

## GRACE - Lake Charles Plant

LCSVCS-90-264

## Lockout/Tagout Procedure

Approved: Mark Louviere  
(Lock Out / Tag Out Facilitator)

REVISION #22

---

**Purpose**

The purpose of this procedure is to establish a uniform Lock, Tag & Try procedure that will prevent injuries to employees from unexpected mechanical movement, electrical shock, flow of product through piping, inadvertent start-up, or release of stored energy from machines, equipment, or processes during service or maintenance. The objective is to achieve "zero energy state" from any and all sources of energy: electrical, pneumatic, hydraulic, chemical, mechanical, thermal, kinetic and gravitational energy.

**Policy**

All equipment that poses a danger to personnel, if inadvertent start-up or activation occurs, must be locked out, tagged with a "Danger-Do Not Operate" tag, and then tried at the local "start" switch (or tested by a qualified employee *{electrician}* if the equipment cannot be tried) to determine if the equipment has been de-energized or immobilized. The Grace Lake Charles Plant Lock-Tag and Try Data Sheet will be referenced and all requirements applicable to the task addressed before any maintenance work begins. For situations where Lock Tag & Try Data Sheets are not available, the Custodian and persons performing work must perform an on the spot analysis of the equipment to be worked on and will identify points for the installation of energy isolating devices and locking devices.

**Responsibility**

All Grace Lake Charles employees and contractors have the responsibility to monitor and comply with this procedure. The Custodian has the responsibility to assure the equipment has been de-energized and/or depressurized, or immobilized with proper locks and tags before issuing the One Day Work Permit. The Custodian and person(s) performing maintenance work are responsible for assuring the Grace Lake Charles Plant Lock-Tag and Try Data Sheet is referenced and all requirements applicable to the task addressed before any maintenance work begins. This form is then attached to the field copy of the One Day Work Permit, along with any other appropriate work permits. (*i.e. Hot Work, Confined Space Entry etc.*) The Custodian is responsible for maintaining the key for all system locks either on his/her person, or in a secure location during a lockout, and for transferring this responsibility to the oncoming Custodian at shift change or upon leaving the plant site. Failure to comply with the requirements of this procedure will result in disciplinary action. In the case of the Administration building, Rec. building, River house, Change house and Guard house at the construction gate, the Safety Department will be responsible for the equipment or delegate responsibility of signing on the work permit and locking out of all equipment in this area.

---

## **Definitions**

**Lockout/Tagout** - The placement of a lock and tag on an energy isolation device in accordance with this procedure until the affective equipment being controlled cannot be operated until the lock out devices have been removed. This is done for the purpose of achieving zero energy state.

**Zero Energy State** - A state in which absolutely no hazardous energy exists in a locked out system.

**Energized** - Connected to an energy source which has not been isolated. The following energy sources are included but not limited to.

- 1.) Mechanical
- 2.) Electrical
- 3.) Hydraulic
- 4.) Chemical
- 5.) Thermal
- 6.) Pneumatic
- 7.) Kinetic
- 8.) Gravitational

**Energy Isolating Device** - A device that physically prevents the transmission or release of energy, including but not limited to the following:

- 1.) Manually operated Circuit Breaker
- 2.) Local Disconnect Switch
- 3.) Slide Gate Valve
- 4.) Slip Blind
- 5.) In-line Manual Block Valve
- 6.) Wheel Chocks
- 7.) Double Block and Bleed Valves

<p><b>NOTE: {DANGER}</b> – ENERGY ISOLATING DEVICE <b>DOES NOT</b> INCLUDE CHECK VALVES, PUSH BUTTONS, SELECTOR SWITCHES, LOCAL “HAND, OFF, AUTOMATIC” SWITCHES OR ANY OTHER CONTROL CIRCUIT TYPE DEVICES.</p>
--

---

**Lock Out / Tag Out Hardware:** Hardware supplied by the employer for isolating, securing or blocking machines or equipment from energy sources includes but are not limited to:

- 1.) Locks
- 2.) Tags
- 3.) Chains
- 4.) Wedges
- 5.) Key Blocks
- 6.) Adapter Pins
- 7.) Self-locking fasteners

**NOTE:** When locking out one of the holes on any hasp will be left open so an additional hasp can be added if needed.

**NOTE:** If a second hasp is added, a review should be done to see if a lock box is needed.

- 8.) When using a Lockout hasp one hole on the hasp will be left open so an additional hasp can be added if needed.

