thalesgroup.com

THALES
Building a future we can all trust

Stored Energy
Guide and Critical Risk Standard

Safety is everyone's responsibility

hse
HEALTH SAFETY ENVIRONMENT

SCAN BEFORE YOU BEGIN

STORED ENERGY

Stored Energy Guide

Safety is everyone's responsibility

Check before you begin

Are you competent to work unsupervised on a pressure or stored energy system? Are you authorised to conduct this high-risk work? Has your competency been assessed by a trained supervisor or subject matter expert? Are you fit, healthy and alert? Have you passed any medical assessments or drug and alcohol tests required for this task?

Are you a trainee? You must be supervised at all times.

Does the exclusion zone have a continuous physical barrier? Does it include all areas where the plant is supported only by hydraulic or pneumatic energy? Who is responsible for managing access?

Is the plant fit for purpose? Have the props, block and chains been assessed for safety by a **competent person**? Are the hydraulic and pneumatic hoses fitted with the necessary whip checks and hose sheaths? Are the grit blasters fitted with a remote control 'Deadman' system? Are gas cylinders suitably restrained during storage and transport? Has an engineer assessed that frames, jacks and stands are safe?

Do you know how to use the pressure controls, indicators and warning devices? Are the pressure controls clearly labelled? Have the relief valves been tested? Do you know how and when to use the Emergency Stop?

Has the plant been idle for a long time? If so, has it been recommissioned?

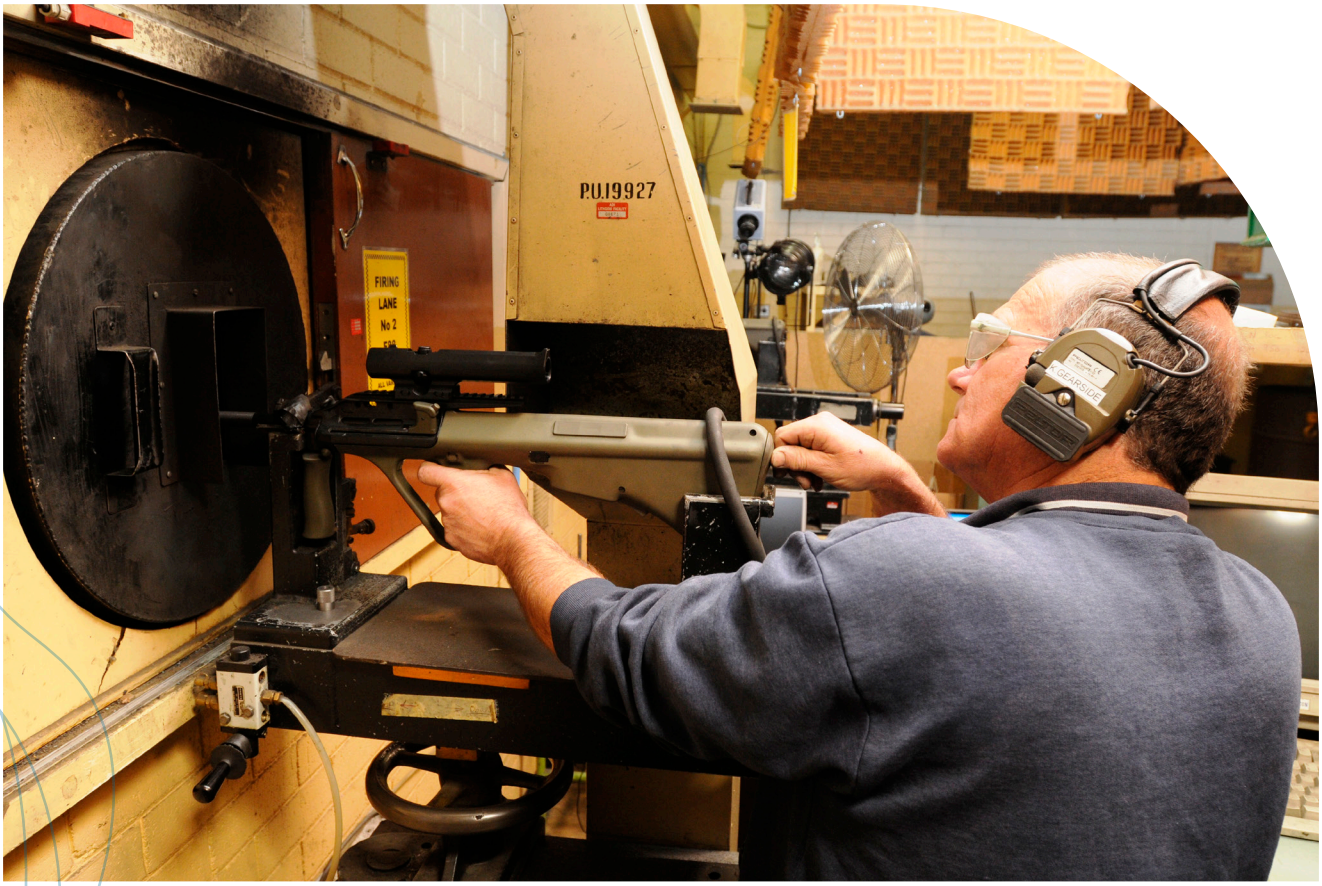
Do you understand how to use the plant safely? Have you seen the risk assessment? Did you read and clearly understand the safe operating procedure? Are you aware of the plant's hazards and controls? Do you know how to protect yourself and other operators from stored energy? Do you know who checked the operating procedure?

