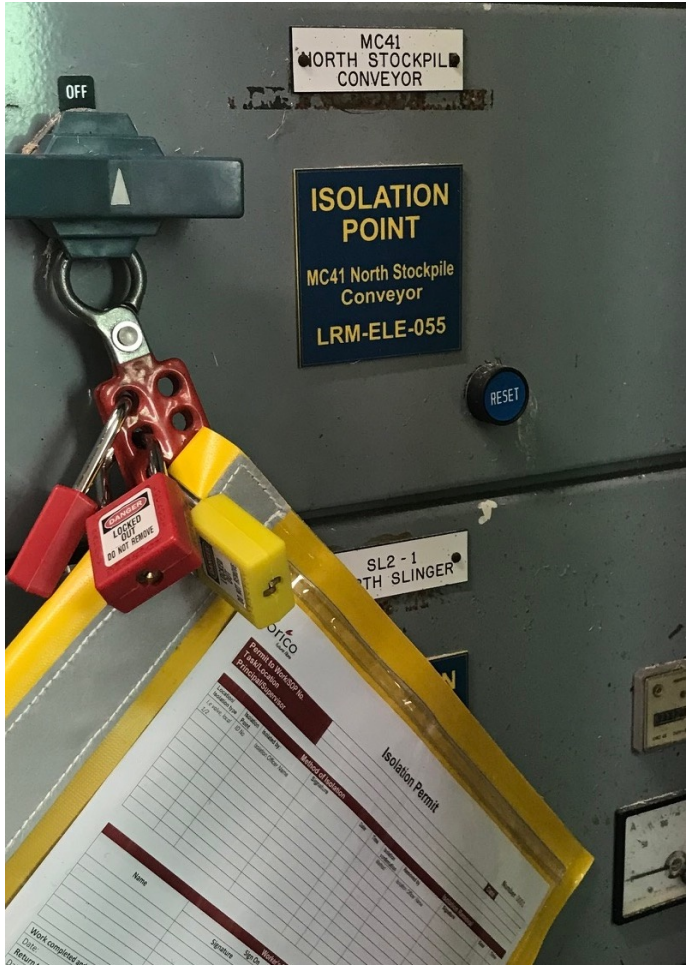
Permit to Work/SOP No.	SOP11223 – Cleaning of conveyor	**Date**	12/12/21
Task/Location	General cleaning of North Stockpile conveyor		
Principal/Supervisor	S Atkinson		

Method of Isolation							**Isolation Removal**			
Location/ Isolation type	Isolation Point	Isolated by:	Signature	Date	Time	Isolation confirmation	Removed by	Signature	Date	Time
i.e valve,local 1/2	*ID No*	*Isolation Officer Name*				*Method*	*Isolation Officer Name*			
MCC/switch	55	B Power	B Power	12/12/21	0900	activate conveyor switch				

Worker's Sign On/Sign Off							
Name	**Sign On**			**Sign Off**			
	Signature	**Date**	**Time**	**Signature**	**Date**	**Time**	Work Complete Y/N
Ivan Right	IRight	12/12/21	0910				
John Citizen	John Citizen	12/12/21	0910				

Work completed and ready for removal of Isolation:		
Date:	Time:	Name/ Signature (Principal/Supervisor)
Return to service – locks removed, equipment re-energised:		
Date:	Time:	Name/ Signature (Isolation Officer)

Completed single point isolation



Completed permit after all works finished

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Isolation Permit

Number: 0004

Permit to Work/SOP No.	SOP11223 – Cleaning of conveyor	**Date**	12/12/21
Task/Location	General cleaning of North Stockpile conveyor		
Principal/Supervisor	S Atkinson		

Method of Isolation							Isolation Removal			
Location/ Isolation type	Isolation Point	Isolated by:	Signature	Date	Time	Isolation confirmation	Removed by	Signature	Date	Time
i.e. valve, local 1/2	*ID No*	*Isolation Officer Name*				*Method*	*Isolation Officer Name*			
MCC/switch	55	B Power	B Power	12/12/21	09:00	activate conveyor switch	B Power	B Power	12/12/21	12:00