**Custodian** - The individual having immediate charge and control of equipment requiring a lockout. To assure all required precautions are taken to secure equipment for maintenance.

- 1.) Custodians are usually the “B” and “C” operators having immediate control of the equipment. However in some instances the General Foreman or Shift Foreman may delegate custodial duties to a Production Contact (“A” Operator) if necessary. Also, the area Foreman can be assigned custodial lock out duties if deemed necessary.
- 2.) Operations custodians will maintain keyed-alike locks that will be the first applied and last removed when equipment is locked out.

**Authorized Worker** - The individual or individuals who are actually performing the maintenance work on a particular piece of equipment. Examples of authorized workers are craft people such as pipefitters, fitter welders, millwrights, electricians and instrument technicians.

- 1.) Each authorized worker will provide their individual locks and tags on all isolation points. *(If impractical due to the size of the job, see group lockout.)*

**Custodian Lock** - The lock of an Operations Group or Electrical Department having immediate control of equipment requiring a lockout.

- 
- 1.) Each operations group and electrical department is responsible for the integrity of their groups custodian key.
    - a.) **One** operations custodian key is to be used for a given operations group and kept in designated location.
    - b.) Each electrician will have a key for an electrical custodial lock when locking out equipment for other authorized workers and a key for their individual locks when the electrician is actually performing work on the equipment.

**Keyed Alike Locks** - A set of locks assigned to an Operations job area or other Custodian group such as the Electrical Department that can be opened using one key. Operations and Electrical Departments will maintain keyed-alike Custodian locks which will be the first applied and last removed when equipment is locked out. (*"Keyed-Alike" means that one key will open a particular group of locks assigned to the Electrical Department or areas in Operations*). The Electrical Department and each Operations area will maintain separate and different Custodian lock groups). Custodian locks will also be used by the designated person overseeing a group lockout. (*See group lockout*)

- 1.) For example, the Boiler House operator will have a set of locks for locking out systems in his/her job area which can be opened with one key.
- 2.) The Boiler House operator is in this case is the "Production Contact" and "Custodian" of equipment in their area.

**Danger Do Not Operate Tags** - All installed locks must be accompanied by a "Danger-Do Not Operate" tag properly filled out indicating:

- 1.) Reason for lock out.
- 2.) Date of lock out.
- 3.) Signature of installer. (*This shall be clear and legible*)

The Danger Do Not Operate tags are red and white in color with "Danger Do Not Operate" written in red. Tags must be made of material able to withstand the elements for the duration of the lockout. Danger Do Not Operate tags can be obtained from the warehouse or area Training Foreman.

<p><b><u>NOTE: {WARNING}</u></b> - Tags are essentially warning devices affixed to energy-isolating devices and do not provide the physical restraint of a lock. (<i>see Tagout section</i>)</p>
--

**Blind Point Tags** - Tags used for positive ID locations in process piping where blinds are to be installed.

- 1.) Blind Point tags are stored in the warehouse.
- 2.) Operations custodians are responsible for tagging the area that the blinds are going to be installed before installation of the blinds.
- 3.) Maintenance personnel will install blind point tags in hard to reach areas under direction of the operations custodian.
- 4.) If a pipe union is involved, it will have a Blind Point tag install on it before it is disconnected. A pipe union plug or pipe cap will be installed after the line has been disconnected on the down streamside of the block valve.
- 5.) The operations custodian will remove blind point tags when maintenance arrives to remove the blinds.
- 6.) Any maintenance work requiring a blind flange to be installed, (*such as confined space*) must be accompanied by a "Blind Point" tag properly filled out indicating:
  - a.) Signature of Craftsman
  - b.) Signature of Custodian
  - c.) Date of installation.

Blind point tags are yellow in color with black stripes and “Blind Point” written in red. Tags must be made of material able to withstand the elements for the duration of the lockout. Blind Point Tags can be obtained from the warehouse or area Training Foreman.