Do you know how to respond in an emergency? Have you checked the emergency medical response protocols for steam burns or hydraulic fluid injection injury? Do you need to carry a medical alert tag?

Have you conducted a Thales pre-start inspection? Have you checked the pressure relief valves? Is the tyre inflation equipment in good condition? Is the grit blaster remote control operating properly? Are you happy with the condition of your equipment, including props, chains, mooring ropes, bollards and chafing protection?

If you are a contractor

- Do you have the correct high-risk work license?
- If you are performing Class B high-pressure water jetting, do you have protocols in place to respond to fluid injection injury?



When working on energised hydraulic oil pressures systems >100psi

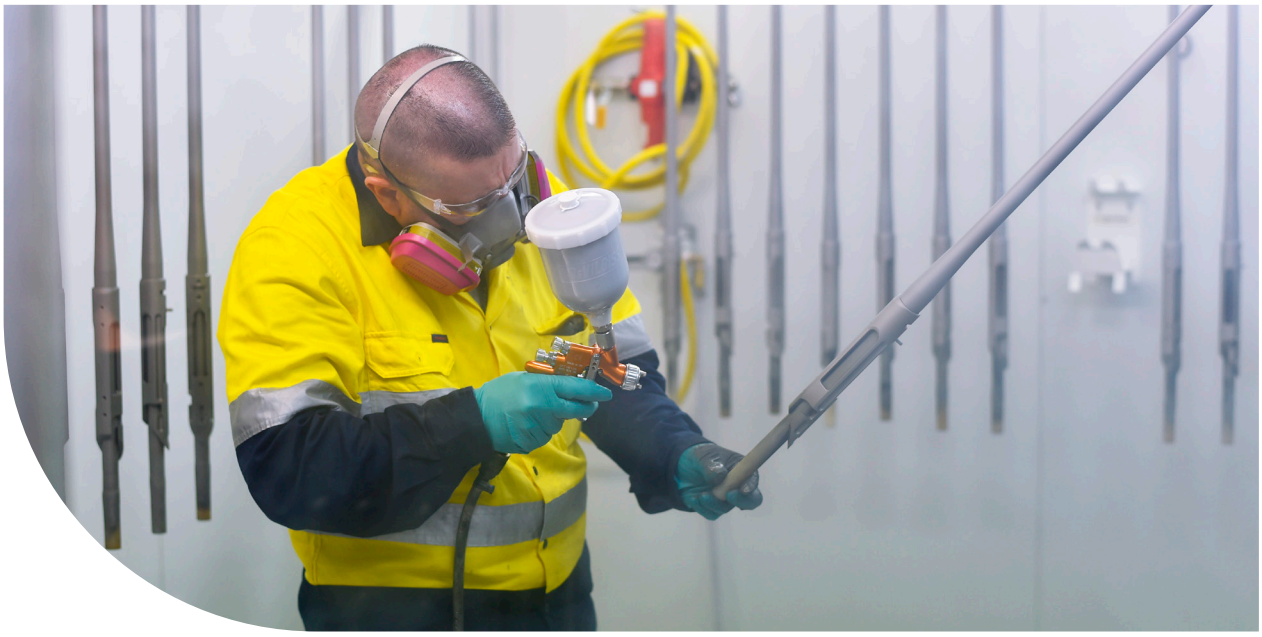
- Wear fluid injection resistant gloves.