Worker's Sign On/Sign Off							
Name	Sign On			Sign Off			
	Signature	Date	Time	Signature	Date	Time	Work Complete Y/N
Ivan Right	IRight	12/12/21	09:10	IRight	12/12//21	11:50	Y
John Citizen	John Citizen	12/12/21	09:10	John Citizen	12/12/21	11:50	Y

Work completed and ready for removal of Isolation:			
Date: 12/12/21	Time: 11:55	Name/ Signature (Principal/Supervisor)	Scott Atkinson SAtkinson
Return to service – locks removed; equipment re-energised:			
Date: 12/12/21	Time: 12:10	Name/ Signature (Isolation Officer)	Ben Power Ben Power

Single Point Isolation

On completion of work:

- Remove personal red lock.
  - There is a formal reporting system if you forget to do this
- Sign off against your name on the Isolation permit.
- Principal person/ Supervisor is required to sign off work completed before isolation can be removed by an Isolation Officer

Isolation officer -Deisolation

- Verify equipment ready for return to service (sign off on permit)
- Check all red personal holder locks have been removed and area is tidy
- Remove yellow Isolation Officer lock and multiclip.
- Remove Isolation permit
- Complete relevant sections of permit to indicate isolations removed and equipment is ready to be returned to service

Multi-point isolation – personal lock holder

At start of work:

- Request the isolation work using the correct system
- Confirm isolation is safe, stop work if it is not safe.
- Attach personal red lock to blue lockbox.
- Sign onto the Isolation permit including date and time.
- Start work on the task/activity.
- Monitor work and work area for hazards that could occur and report as soon as practicable.
- If you leave before the work has been completed, remember to sign off the Permit and remove your lock.

Isolation Officer role

- Confirm isolation points are correct on Permit
- Collect blue lock box that includes a set of blue multi-isolation locks
- Start Isolation Permit details
- Release stored energy for all isolation points
- Attach isolation devices as needed and apply blue isolation locks to each device
- Place all keys in the blue lock box and any unused locks
- Confirm isolation
- Complete Isolation Permit and attach to lock box using yellow Isolation Officer lock

Isolation permit – isolation points identified and checked

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Isolation Permit

Number: 0005

Permit to Work/SOP No.	Permit 10000000	**Date**	12/12/21
Task/Location	General maintenance work on Chip Screens 1-3		
Principal/Supervisor	S Spark		

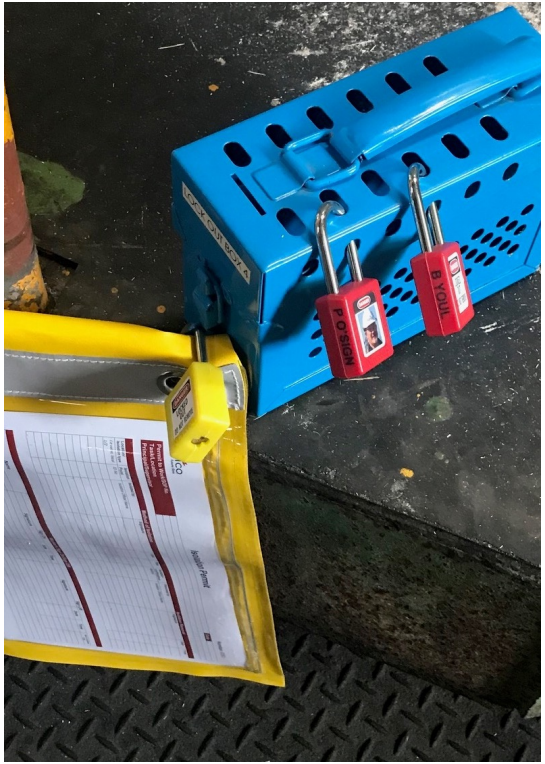
Method of Isolation							**Isolation Removal**			
Location/ Isolation type	Isolation Point	Isolated by:	Signature	Date	Time	Isolation confirmation	Removed by	Signature	Date	Time
Eg. valve, local I/O	*ID No*	*Isolation Officer Name*				*Method*	*Isolation Officer Name*			
MCC/switch	71	B Power	B Power	12/12/21	0900	activate switch				
MCC/switch	72	B Power	B Power	12/12/21	0900	activate switch				
MCC/switch	73	B Power	B Power	12/12/21	0900	activate switch				

