STANDARD WORK PRACTICE *and* PROCEDURE

DATE: 5/9/22

SUBJECT: Lock Out / Tag Out (LOTO)

ELEVATOR INDUSTRY STANDARD: Elevator Industry - Field Employee Safety Handbook Section 7 – Lockout and Tagout

BASIS: The procedures outlined below are intended to prevent injury or death to employees by requiring certain procedures be taken before working on equipment. Unless it is not feasible (i.e., inspecting, troubleshooting, observing, etc.), employees shall not perform any work on equipment where there is a potential to be exposed to energized mechanical or electrical hazards until all sources of energy have been de-energized, grounded or guarded. Equipment variations require the mechanic to know what car controls are available and operating; the mechanic must know what safety methods will be employed to gain control of the car. Never access the hoistway unless you have control of the car. All forms of potential energy including electrical, mechanical, hydraulic, pneumatic, kinetic, gravity, etc. shall be controlled to prevent inadvertent movement of a unit or piece of equipment being worked on.

GENERAL: Each elevator field employee must be able to demonstrate and explain the essential steps by following the elevator industry standards on how they maintain complete control of the elevator prior to performing any task.

RESPONSIBILITY: The Company Owner, Executives, Department Directors, Field Superintendents, Managers, Supervisors and Union Officials are all responsible for all facets of this program and they must understand the leading by example and holding all employees accountable for their actions both Management and Union alike will ensure that **NO one** receives an unwanted serious or fatal injury because they cannot understand, follow and or execute complete control of the elevator by executing this elevator industry standard practice without fear of appraisal for their actions. Your safety officer **is not solely** responsible for your company's safety program but merely is a representative given the authority to oversee how the program is being implemented and or improved and enhanced by test and verifying how the company is deploying and executing without mishap. He is also in charge of ensuring that the company and field associates have the necessary Training and Personal Protective Equipment (PPE) to implement the process so there is **NO** misunderstanding on how to Properly Lockout and Tagout the elevator or escalator prior to the work assignment being performed.

1.0 General Requirements

1.1 Take the time to do a verbal / mental or written Job Hazard Analysis (JHA) so you have the correct tools and equipment and all the correct safety equipment before you arrive on the jobsite.
1.2 Upon arriving on the jobsite notify the building management/owner/property

management company/engineer that the elevator will be taken “out of service” for general maintenance and place your “out of service signage” and your barricade in front of the hoistway or machine room door to protect the public all prior to starting the task.

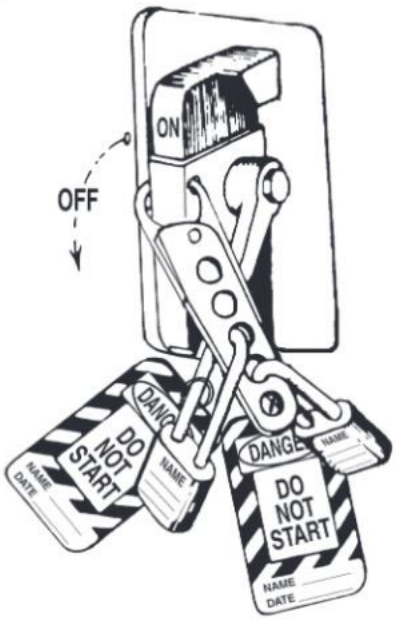
1.3 As part of your JHA you will have determined if the power is needed to perform the task.
1.4 If not you are to follow your companies Lock out / Tag out standard and if you do not have one refer to Section 7 page 49 of the Elevator Industries Field Employee Safety Standard for further guidance and direction.

2 Procedure

(a) Understand the equipment; be aware of its potential hazards. If it is not understood, or if you have a question, contact your Superintendent/Manager immediately before proceeding. (b) Where the accidental starting of the equipment would create a hazard - deactivate mainline disconnect switch to shut off the power. CAUTION: Do not stand directly in front of the mainline disconnect when operating (stand off to the side of the disconnect). Each employee shall apply to the disconnect switch a personal lock and a "Do Not Start" tag with the employee's name (Section 5.3).

(c) Some components (capacitors, MG sets, etc.) often store residual energy, even though power is shut off. The stored energy can result in electrical shock or unintended movement of equipment. Before working on equipment with these components, discharge the stored energy to ground. (d) When it is impossible to lock the switch, assurances shall be made that the circuit is deactivated and tagged out.