When grit blasting or using spray painting equipment >150psi

- Use an air fed respirator with an approved breathing air compressor, or equivalent air supply.

When water blasting or spray painting using compressed air systems >150psi

- Wear a sealed face shield or double eye protection.

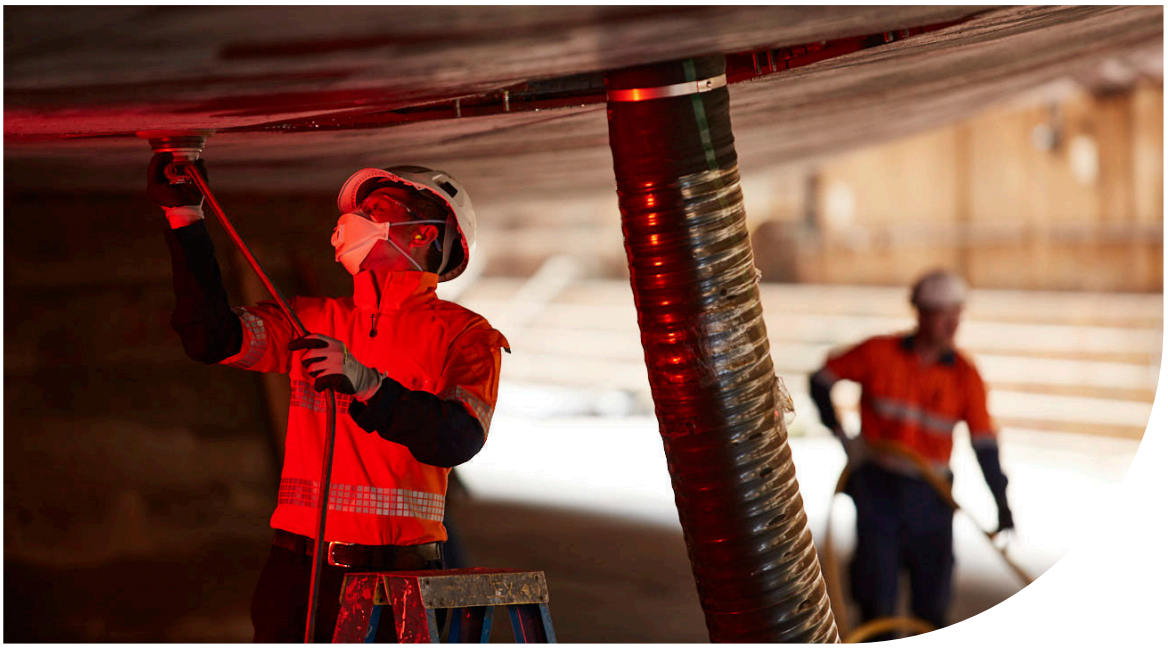


When conducting maintenance

- **DO NOT** proceed until energy sources are isolated, stored energy is released or restrained and you have **VERIFIED** these measures.
- Where possible, isolate hydraulic, pneumatic and stream pressurised systems with a double block and bleed process.
- Make sure everyone working on an isolated system is protected from the energy source by their own personal lock.
- Attach personal locks to the isolator, hasp, lock box, or group lockout board.
- **DO NOT** re-energise the system until all personal locks have been removed.