Worker's Sign On/Sign Off							
Name	**Sign On**			**Sign Off**			
	Signature	**Date**	**Time**	**Signature**	**Date**	**Time**	Work Complete Y/N

Work completed and ready for removal of Isolation:		
Date:	Time:	Name/ Signature (Principal/Supervisor)
Return to service – locks removed, equipment re-energised:		
Date:	Time:	Name/ Signature (Isolation Officer)

Completed multi-point isolation

Multi-point isolation - lockbox



Isolation permit – ready for work

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Isolation Permit

Number: 0005

Permit to Work/SOP No.	Permit 10000000	**Date**	12/12/21
Task/Location	General maintenance work on Chip Screens 1-3		
Principal/Supervisor	S Spark		

Method of Isolation							Isolation Removal			
Location/ Isolation type	Isolation Point	Isolated by:	Signature	Date	Time	Isolation confirmation	Removed by	Signature	Date	Time
i.e valve local 1/2	*ID No*	*Isolation Officer Name*				*Method*	*Isolation Officer Name*			
MCC/switch	71	B Power	B Power	12/12/21	0900	activate switch				
MCC/switch	72	B Power	B Power	12/12/21	0900	activate switch				
MCC/switch	73	B Power	B Power	12/12/21	0900	activate switch				

Worker's Sign On/Sign Off							
Name	Sign On			Sign Off			
	Signature	Date	Time	Signature	Date	Time	Work Complete Y/N
Barry Youl	Barry Youl	12/12/21	0910				
Phil O'Sign	Phil O'Sign	12/12/21	0910				

Work completed and ready for removal of Isolation:		
Date: 12/12/21	Time: 1455	Name/ Signature (Principal/Supervisor)
Return to service – locks removed, equipment re-energised:		
Date: 12/12/21	Time: 1500	Name/ Signature (Isolation Officer)

Multi-point isolation – personal lock holder

On completion of work (or when leaving work group):

- Remove personal lock from lock box.
- Sign off against your name on the Isolation permit.
- Principal person/ Supervisor is required to sign off when the work is completed and before the isolations can be removed.
- The isolation officer will check work is completed and area is tidy before removing the yellow isolation lock to use the blue multiple isolation key to remove the blue locks and complete the permit.

Isolation officer de-isolation and return to service

- Confirm equipment status is ready for return to service, as indicated by Principal/supervisor signoff on Isolation permit.
- Ensure all red Personal locks have been removed and lock holders have signed off the Isolation Permit.
- Remove yellow Isolation Officer lock.
- For a multi-point isolation remove keys from lock box and remove all blue multi-isolation locks.
- Isolation Officer who removed the isolation locks signs the Isolation Permit for completion of isolation.

Fully completed Isolation Permit (all work completed)

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Isolation Permit

Number: 0005

Permit to Work/SOP No.	Permit 10000000	**Date**	12/12/21
Task/Location	General maintenance work on Chip Screens 1-3		
Principal/Supervisor	S Spark		

Method of Isolation							Isolation Removal			
Location/ isolation type	Isolation Point	Isolated by:	Signature	Date	Time	Isolation confirmation	Removed by	Signature	Date	Time
i.e valve,local 1/2	*ID No*	*Isolation Officer Name*				*Method*	*Isolation Officer Name*			
MCC/switch	71	B Power	B Power	12/12/21	0900	activate switch	B Power	B Power	12/12/21	1500
MCC/switch	72	B Power	B Power	12/12/21	0900	activate switch	B Power	B Power	12/12/21	1500
MCC/switch	73	B Power	B Power	12/12/21	0900	activate switch	B Power	B Power	12/12/21	1500