### **Electrical Department Yellow Caution Tags**

When the electrical department physically disconnects wiring from motor or other special duties with a piece of electrical equipment they will install their personal locks and Do Not Operate tags. If they leave the job unfinished they will install an Electrical Department Custodian lock with a blue Electrical Department tag. They will also leave a yellow caution tag on the lockout with their name, date & why it has been disconnected. This will ensure that the next Craftsman will know why the Electrical Department has locked out the equipment. This is the only time they do not have to install a Job Incomplete tag.

---

***Job Incomplete Tag*** - A tag placed on a lockout device that notifies affected personnel that a job is incomplete. This tag will be used when maintenance on a system is not completed before shift change, and a decision has been made that maintenance will resume at a later date.

**NOTE:** An exception exist from hanging job incomplete tags and the removal of locks & tags when a shutdown is going to last more than 24 hours. The exception is listed on page 8.

- 1.) If a Maintenance employee working on the job must leave the plant site before a job is completed, such as at shift change, they will remove their lock and tag and install a job Incomplete tag to the isolating device.
- 2.) Maintenance personnel are responsible filling out and for applying a job incomplete tag.
- 3.) Operations personnel may leave their locks and tags on the affected incomplete equipment but the operator must sign the Lock Tag Data Sheet verifying that visual on site check has been performed and that all locks & tags are in place before the work to continues. In these cases, the custodial lock(s) will remain on the locked out equipment as long as the job incomplete tag is installed and until all work has been satisfactorily completed.
- 4.) When the Maintenance employee or authorized worker resumes work on the job, he must re-lock, tag and try the equipment using the same procedure and then remove the job incomplete tag.
- 5.) The job incomplete tag can only be removed by the craftsman or authorized worker once the job is complete. The tag is notification that the equipment is out of service until maintenance is completed. Never attempt to energize equipment with a job incomplete tag on it.
- 6.) Any incomplete maintenance work requiring “Job Incomplete Tag” must be filled out properly indicating the following:
  - a.) Signature of Craftsman
  - b.) Date of installation.

Job incomplete tags are red in color with “Job Incomplete” written in yellow. Tags must be made of material able to withstand the elements for the duration of the lockout. Job Incomplete Tags can be obtained from the warehouse or area Maintenance Foreman.

---

***Group Lockout*** - A situation in which each worker does not apply an individual lock to the energy isolating device, but instead applies a lock to a group lockout device such as a lock box. The following are examples of where a group lock out is utilized.

NOTE: When group lockout is used it will be marked on the Data sheet in the area that states that this is a group lockout.
--

- 1.) A large number of isolating devices needing to be locked out by a large number of employees. (*such as in a major shutdown or turnaround*)
- 2.) This type lockout is used for turnarounds, shutdowns and other situations as deemed necessary by the area General Foreman and the Grace maintenance or contract maintenance supervisors.
- 3.) Large separation of distance between the work location and energy sources make it impractical for every individual to affix a lock.
- 4.) Necessity to energize a piece of equipment or parts of a system for testing or troubleshooting for which the placement of numerous individual locks in remote locations would make such activity unreasonably difficult.
- 5.) When a authorized worker overseeing (*a person designated to oversee the lockout such as an authorized worker or contract maintenance foreman*) locks out the equipment on behalf of other authorized workers and places the key associated with that lock box will be placed inside the lock box (no one will possess duplicated key once the lock box is closes). All authorized workers then place their individual lock on the lock box.

In a Group lockout, each individual does not put personal locks on the individual lockout devices, but on a lockbox instead. An authorized worker overseer is designated by supervision to assume responsibility for the Lockout/Tagout on behalf of the work group. The authorized worker overseer will coordinate and implement non-custodial lockout for the entire group. In Group lockouts, the designated lockout overseer will affix a personal lockout device (lock & tag) to the group lock box when he or she begins work, and remove the lock & tag when he or she stops working on the equipment being repaired. At no time are authorized employees or custodians to lock out equipment / lock boxes for other authorized workers or custodians.

When the authorized worker designated lockout overseer has locked out each device required, he or she will place the key used for the lock box locks will be placed in a lock box. Each person performing maintenance will then install his individual lock & tag on the lock box. The designated lockout overseer is not allowed to transfer responsibility for overseeing the lockout unless all of the following provisions have been satisfied:

- 1.) The Custodian has been notified.
- 2.) The individual workers protected by the lockout have been notified.
- 3.) These responsibilities are transferred to another authorized employee with no interruption in the control of the lockout.