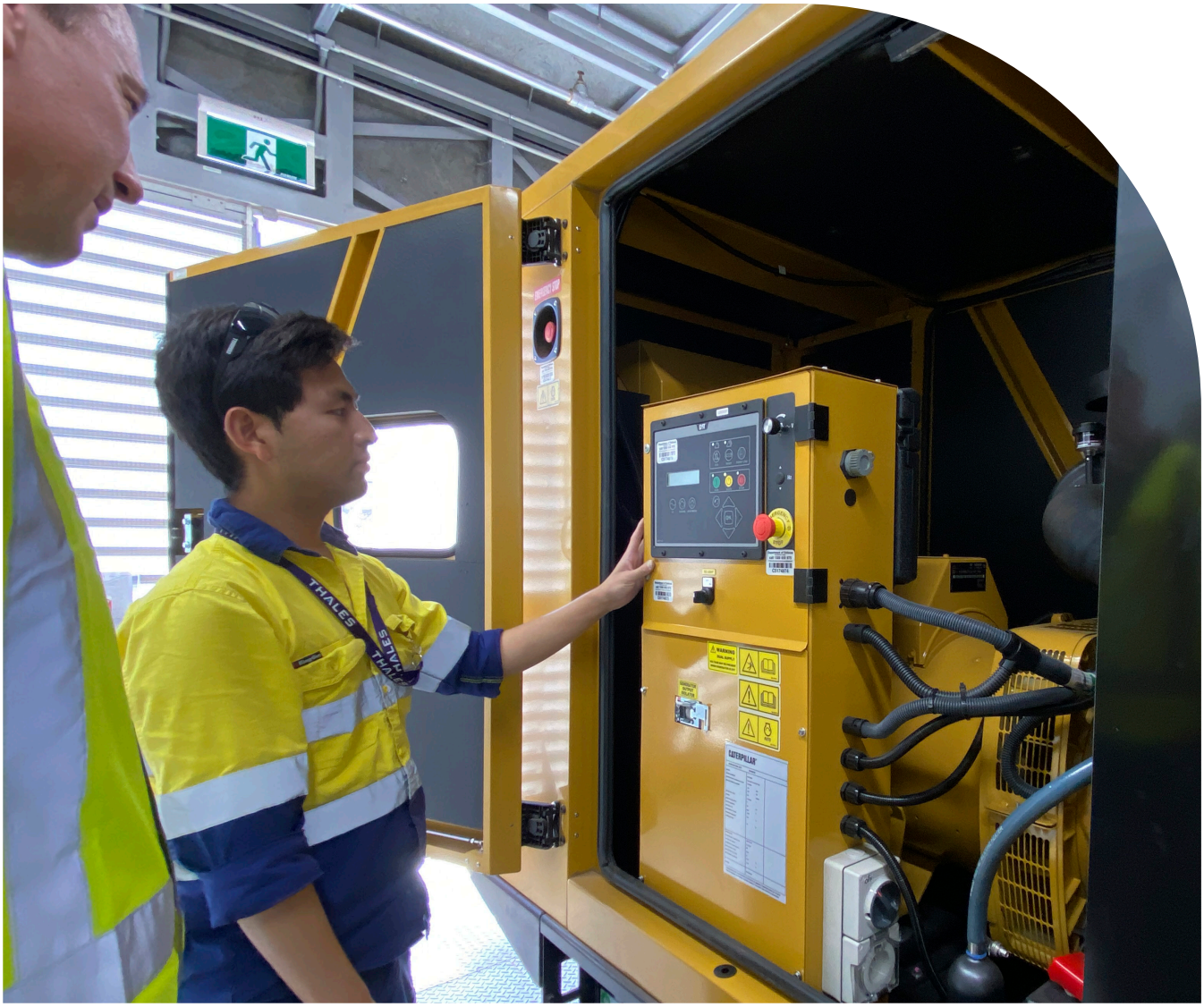
When inflating tyres

- For in-situ inflation of split rim and other tyres greater than 50 psi, the exclusion zone must have a continuous physical barrier. The only exceptions are tyres being inflated:
  - Inside a purpose-built cage
  - Behind a screen
  - Using automatic systems



When altering pressure or other stored energy systems

- Use safety in design and management of change processes.
- Maintain the configuration of pressure relief valves, pressure gauges and other safety systems by applying a “like-for-like” approach to parts replacement.