Worker's Sign On/Sign Off							
Name	Sign On			Sign Off			
	Signature	Date	Time	Signature	Date	Time	Work Complete Y/N
Barry Youl	Barry Youl	12/12/21	0910	Barry Youl	12/12/21	1450	Y
Phil O'Sign	Phil O'Sign	12/12/21	0910	Phil O'Sign	12/12/21	1450	Y

Work completed and ready for removal of Isolation:			
Date: 12/12/21	Time: 1455	Name/ Signature (Principal/Supervisor)	S Spark SSpark
Return to service – locks removed, equipment re-energised:			
Date: 12/12/21	Time: 1500	Name/ Signature (Isolation Officer)	B Power B Power

Rules for isolations for red lock holder - summary

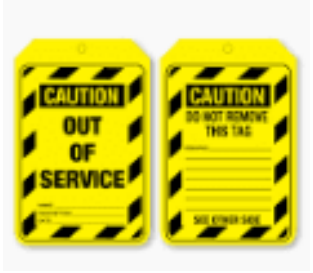
- Always attach your own personal lock
- Always sign on to the Isolation permit before you start work and sign off when you remove your lock.
- If you return to the work area you will need to affix your lock and sign on and off again (record of when you were part of the work group).
- Only you can place or remove your personal lock.
- If you fail to remove your lock prior to leaving work you will be required to return to remove it. If this is not possible it will be removed for you after approval from your site manager and an incident report will be raised.

Isolation Officer - summary

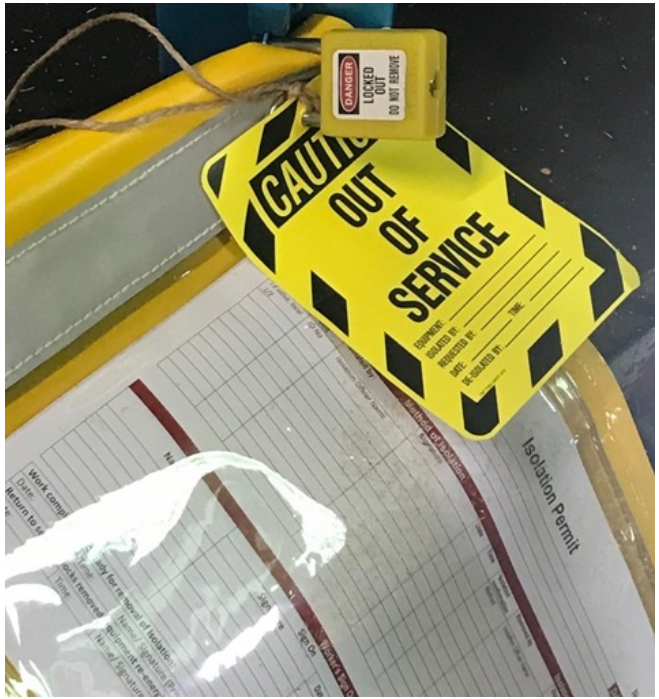
- Safety procedures must be followed in order to protect everyone when dealing with hazardous energy sources.
- Isolation and Lock-out procedure must be followed for all work on equipment as needed to help ensure safety and regulatory compliance.
- Isolation Permit must be completed at work site and not in the office and must be attached to the isolation point.
- As an Isolation Officer you are responsible for the safe and correct isolation of the energy sources for the identified work task.

Out of Service Tag

- An Out Of Service tag is used to identify equipment that has been removed from service.
- An Out of Service Tag is used within the isolation procedure to identify equipment where the work has not be completed by the end of a shift.
- The work group removes their Personal Locks, signs off the isolation tag and places an Out of Service Tag to notify that the isolation is still in place for work is still to be completed.
- An Out of Service tag can only be removed by a competent person who has completed repairs or persons authorised to do so.



Out of Service



Summary/round up

- Why we isolate
- Hazardous energy sources
- Roles and Responsibilities – personal lock holder and Isolation Officer
- Isolation points and tools
- Isolation process
  - Simple
  - Multiple
- Summary
- Assessment - quiz

Questions

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