

CRITICAL RISK STANDARD

Isolation and control of hazardous energy sources

1. INTENT

This standard identifies the controls required to manage the risk of personnel being exposed to the release of uncontrolled hazardous energies.

2. **APPLICATION**

This standard applies to all maintenance and operational activities across the Perenti business. Hazardous energy in this standard includes but is notlimited to electrical, mechanical, pneumatical, pressure, gravity, vehicle and thermal.

3. **REQUIREMENTS**

3.1 **PEOPLE**

- Employees and contractors must receive energy isolation training andbe deemed competent prior to starting any work.
- No person will work on any item of plant, electrical system, piping orpressure system unless all energy sources relevant to the work havebeen isolated, tested and proven and they have placed a personal danger tag and lock on the isolation points.
- No person will work on any item of plant with energised systems unless working under a testing and adjusting protocol. The exception to this requirement is where work/testing occurs on mobile equipment that is fitted with a start circuit isolator that has been locked out.

3.2 SYSTEMS AND PROCEDURES

- Hazardous energy isolation/testing and adjusting requirements for allplant and equipment must be identified in a formal risk assessment and controls developed before equipment is commissioned.
- A point of work risk assessment (SWIC or Take 5 etc) must be used to identify relevant energy isolation points before attempting any work on plant and equipment with single energy sources and a singleisolation point.
- A Job Safety Analysis (JSA) or a Safe Work Procedure (SWP) must be used to identify relevant energy isolation points before attempting any work on plant and equipment with multiple energy sources and/or multiple isolation points.
- Out of service tags must only be removed by a competent and authorised person able to declare that the equipment is safe and serviceable.
- Personal danger locks and tags must only be removed by the personwho placed them.

3.3 ISOLATIONS

- The ISG or individual ISG business units will develop and implementdetailed isolation procedures reflective of their isolation needs that must include the following minimum requirements:
 - the identification of all applicable energies (including but not limited to electrical, pneumatic, hydraulic, stored, potential andgravitational);
 - the methods of isolation;
 - all isolation points and the devices to be used for isolations;
 - sequence of the isolation steps for both Single point or Group Isolations;
 - roles and responsibilities with isolations to be performed by a competent and authorised person;
 - the verification of zero energy and the safe methods to achieve this;
 - verification of the isolation by each member of the work team(i.e. a process to test for dead);
 - each member of the work team to apply their personal lockand tag;
 - permits, communication and coordination of the isolations, including over multiple shifts;
 - isolation exclusion zones including barriers and barricading;
 - the process for removal of a personal lock and tag left on the isolation.
- Every isolation performed must positively isolate the energy source, be locked and tagged at the isolation point(s), de-energise stored energy and be able to be tested for a de-energised state (i.e tested fordead) by work team members before commencing work.
- Isolation must be undertaken at the energy source and not relied upon at control circuitry, (e.g., push buttons, stop switches, interlocks, emergency stops, pilot circuitry, instrument air).
- Personal locking devices shall:
 - be uniquely keyed;
 - not be combination locks;
 - not have an unauthorised second-party master override key; and
 - be kept under the exclusive control of the owning individual, andkey(s) must not be transferred to another person for lock removal;
 - The removal of a personal danger lock and tag by any person other than the person who applied the lock and tag requires the documented authorisation of the authorised person or delegate;
 - When working forward of Jumbo jacks the boom isolator mustbe engaged and no movement is to occur.



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3.4 LIVE TESTING AND ADJUSTING

- ISG's must develop a testing and adjusting procedure to be used where
 plant and equipment is required to remain energised for maintenance
 activity, commissioning or testing of that equipment.
- When commissioning/testing tasks are being conducted all persons in the immediate work area must be signed on to the JSA for the task, the testing and adjusting tag itself and be notified and clear of any exposure prior to any movement taking place.
- Only the authorised controller or nominated person when directed bythe controller will operate or use the controls for a piece of plant or equipment which has a testing and adjusting tag attached.
- Testing and Adjusting tag(s) must be placed in a prominent position on both the isolation and control point(s) (e.g. steering wheel/ignitionswitch of a vehicle) where it can be easily seen by anyone attempting to start, operate or access the plant or equipment.

3.5 ELECTRICAL ISOLATIONS

- No electrically powered equipment is to be moved unless deenergised and isolated from the main electrical power source (excludes hand tools and electronic devices):
 - Electrically powered mobile plant may be moved, and personscan go forward of the outriggers/jacklegs when done in accordance with the specific procedures for these machines.
- All electrical equipment that is connected to a power supply by a plugmust be isolated by turning off the power supply then removing the plug from the power source and locking and tagging the plug with the appropriate purpose made device.
- Where electrical equipment is hard wired to an electrical reticulation system and is fitted with a lockable isolator switch an electrician is notrequired to complete the isolation.
- Only licensed and authorised electricians will perform isolations on electrical reticulation or where distribution box entry is required, forsystems above 32 volts or with mixed voltage e.g. pilot and power.

3.6 PLANT AND EQUIPMENT

- All mobile equipment must be able to be positively isolated by:
 - being fitted with lockable main isolation point;
 - being fitted with lockable start circuit isolation point.
- Designated isolation points must be clearly labelled to identify the circuit or system over which they have direct control.
- Stored energy systems that exist within items of plant such as air receivers, hydraulic accumulators, capacitors and batteries; mustbe identified, discharged or isolated before commencing any maintenance work.
- Where equipment has locking pins or articulation locks, these mustbe in place during servicing and maintenance work.
- All hired and contracted equipment must be audited to ensure it meets the projects isolation requirements and the requirements of this standard, before use on site.
- Equipment that is not in a state to be returned to service must betagged as Out of Service.