Stored Energy
Critical Risk Standard

Safety is everyone's responsibility

Contents

Introduction

The Thales Australia Critical Risk Standards describe the minimum requirements for controlling each of the critical work health and safety risks that are common to our operations and workplaces. The Critical Risk Standards provide a high level framework for managing health and safety hazards.

Scope

This Critical Risk Standard describes the Critical Controls for activities involving Stored Energy and applies to all Thales sites and operations.

The intent is to eliminate or minimise the risk of fatalities and serious injuries arising from tasks involving Stored Energy.

Where Thales Australia does not have control of the worksite or is working under a client's safety management system, then:

- The client's standards shall be applied if they are equal or higher, and
- The Thales Australia Standard shall be applied for all aspects where the client's system is "silent".

If the client's standards are lower and this presents a material risk then this must be escalated with the Thales Australia Project Manager.

What if a Critical Control Cannot Be Applied?

If for any reason there are circumstances where the Minimum Requirement for a Critical Control cannot be met, then a formal Control Standard variation is required.

Deviation from the requirements set out in each Control Standards shall be formally approved by a variation which involves:

- A documented and detailed risk assessment of the situation;
- A documented recommendation supported by the Business Safety Manager;
- A documented recommendation from a Technical Expert where appropriate; and
- Formal approval from the Business General Manager or Business Vice President that the level of risk as a result of the alternate control measures is understood, and considered acceptable to the organisation.

Contracted Work

Contracted workers and their Supervision must be inducted in this Critical Risk Standard.

Contractors are required to meet or exceed this Standard when undertaking work for Thales Australia Where there is a risk of fatalities and serious injuries arising from Stored Energy.

Definitions

The following terms are used in this Risk Standard. Additional definitions can be found in the reference documents.

Critical Risk	A risk where there is potential for a fatality or life-altering injury.
Critical Control	A control that is crucial to preventing the event or mitigating the consequences of the event. The absence or failure of a critical control would significantly increase the risk despite the existence of the other controls.
Minimum Requirements	Aspects of the Critical Control that must be applied in all Thales Australia controlled operations.
Additional Requirements	Aspects of the Critical Control that may be applied based on a site-specific or task-specific risk assessment.
Competent Person	A person who has acquired through training, qualification, competency or experience the knowledge and skills to carry out the task.
SWMS	Safe Work Method Statement
JSEA	Job Safety and Environment Analysis
SOP	"Safe Operating Procedure" is used as a general term to include SWMSs, JSEAs, Work Instructions, SOPs etc.
Plant	Where these Life Saving Controls refer to "High Risk Fixed Plant", this includes fixed plant where a risk assessment has determined that incorrect operation can lead to a fatality of life-altering injury.

As a guide, these lifesaving controls apply to:

- Pressure systems classed as Hazard Level Category A, B or C according to Pressure Equipment – Hazard Levels AS 4343:2014.
- Hydraulic systems greater than 100 psi
- Compressed air systems greater than 150 psi
- Tyre pressures greater than 50 psi
- Tension or gravitational energy where the forces generated could result in serious injury.

RELEVANT OPERATIONS DIRECTOR or WORKPLACE MANAGER

Holds overall responsibility for Stored Energy in the workplace or on the project under their control.

APPOINTED PERSON

A person approved by the Operations Manager or Workplace Manager as having sufficient knowledge, qualifications and experience to approve Competent Workers.

A person that can provide satisfactory evidence to a responsible authority that they have the qualifications and experience to be competent to independently perform the required tasks.

Responsible for all activities involving stored energy within the scope defined by the Operations Manager or Workplace Manager for development, review and maintenance of the lifting operations plan.

QUALIFIED AND COMPETENT PERSONS

Qualified Person is a person who holds a National License to Perform High Risk to undertake Scheduled Work.