### **Multiple Day Shutdown Lockout**

#### **Operations**

When a shutdown is going to last more than 12 hours, locks & tags may remain on the equipment. When ongoing work is taking place on a piece of equipment each changing shift must verify the tags & locks are still in place to ensure that the lockout has not changed. The operator must sign the Lock Tag Data Sheet verifying that visual on site check has been performed and that all locks & tags are in place before the work continues.

#### **Maintenance Dept**

When a shutdown is going to last more than 24 hours, locks & tags may remain on the equipment. Each changing shift must perform an onsite check to verify that all locks & tags are in place and sign the Work Permit & Lock Tag Data Sheet before any work can continue. After the job has been finished the locks & tags will be removed by Maintenance. If for any reason a Craftsperson who was performing maintenance fails to show up at the plant, before their locks & tags can be removed an investigation will be conducted to ensure the removal of the locks & tags will not create a safety issue. The investigation will be conducted by the Craftsperson's Supervisor, the Grace Custodian and Grace Supervisor.

**Lock Tag & Try Data Sheets** - A list to be referenced by the Custodian and Authorized workers (*persons performing the maintenance*) which identifies all areas to be locked out so as to achieve zero energy state for a particular piece of equipment or system before any maintenance work can begin. The purpose of the Lock - Tag and Try data sheets is to provide the Custodian and persons performing maintenance work with the information required to identify all isolation points for energy sources. Also, to provide a list of sequential steps for the following:

- 1.) Shutting down the equipment.
- 2.) Installing or Verifying energy isolating devices and locks/tags.
- 3.) Releasing stored energy.
- 4.) Record the type of stored energy it was on the Data sheet in check boxes.
- 5.) Removing energy isolating devices after completion of maintenance.
- 6.) Inspecting equipment before re-energizing.
- 7.) Re-energizing equipment.

8.) Responsibilities for each of the above.

The operations custodian and authorized worker will reference the data sheet, addressing all of the requirements applicable to the task as listed in 1 - 8 above before work begins.

**NOTE: {DANGER}** – LOCKOUT / TAG OUT DATA SHEETS IDENTIFY ALL STEPS REQUIRED TO RENDER EQUIPMENT TO TOTAL ZERO ENERGY STATE. IT IS RECOGNIZED THAT SOME MAINTENANCE TASKS WILL NOT REQUIRE THAT EQUIPMENT BE RENDERED TO TOTAL ZERO ENERGY STATE. INDEED, SOME TASKS CANNOT BE PERFORMED IF EQUIPMENT IS RENDERED TO TOTAL ZERO ENERGY STATE. THE CUSTODIAN OF THE EQUIPMENT AND PERSON(S) PERFORMING MAINTENANCE ARE REQUIRED TO ASCERTAIN WHICH ISOLATING DEVICES IDENTIFIED ON THE LOCK TAG & TRY DATA SHEET WILL REQUIRE LOCKOUT. **ALL ENERGY WHICH COULD CAUSE INJURY IF INADVERTENT START-UP OR ACTIVATION WERE TO OCCUR MUST BE LOCKED OUT!**

8.) Lock Out Tag Out data sheets can be found on the GRACE Interlan home page.

- a.) Click on the “Lockout/Tag Sheets” icon.
- b.) Type in desired equipment number.
- c.) Print page one, “Preparing Equipment for Maintenance.”
- d.) Print page two, “Preparing Equipment for Startup.”

9.) The Custodian and each Authorized worker (or Authorized Worker designated to oversee lockout under Group Lockout) shall perform an on-site analysis and are required to check off on all points of responsibility as identified on the Lock Tag & Try Data Sheet. The Data Sheet shall then be signed off verifying that all requirements have been met and the required on-site analysis has been completed. If Lockout Tagout is not applicable, the data sheet must be checked off in the appropriate area and signed.

10.) For group lockouts, the Custodian and person authorized to oversee the lockout will assure that all requirements are met. (*see group lockouts*)

11.) For situations where Lock Tag & Try Data Sheets are not available, the Custodian and authorized workers (*persons performing work*) must perform an on the spot analysis of the equipment or system to be worked on and will identify points for the installation of energy isolating devices and locking devices.

