CONTENTS

LOCK OUT / TAG OUT SYSTEMS

1. INTRODUCTION

Plant is a general name for equipment, machinery, appliances, tools and implements. Every year, seafarers at work are injured, sometimes fatally, when plant inadvertently activates or stored energy including electricity, heat, steam, and fluids released during inspection, repair, maintenance, or cleaning.[1]

Accidents often occur when someone “thought” that the machine, valve, or electricity was safely isolated, or when someone turns on the power or machine not knowing that maintenance is being carried out on the system.

Lock Out/Tag Out systems are used to prevent contact with a hazard while performing tasks that require the removal, by-passing, or deactivation of safeguarding devices, and the unintended release of hazardous energy (stored energy), or the unintended start-up or motion of machinery, equipment, or processes. Lock-Out/Tag-Out is a decommissioning/recommissioning work system. Decommission to make the work environment safe and recommission to restore operational readiness.[2]

By having good practices and procedures regarding Lockout and Tagout during maintenance, hazardous energy sources like electrical, mechanical, hydraulic, pneumatic, thermal, and other hazardous sources can be isolated in a safe way.

The following are some typical sources of energy that may need to be controlled:

- Electricity (primary energy source for many machines and motors)
- Hydraulic (e.g., pressurized fluids in hoses/pipes)
- Mechanical (e.g., gravity systems, or spring energy)
- Pneumatic (e.g., pressurized air in hoses/pipes)
- Thermal (e.g., pressurized steam in hoses/pipes)

2. RESPONSIBILITY

a. Master is responsible for initiating actions that ensure:

- Crew members are informed and trained in Lock Out / Tag Out procedures.
- Contract workers comply with the vessels Lock Out / Tag Out procedures; and

[1] W 49 / 2022
[2] W 49 / 2022

- Periodic verification of Lock Out / Tag Out procedures.

b. Chief Engineer shall be responsible for ensuring compliance for any work in engine room and all machinery on board

c. Chief Engineer / Electrical officer shall be responsible for ensuring compliance with all electrical equipment on board

d. Chief Officer shall be responsible for ensuring compliance on deck

3. PROCEDURES

This procedure is to be followed for:

- Repairs to equipment where unexpected energizing or startup of the equipment, could cause injury;
- Repairs where release of stored energy such as from pressurized pipelines (steam, hydraulic, pneumatic) could cause injury;
- When maintenance is being carried out in close proximity to potentially dangerous equipment;
- Dismantling of valves or pipelines;
- Work in the vicinity of ships whistle;
- Work in the vicinity of devices posing a radiation hazard such as radar scanners and ships radio transmitter aerials;
- Other jobs as per senior officer's discretion.

Lockout Tagout itself is a process in two steps, Lockout is the isolation of energy and it is a physical lock or block of machinery, or equipment. The Lockout device holds an energy isolation device in a safe or "off" position. The energy isolation device can be any device that safely isolate the energy, like a line valve, circuit breaker, disconnect switch, block[3] etc. Push buttons, selection switches and other circuit control switches are not considered energy-isolating devices.[4]

Wherever possible the equipment is to be locked-out. A lockout system may be in the form of a latch, cover, handle, chain bar, cable ties, clasp with padlock, tying off or sealing a valve or a switch to immobilize its movement or other similar devices which would offer physical restraint from opening an energy source.

Where key-operated locks are used, the person whose name appears on the tag shall retain the keys.

[3] W 49 / 2022
[4] W 49 / 2022

Ship staff should not be able to remove the Lockout device without a key or other unlocking mechanism.

All the locking device will also be accompanied with a tag.

Where lockout is not possible, tags are to be used on their own and affixed to the energy isolating source.

Their purpose is to:

- Identify the isolation device(s) which is/are being used to protect personnel from the possible release of hazardous substances or energy;
- Give warning against unauthorized operation of the isolation device;
- Identify who has the authority to remove the lock / tag;

Tags shall be attached by substantial means; a one-piece plastic cable tie is highly recommended.

Where a tag cannot be affixed directly to the energy-isolating device, the tag shall be located as close as safely possible to the device, in a position that will be immediately obvious to anyone attempting to operate the device.