Stored Energy Safety Critical Controls

The minimum requirements for Stored Energy which could cause serious injury or fatality are:

SE1	All operators and maintainers of pressure and other stored energy systems are assessed for fitness and competency, and, are authorised to undertake work on those systems.
SE2	Plant, parts and consumables for pressure and other stored energy systems are designed to relevant standards and suitable for the task.
SE3	The safe operation and maintenance of pressure and other stored energy systems is described in accessible and easy to understand procedures.
SE4	All pressure and other stored energy systems must be subject to inspections and maintenance in accordance with Australian Standards, OEM specifications or equivalent.
SE5	All stored energy is released or restrained prior to operations or maintenance work.
SE6	Exclusion zones are established where there is a risk of operators and bystanders being impacted by stored energy risks.
SE7	Pressure controls, indicators and warning devices are accessible, easy to understand and use.
SE8	Where contractors are engaged, they have the capability and capacity to safely operate and maintain pressure and other stored energy systems.
SE9	Change management processes must be applied to alterations of pressure and other stored energy systems.
SE10	Protocols are established to respond effectively to specific pressure and stored energy injuries.

SE1 Fit, Competent and Authorised Operators

All operators and maintainers of pressure and other stored energy systems are assessed for fitness and competency, and are authorised to undertake work on those systems.

MINIMUM REQUIREMENTS

- Operators and maintainers of pressure and other stored energy systems must be assessed for competency prior to unsupervised work and subsequently when there are changes to the work method.
- High risk work involving pressure and other stored energy systems and, where the activity is highly reliant on fit, healthy and alert personnel to undertake the task, shall be assessed to determine if workers should be subject to additional fitness for work requirements, such as:
    - Routine medical assessments
    - More stringent drug and alcohol testing e.g. Pre-shift Alcohol and other drugs screening for Class B high pressure water jetting
    - Job rotation to address potential fatigue
- Supervisors must undergo training in their responsibilities for overseeing the maintenance of pressure and other stored energy systems, including the action to be taken to address unsafe work practices. As a minimum this training will consist of HIRAC & Critical Control Training for Stored Energy and any other Critical Control Training relevant to the task.

ADDITIONAL REQUIREMENTS

- Competency should be assessed by a competent supervisor or subject matter expert following a process defined by a qualified trainer. The extent of the competency assessment should be based on the risk of the machine.

NOTES AND REFERENCES

- Thales has established requirements for pre-employment medicals, fatigue management and drug and alcohol testing including the use of prescription medication that may impact performance.

SE2 Fit for Purpose Plant

Plant, parts and consumables for pressure and other stored energy systems are designed to relevant standards and suitable for the task.

MINIMUM REQUIREMENTS

- Only fit for purpose plant, parts and consumables must be used as directed by Safe Operating Procedures, Australian, International or Maritime Standards or OEM Manuals.
- Props, blocks, chains or similar devices used to support or restrain stored energy must be assessed for safety and suitability by a competent person.
- Where Thales controls the selection process, berthing ropes and wires are chosen to be fit for purpose whilst minimising, so far as reasonably practicable, the risk of snapback.
- Hydraulic and pneumatic hoses must be fitted with fit for purpose whip checks and hose sheaths in accordance with relevant Standards, OEM manuals or as determined by risk assessment.
- Grit blasters must be fitted with a remote control “Deadman” system controlled by the operator.
- All gas cylinders must be stored as required by Standards and suitably restrained. When being transported, gas cylinders must be restrained using a suitably engineered vehicle rack or trolley.

ADDITIONAL REQUIREMENTS

- Where a critical risk exists, frames, jacks, stands and similar fabricated equipment used to support plant items or otherwise restrain stored energy, must be assessed for safety and suitability by an engineer.

NOTES AND REFERENCES

SE3 Safe Work Methods

The safe operation and maintenance of pressure and other stored energy systems is described in accessible and easy to understand procedures.