- a.) When data sheets are not in the lock tag data base the custodian can generate a blank data sheet by typing the work "BLANK" in the equipment number field and print a blank copy.
- b.) The custodian can also perform an on the spot analysis and write the information on the back of the work order. The work order will be reviewed and forwarded to the area Training Foreman to create a data sheet. .) Make sure the revision box is checked on the front page of the Work Permit if a problem is found on the data sheet.
- c.) To assure that non existing data sheets are addressed and created, flag or note on the front of the work permit that the data sheet needs correcting or creating. Make sure the revision box is checked on the front page of the Work Permit if a problem is found on the data sheet.

## Electrical Equipment

When the purpose of the lockout is to de-energize electrical circuits so that personnel can safely work in close proximity to or on exposed electrical parts, a qualified electrician must use test equipment to verify that the exposed parts or elements are not energized. This shall be done after the system has been de-energized and locked out, but before work on exposed electrical parts is initiated.

- 1.) The Custodian opens the breaker (*switches to off position*) to interrupt the power circuit after the equipment has been identified and shut down.  
(\**except in systems operating above 480 volts*)
- 2.) On breakers having an "Open/Close" or "Off/On" switch, a multiple lockout hasp is applied to the switch by the Custodian along with a "Danger-Do Not Operate" tag attached to the lock. (*except in systems operating above 480 volts*)
- 3.) Breakers not having switches must be racked out and a cover applied over the crankshaft. The cover is to be locked in place by the Electrical Department electrician with a multiple lockout hasp, and the Custodian lock\*\* is to be placed on the hasp, along with a Electrical Department **blue** "Danger-Do Not Operate" tag.

---

\*\*\* For all situations as referenced in section #3 above, the Electrical Department will be the Custodian as regards electrical de-energization. This means that the Electrical Department's lock will be first on and last off. The Operations Custodian and persons performing maintenance will then install their locks and tags, except in situations involving exposed electrical components. In these situations, the Operations Custodian lock and the individual lock of the person(s) performing maintenance may be installed by an electrician acting for these individuals provided that the installation can be verified through observation by the Operations Custodian and person(s) performing work. The keys for these locks remain in the possession of these individuals. Upon completion of work, if a condition involving exposed electrical parts still exists, an electrician may remove the locks for the Operations Custodian and person(s) performing maintenance. "Danger-Do Not Operate Tags" used by electrical custodians will be **blue** in color to clearly identify the electrical department as the custodian for those situations referenced in section #3.

- 4.) The Custodian and authorized workers are to go to the starter switch for the equipment involved and activate the switch to ensure the lockout has been effective. If upon trying the control switch the equipment should start, the Electrical Department must be notified to identify and correct the problem
- 5.) After confirming that the equipment will not start when the control switch is activated, the switch shall be placed in the OFF position. A lock is not required on the local control switch.
- 6.) ***Each*** authorized worker who will work on the equipment will apply their own lock to the hasp along with a "Danger-Do Not Operate" tag with the required information at the breaker location. The Grace Lake Charles Plant Lock-Tag and Try Data Sheet will be referenced and all requirements applicable to the task addressed before the One-Day Work Permit is signed on.

<p><b><u>NOTE:</u></b> On all work orders the Custodian will fill out the, Operations part on the top of the Maintenance JSA sheet after reviewing the task with Maintenance and will then sign the JSA.</p>
--

- 7.) A "One-Day Work Permit" will be "signed on" by the Custodian when the lockout and other necessary precautions have been addressed.

**NOTE: {DANGER}** – CONTROL CIRCUIT TYPE DEVICES SUCH AS PUSH BUTTONS, SELECTOR SWITCHES, LOCAL “HAND, OFF, AUTOMATIC” SWITCHES OR ANY OTHER CONTROL SWITCHES ARE NOT ENERGY ISOLATING DEVICES. CUSTODIANS OR AUTHORIZED WORKERS WILL NOT BE PERMITTED TO STAND BY CONTROL SWITCHES WHILE MAINTENANCE IS BEING PERFORMED WITHOUT LOCKING OUT EQUIPMENT.