Figure 7a



(e) CAUTION: It is likely to have electrical energy on a controller that has had the mainline-disconnect switch deactivated. After initiating lockout and tagout, the lighting circuit may still be energized, battery backup may still be energized, and group controller cross connects may still be live. (f) Once the system has been locked out, verify with the appropriate test equipment that the system has been de-energized. (See Section 5.3) (g) Before working on mechanical systems, make sure the system is understood. If there are any questions, get answers before proceeding. Such systems often store energy, even though the electrical power is shut off. The stored energy can result in violent movement of a machine part, such as a plunger or piston rod, when work is done on another portion of the equipment. If the portion of the system to be worked on can be isolated and the pressure in that portion of the system released by bleeding, it is not necessary to shut down the entire system. However, the valves and controls which could readmit pressure to the system being worked on shall be identified with "Do Not Start" tags and locked out. If a lockout is not possible, other positive action shall be taken to ensure that the equipment will not be energized. Check flanged connections, cylinder heads or plate-mounted components. The sticking of a gasket can hold the parts together, while bolts are removed, and then can come apart violently due to stored pressure. (h) When working on the hydraulic system of a hydraulic elevator, mechanical controls shall be established by mechanically blocking or controlling the mechanical stored energy (i.e., landing on rated pipe stands, rail blocks, etc.). (i) Each employee who performs duties described above will be provided with an individually keyed or combination lockout device and tags. If more than one employee is assigned to a task, each employee shall be responsible for placing their own lock and "Do Not Start" tag, so the controls cannot be operated.

(0) If controls are so located that only one lock can be accommodated, a multiple lockout device shall be used. (K) Lockout devices shall be made available for locking out additional equipment. (L) Where special devices are required to lockout circuit breakers, they shall be available and used. (M) Lockout devices shall be returned to the Company when an employee transfers to other assignments or terminates. (n) When switches are deactivated for service, repairs, or alterations, they shall be locked out and tagged out. (O) Before starting work on any equipment that is out of service, make a thorough check of all electrical control and starting devices. When any part of such equipment is remotely controlled, lockout and tagout the mainline disconnect and confirm that the system is de-energized [Section 7.1 (f)].

2.1 Shift Changes

(a) When employees are ending their shift and/or other employees will continue work on the machine or equipment, the employees shall attach the company locks and tags and then shall remove their personal locks and tags. (b) The new shift employees shall apply their personal locks and tags before beginning work on the machine or equipment. After the employees have placed their personal lockout mechanism and tag, and have verified that the system is de-energized the company locks and tags shall be removed.

2.2 Restoring Equipment and Machines to Normal Service (a) All tools shall be removed, all guards and covers shall be reinstalled, and the area shall be checked to ensure that no personnel are exposed to the equipment or machine. (b) The mechanic, after checking to make sure that no one is exposed to the equipment or machine, shall restore energy to it. (c) After each portion of the work is completed, the individual who places the lockout mechanism shall be responsible for its removal. If more than one operation is performed on a piece of equipment, machine, or system, it will be necessary for everyone to remove their lockout mechanism immediately after their work task has ended. The last individual to remove their lockout mechanism shall notify the customer that all work has ended. (d) The unit shall be operated in the normal mode before returning it to service. (e) Remove out of service tags.
(f) Notify the customer that the unit is back in service.

3 Supervisory/Emergency Removal of Lockout/Tagout

(a) If it is necessary to operate a piece of equipment which is locked out, every effort shall be made to locate the employee whose lock is on the equipment. If the employee cannot be located, and after positive assurance is made that no one is working on the locked-out equipment, your Superintendent/Manager may personally remove the lock. The Superintendent/ Manager must remember that there is danger of the employee involved returning, thinking the machine is still locked out, when actually it has been reactivated. The Superintendent/Manager shall ensure that the equipment is, once again, locked out before the employee resumes work. (b) If a machine is locked out and it becomes necessary to leave, recheck upon returning to make sure the machine is still locked out. While supervisors will make every effort to avoid removing locks, there may be situations when it must be done. The recheck is for your protection.

4 Lockout/Tagout Procedures for Escalators and Moving Walks

(a) The applicable procedures in Sections 7.1 and 7.2 apply to all employees who work on escalators and moving walks. Anytime work is to be performed within the interior plane of the steps/ pallets, it shall be locked out and tagged out to prevent the unit from starting unexpectedly. (b) In addition to lockout/tagout, whenever working within the truss where 10% or more of the escalator steps are removed, a mechanical blocking device shall be activated to prevent the escalator from moving. If the unit is not equipped with a mechanical blocking device, the drive chain and/or step axles must be secured to the truss braces to prevent movement in either direction. (c) Whenever steps are removed and the unit is going to be left out-of-service, the steps/pallets should be moved to cover the openings (whenever possible).