MINIMUM REQUIREMENTS

- All tasks where operators and maintainers are exposed to a critical stored energy risk are subject to a risk assessment and/or described in safe operating procedures which have been independently checked and authorised by an appointed person.
- Safe Operating Procedures must include the safe work methods for releasing, restraining or otherwise protecting operators and maintainers from stored energy.
- For specific high risk work, safe work methods must specify Personal Protective Equipment as follows:
  - Fluid injection resistant gloves must be worn when conducting maintenance on energised hydraulic oil pressure systems greater than 100psi
  - Air fed respirators with an approved breathing air compressor, or equivalent air supply, must be worn when grit blasting or using high-pressure spray-painting equipment greater than 150PSI.
  - Sealed face shield or Double eye protection must be worn water blasting or spray painting using compressed air systems greater than 150 psi.

ADDITIONAL REQUIREMENTS

- Unless the operating hazards are well known and have well established and accepted control measures, and these controls are implemented, Safe Operating Procedures must be based on a Plant Risk Assessment.
- Safe Operating Procedures should:
  - Cleary state specific hazards and controls
  - Be visual and brief rather than long and wordy
  - Be easy to understand by differing levels of literacy
  - Be located close to the machine.

NOTES AND REFERENCES
• Sites must determine what level of “independence” is appropriate based on the risk of the stored energy.

SE4 Inspections and Maintenance

All pressure and other stored energy systems must be subject to inspections and maintenance in accordance with Australian Standards, OEM specifications, or equivalent.

MINIMUM REQUIREMENTS

- Inspections and maintenance must be conducted by a competent person in accordance with Australian Standards, OEM requirements or an equivalent standard.
- Specific pre-start inspections, routine inspections and maintenance on pressure and other stored energy systems must include:
  - Pressure relief valves
  - Condition and operation of tyre inflation equipment.
  - Condition of props, chains, mechanical devices and other stored energy restraints
  - Condition of mooring ropes, bollards and chafing protection
  - Grit blaster remote control operation

ADDITIONAL REQUIREMENTS

- A Computerised Maintenance System should be used to schedule and monitor compliance to inspection and maintenance requirements.
- Pressure systems that are idle for long periods should have decommissioning and recommissioning procedures that follow OEM or equivalent requirements.

NOTES AND REFERENCES

- Refer to AS 3788 Pressure equipment - In-service inspection

SE5 Isolation

All stored energy is released or restrained prior to operations or maintenance work.

MINIMUM REQUIREMENTS

- No maintenance work may proceed until energy sources are isolated and stored energy is released or restrained. Fault finding on systems which are not isolated or stored energy has not been released or restrained must only be performed by a competent and authorised operator or maintainer.
- Each person working on an isolated system must be protected from the energy source(s) by their own personal lock(s).
- Prior to starting work, each person working on an isolated and depressurised hydraulic, pneumatic, steam or other stored energy system must:
    - check they are following the correct isolation plan or procedure
    - verify the isolation, release and/or restraint of stored energy has been effective, and
    - attach their personal lock(s) to the isolator, hasp, lock box, or group lockout board.
- Systems must not be re-energised until all personal locks have been removed.

ADDITIONAL REQUIREMENTS

- Where practicable, hydraulic, pneumatic and steam pressurised systems must be isolated following a double block and bleed process.
- If neither of the persons named on the Lock Tag are available and removal of the tag is required then the tag may only be removed after;
    - All isolation requests placed for the isolation of that system have been reviewed and all parties consulted and agree to the de-isolation of the system

- The named party(s) on the Danger Tag or their authorised delegate(s) has been contacted and permission is obtained to remove the tag.
- After written permission from the Project Manager is obtained indicating the necessity to remove the Danger Tag.
- This lock removal process shall be documented using the Hazard and Incident Report form.

NOTES AND REFERENCES

SE6 Exclusion Zones

Exclusion zones are established where there is a risk of operators or bystanders being impacted by stored energy.

MINIMUM REQUIREMENTS

- Exclusion zones must be established by a continuous physical barrier for:
  - Pressure-testing and commissioning of systems.
  - High-pressure water jetting.
  - Grit blasting.
  - In-situ inflation of split rim and other tyres greater than 50 psi (other than tyres inside a purpose-built cage or behind tyre inflation screen and tyres inflated using Automatic tyre inflation systems)

The size of the exclusion zone must be determined through a risk assessment.