- 8.) When maintenance is complete, the Maintenance employee notifies the Custodian and together they inspect the equipment for proper operation, inspect work area for housekeeping and then remove the Maintenance and custodial locks.
- 9.) When the Custodian has made sure that the equipment is ready, work area is clean and that all workers are in a safe position, he will remove the Operations lock, tag and multiple lockout hasp, and re-energize the equipment. On equipment which operates above 480 volts, the Electrical Department lock must be removed along with the Operations lock, and then the electrician will re-energize the equipment. The Custodian then accepts the responsibility for the equipment and its operation.

**NOTE:** – The electrical department has been assigned personal and custodial locks. If an electrician is an authorized worker on the job he will use his personal locks. If the electrician is unwiring electrical equipment for another craft he will install his personal lock while unwiring the equipment and then install an electrical custodial lock when completed.

- 10.) When electrical equipment is left disconnected for equipment repairs, the Electrician's personal lock will be removed and an Electrical Custodian lock will be applied to the lockout hasp along with a “blue” electrical department “Do Not Operate” tag providing information as to the reason the equipment is being left locked out. When the equipment is to be reconnected, the Electrician will install his personal lock before beginning work.
- 11.) Electrical breakers shall only be in one of four modes:
  - a.) In the ON position - No permits or tags necessary.
  - b.) In the OFF position - For maintenance with the hasp, incomplete tag, and Operations (and/or Electrical) lock in place.
  - c.) In the OFF position - Spare breaker with NO electrical leads in the breaker box. For breakers removed from service, all electrical motor leads shall be pulled from the breaker box. The door shall be labeled by the Electrical Department "SPARE".

- d.) In the OFF position - Ready for use but not required at the present time.

**Instrument technician Required Lockout**

For equipment that can only be isolated by an instrument technician, only the Instrumentation Department will de-energize, and upon completion, re-energize the equipment. When removal of the energy is accomplished by disconnecting air lines, the lines will be tagged with an Instrumentation department custodian's tag & Operations custodian tag. When removal of the energy is accomplished by disconnecting wires off of an instrument, the wires will be tagged with an Instrumentation department custodian's tag & Operations custodian tag.

**Electrician Required Lockout**

- 1.) For electrical equipment above 480 volts, only the Electrical Department will de-energize, and upon completion, re-energize the electrical components of equipment. When electrical switch gear above 480 volts is de-energized, the Electrical Department lock will be first applied with the Operation's lock second. ***Operators will only apply locks and remove locks on systems operating above 480 volts when accompanied by an Electrician.***

**NOTE: {DANGER} - ONLY QUALIFIED ELECTRICIANS ARE ALLOWED TO APPROACH WITHIN 10 FEET OF EXPOSED ELECTRICAL COMPONENTS EXCEEDING 480 VOLTS. WHEN WORKING ON SUCH EXPOSED ELECTRICAL COMPONENTS, THE ELECTRICIANS PERFORMING THE WORK WILL TAKE THE NECESSARY STEPS (BARRICADING, POSTING A WATCH, ETC.) TO KEEP UN-QUALIFIED EMPLOYEES OUTSIDE OF THE 10 FOOT EXCLUSION ZONE.**

**NOTE:** – The electrical department will install a custodial lock or locks anytime they verify zero energy. In situations where equipment cannot be tried for any reason, an electrician must be called to assure electrical de-energization. *(For example: locking out a pump that shares a variable speed drive with another pump, interlocked equipment that cannot be tried.)* In these cases, the operator shall wait until the electrician has assured de-energization before installing custodial locks. The electrical department will then install a custodial lock and tag until the job is completed.

- 2.) In situations where equipment cannot be tried for any reason, an electrician must be called to assure electrical de-energization. *(For example: locking out a pump that shares a variable speed drive with another pump)* In these cases, the operator shall wait until the electrician has assured de-energization before installing custodial locks.

**NOTE: {DANGER}** - THE CUSTODIAN MUST ENSURE, WITH THE ASSISTANCE OF THE INSTRUMENTATION OR ELECTRICAL DEPARTMENT, THAT EQUIPMENT IS NOT TEMPORARILY INOPERATIVE BECAUSE OF AN INTERLOCK. IN THESE CASES, THE OPERATOR SHALL WAIT UNTIL THE ELECTRICIAN OR INSTRUMENT TECHNICIAN HAS ASSURED DE-ENERGIZATION BEFORE INSTALLING CUSTODIAL LOCKS.