For jobs which require lock out / tag out, responsible officer shall ensure that the Lockout tagout permit to work form is completed and use of locks and /or tags is included in the risk assessment. Lockout tagout permit shall be used in conjunction with other permits like working aloft etc as applicable.

In addition to locking and tagging out, additional safety precautions should also be taken wherever possible such as removing valve handles, inserting blanks, levers etc in order to act as a secondary barrier to accidental start. These additional barriers should be recorded on the Permit to work

Following factors must be taken into account while determining the extent of Lock Out / Tag Out required:

- Length of time needed to do the work;
- Criticality of the equipment being worked on;
- Consequences of inadvertent removal of a tag;
- Number of potential dangerous energy sources;
- Whether work is being performed by ship crew or outside agencies;
- Potential impact of any other operation being carried out simultaneously.

The following to be ensured by responsible officer when lockout or tag-out is required.

- Machinery or equipment are turned off and electrically isolated;
- Pipelines and valves have been isolated, depressurized and drained;
- Closed systems have been shut off and isolated;
- Measures to prevent accidental re-energizing have been implemented.

All energy must be isolated by being turned off, eliminated, dissipated or controlled and securely maintained in the safe or 'Off' position until service personnel are out of danger and the equipment has been restored to its normal condition.

Sources must be switched off / turned off individually and controllers of equipment must be put in the "Off" or "Neutral" position.

Before commencing work, energy isolation must be verified by attempting to restart the equipment, reading a pressure gauge, voltmeter or other gauges. Where applicable, systems must be depressurized and drained.

Care must be taken after equipment is stopped and isolated that any stored energy (e.g. springs, hydraulics, steam or water pressure etc) is either released in a controlled manner or restrained by methods such as repositioning, blocking, bleeding etc. Steps should be taken to ensure that energy previously stored is not allowed to re-accumulate during the work or maintenance being carried out.

Where there is possibility of re-accumulation of stored energy during work, verification of isolation must be continued until servicing or maintenance is completed.

The responsible officer must also advise all relevant personnel that a lock-out/tag-out system is in place along with the reasons thereof. No work is to commence until the lock/tag is in position. The responsible officer shall sign the tag and affix the same to the energy isolating source.

All personnel, including any contractors/riding squads, are to comply with the procedure. No one must attempt to start, energize or use equipment that is locked or tagged out.

Proper handing over shall take place during change of watch. Lock out tag out procedures shall be clearly explained and permit to be signed by personnel taking over the watch.

The permit is to be reissued after 8 hours.

During change of watch of the responsible officer, the tag shall be updated to reflect the responsible officer taking over the watch. He will amend the tag to reflect his name. He will also update the tag to reflect any changes, such as other crew member watch changes, and also update the Permit.

After work has been completed and the equipment is ready for normal operation, the Responsible Officer shall discuss with members presently involved in the work and ensure that everyone is clear of the machinery or equipment, all tools have been removed from the work site, guards have been replaced, secondary barriers (such as blanks) have been removed, and any operating controls have been placed in the “neutral” or “off” position and no further hazard exists from energizing the equipment or opening the device to the system.

If work is done on engine room valves or filters, valve has to be opened gradually and tautness of system shall be checked.

The Responsible Officer will remove the lockout/ tag out devices and restore power to the machine. When it is verified all functions are operating properly, Master and all relevant personnel will be advised that normal operating conditions have been restored.

All crewmembers must be familiarized with Lock Out / Tag Out procedures and must be able to recognize locks and tags.

4. STORAGE LOCATION OF LOCK OUT / TAG OUT KIT

Lock out/tag out kit will comprise locks (recommended quantity 6 nos), tag out stickers, tag out cards and sufficient cable ties.

Company recommends Lock out / tag out kit is kept in engine control room.

The locks shall not be used for any other purpose.

Chief engineer is responsible for ensuring that lock out / tag out kit is properly maintained.

DANGER – DO NOT REMOVE THIS TAG
TO DO SO MAY ENDANGER PERSONNEL OF THE VESSEL
EQUIPMENT TAGGED BY (NAME):_____DATE:_____TIME:_____
THE ONLY PERSON AUTHORIZED TO REMOVE THIS TAG IS _____