- "No go" areas shall be defined under any part of a plant or structure that is supported only by hydraulic or pneumatic energy.
- The induction for personnel working on wharves or ships must include exclusion areas where there is potential for critical injury from mooring rope snap back.

ADDITIONAL REQUIREMENTS

- Only when continuous physical barriers are not reasonably practicable, shall exclusion zones be identified through painted markings, cones and/or signage.
- A single point of accountability must be established for managing access to any exclusion zone.

NOTES AND REFERENCES

- Access may be restricted by perimeter or building security as determined by risk assessment.
- “In-situ” refers to inflation of tyres other than inside a purpose-built cage or chamber.

SE7 Pressure Controls, Indicators and Warning Devices

Pressure controls, indicators and warning devices are accessible, easy to understand and use.

MINIMUM REQUIREMENTS

- Pressure controls must be clearly labelled and designed to prevent inadvertent operation.
- Where required by Australian Standards, maritime requirements or international equivalents, Pressure and other stored energy systems must be assessed by a licensed inspector to ensure the pressure controls, relief valves, indicators and warning devices meet those requirements.
- Emergency stops must only be used for emergencies.
- Relief Valves are to have an annual on-line visual external inspection by a competent person and that a test interval is to meet the internal inspection interval of the item of pressure equipment that it protects (i.e. 4-years for air receivers), this can be done as either an in-situ accumulation test performed by a competent person, removed and bench tested or replaced.

ADDITIONAL REQUIREMENTS

- Any Relief Valves that do not have easing gear fitted (test level or pin) are not able to be tested in situ and should be considered for replacement.

NOTES AND REFERENCES

- The requirements of Pressure Equipment – In-service Inspection AS 3788:2006 must be followed. Boiler Inspectors must be licensed as required by legislation.

SE8 Pre-qualified, Competent and Approved Contractors

Where contractors are engaged, they have the capability and capacity to safely operate and maintain pressure and other stored energy systems.

MINIMUM REQUIREMENTS

- Contractor companies that operate or maintain pressure and other stored energy systems are pre-qualified based on their ability to manage the specific safety risks.
- Contractors that work on pressure systems must hold the appropriate high-risk work licenses.
- All Class B high pressure water jetting (i.e. in excess of 5600 bar litres per minute) must be conducted by specialist contractors
- Contractors that perform work on hydraulic systems and perform Class B high-pressure water jetting have protocols in place to respond to fluid injection injury.

ADDITIONAL REQUIREMENTS

NOTES AND REFERENCES

- Class B High Pressure Water Jetting qualifications are listed on training.gov.au (https://training.gov.au/Training/Details/MSMSS00018)
- There is no formal requirement for Class A, however, organisations must ensure workers are competent.

SE9 Change Management

Change management processes must be applied to alterations of pressure and other stored energy systems.

MINIMUM REQUIREMENTS

- Safety in Design and Management of Change processes must be applied to any alteration of pressure and other stored energy systems with the potential to impact it's safe operation.
- All alterations to pressure and other stored energy systems must be authorised through Thales Management of Change process.
- The configuration of pressure relief valves, pressure gauges and other safety systems must be maintained by applying a "like-for-like" approach to parts replacement. Where "like-for-like" replacement cannot be achieved, the Management of Change process must be applied.

ADDITIONAL REQUIREMENTS

NOTES AND REFERENCES

- Management of Change Toolkit - 83392492-HSE-AUS-EN

SE10 Emergency Response

Protocols are established to respond effectively to specific pressure and stored energy injuries.

MINIMUM REQUIREMENTS

- Specific emergency medical response protocols are documented in site emergency response plans and communicated via site induction for:
  - hydraulic fluid injection injury from hydraulic systems, paint spraying, high pressure water blasters, or similar equipment.
  - steam burns

ADDITIONAL REQUIREMENTS

- Operators and maintainers of high-pressure systems where there is a risk of fluid injection injury carry a medical alert tag.

NOTES AND REFERENCES

THALES

Building a future we can all trust

7 Murray Rose Avenue
Sydney Olympic Park,
NSW 2017
Australia

Email: hsematters@thalesgroup.com.au

> Thalesgroup.com <

See more

Say more

Solve more