7.4 MRL Car Movement Locking Devices

(a) Some machine-room-less elevators are equipped with special car movement locking devices that provide an independent method of securing the car. The cartop can then safely be used for performing maintenance or inspection to overhead equipment.
• Elevator suspension must be in place
• The device is typically located on the crosshead
• It shall have a sign stating "WARNING!" Engage before maintaining on inspecting brake, emergency brake or controller.
(b) Some MRLs with controllers in the hoistway have multiple lockout locations. Prior to performing lockout/tagout, determine the best location to de-energize the equipment you will be working on. Refer to manufacturer's documentation for further information

Safety Alert: Prior to the time that the authorized employee(s) start to work on a machine or a piece of equipment that has been locked out or tagged out, the authorized employee(s) must verify isolation and de-energization of the machine or the piece of equipment. Verify zero-energy state by attempting to start the equipment.

4.1 Training. Each company is responsible and shall develop a standardized training format to meet the requirement in the above Lockout/ Tagout process.
https://www.osha.gov/sites/default/files/2018-12/fy11_sh-22300-11_LOTO.pptx

4.2 Personal Protective Equipment
• For arc-flash protection long-sleeved natural-fiber or FR-rated shirts, or long-sleeved FR-rated coveralls or other company-approved arc-flash-hazard protection
• For arc-flash protection, clean leather gloves or arc rated gloves when working on or near energized electrical components.
• Voltage rated gloves with leather protectors may be required when working on energized components when there is a risk of contact with energized components above 150V and if safe-working practices cannot abate the risk.
• Nonconductive safety glasses
• EH-rated footwear or rubber mats

4.3 Additional Resources.
https://www.osha.gov/control-hazardous-energy
https://www.osha.gov/sites/default/files/publications/factsheet-lockout-tagout.pdf

Pocket Card – Quick Actions

The procedures outlined below are intended to prevent injury or death to employees by requiring certain procedures be taken before working on equipment. Each associate must be able to demonstrate & explain essential policies and procedures on the proper Lockout/Tagout procedure.

1. Take the time to do a verbal / mental or written Job Hazard Analysis As part of your JHA you will have determined if the power is needed to perform the task.

2. Deactivate mainline disconnect switch to shut off the power- CAUTION: Do not stand directly in front of the mainline disconnect when operating (stand off to the side of the disconnect). Each employee shall apply to the disconnect switch a personal lock and a "Do Not Start" tag with the employee's name.

3. Some components (capacitors, MG sets, etc.) often store residual energy, even though power is shut off. The stored energy can result in electrical shock or unintended movement of equipment. The stored energy can result in violent movement of a machine part, such as a plunger or piston rod, when work is done on another portion of the equipment

4. Once the system has been locked out, verify with the appropriate test equipment that the system has been de-energized.

5. Restoring Equipment and Machines to Normal Service. All tools shall be removed, all guards and covers shall be reinstalled, and the area shall be checked to ensure that no personnel are exposed to the equipment or machine. The mechanic, after checking to make sure that no one is exposed to the equipment or machine, shall restore energy to it, after everyone who places the lockout mechanism removes it.

Summary

The intent of this Standard Work Process and Procedure is to make sure that all mechanics and apprentices fully understand how to properly Lock Out/ Tag Out, and elevator or escalator when conventional means cannot be used in accordance to this SWP or in accordance to the Elevator Industry Field Employee Safety handbook (EIFESHB) and you must deviate from these practice(s) E.g. Live work, a written JHA shall be approved by your manager / supervisor before proceeding. All NAEC Companies will be required to conduct yearly training to their employees on these safe methods to use by following these Industry Standards. This will ensure that **NO** one receives an unwanted injury because they did not receive, did not know, or understand the correct processes to Lockout/ Tagout any elevator or escalator top in their portfolio.

OSHA requires under the Code of Federal Regulations - General Duty Clause
SEC.5. DUTIES

(a) Each employer --

(1) shall furnish to each of his employees' employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious physical harm to his employees; 29 USC 654

(2) shall comply with occupational safety and health standards promulgated under this Act.

(b) Each employee shall comply with occupational safety and health standards and all rules, regulations, and orders issued pursuant to this Act which are applicable to his own actions and conduct.

Conclusion: If any questions, concerns, or your company needs clarification to the above Lock Out/ Tag Out procedure that may surface during your training or safety committee meetings feel free to contact the NAEC office. They in turn will direct your call to one of the NAEC Safety Committee Members who will return your call to assist you in your concern.