- 3.) For electrical equipment that is interlocked the electrical or instrument department will be called to assure that the equipment is not inoperative because of an interlock. In these cases the custodian shall wait until the electrician or instrument man has assured de-energization before installing custodial locks.
- 4.) Separate and apart from the requirements outlined above, a qualified employee (*electrician*) will verify electrical de-energization for blowers, agitators, pumps and rotary valves, and screw conveyors for all situations involving Confined Space Entry.

## Piping

**NOTE:** Lock-Tag & Try Data Sheets are not available for piping systems at this time. For work performed on piping systems follow the requirements listed below.

- 1.) Lock Tag and Try Data sheets are not available for piping systems at this time. The Custodian of the piping system, in collaboration with the persons performing work on the piping will perform an on the spot analysis of the piping system to be worked on and will identify points for the installation of blind point tags and/or energy isolating devices. The Custodian will assure that all residual energy has been identified, isolated and released. The data sheet for the affected equipment can be printed and utilized or a blank data sheet can be printed and isolation points identified by custodian and authorized worker. (*see lock out data sheet section*)
- 2.) Valves in piping shall be secured by the use of chains or other approved lockout devices to keep the valve from being operated inadvertently. Piping valves are defined as systems that could contain a flow of air, steam, water, flammable liquids, gases, or chemicals in piping systems that may present a hazard to personnel or the environment if inadvertently opened.
- 3.) Each authorized worker and operations custodian will install an approved lock out device on all isolation points in piping. Custodians and authorized workers will not be permitted to stand by isolation points while maintenance is performed without approved lock out devices in place on isolation points. Any identified isolation point will require an approved lock out device.

- 
- 4.) The custodian will apply the chain and lock to prevent movement of the valve operating mechanism. This will be accomplished by connecting the valve wheel or handle to a structure using the chain. Some types of valves will accommodate a locking device without the necessity of chains. The proper device shall be used. It is intended that chains be used in situations where placement of the chain will physically prevent the activation of the valve. In situations where valves and installation is so configured that chains would be ineffective in preventing the valves from being opened, tagout will be used. However, in these cases all personnel must be aware of the limitations of tags versus locks. Also, when piping and valve revisions are made in these situations, valves which will accept a lock must be installed. *(See Tagout section)*
  - 5.) A multiple lockout hasp will then be applied by the Operator, and he will place the custodian lock on the hasp along with a "Danger-Do Not Operate" tag. For situations where the valves are located in pipe racks or other areas not accessible to Operators, Maintenance personnel will install the Operator's Custodian lock and tag.

The Grace Lake Charles Plant allows working behind a single block valve. If working behind a single block valve, it must be verified that the single block is holding. **Note: A line behind a single block must be pressurized to determine if the block is holding. Work can't continue until verified.** A check valve **CANNOT** be used as an energy isolation valve.

When working in the immediate proximity of the final isolation valve, either a slip blank blind will be installed between the valve flange and the downstream piping or the spool piece will be removed and a blind flange installed on the valve.

When performing the LOTO for work on a line, if it cannot be verified that the isolation valves are holding or if the piping system cannot be depressurized:

The Production Contact, the Custodian, and/or the Authorized Workers assigned to the Work Permit will notify the Grace Supervisor and/or Maintenance General Foreman, or designee, of the concern.

### **Remote Isolating Devices**

In some instances, remote isolating devices will need to be operated in order to secure energy during a lockout. These devices may be in a different plant or area that is outside of the normal area of control assigned to the Custodian. In most cases, the remote isolating device will be a valve. In instances involving remote isolating devices, the following guidelines will be followed:

- 
- 1.) The Custodian of the equipment being worked on will request that the person in control of the isolating device identify the correct valve or other isolation device to be locked out.
  - 2.) Assure the production contact of the “outside area” is notified of the lock out and work to be performed in their area.
  - 3.) Once the custodian in control of the isolating device installs his lock, then the lock of the authorized worker can be installed.

## **Tagout**

Certain energy isolation devices (*e.g. underground water valves*) may not permit the direct application of a lockout device. Lockout is the preferred method of securing energy isolating devices. However, some devices are not capable of being locked. (*For example, instrument air tubing, bleed valves, disconnected flex hoses etc.*) In these cases, Tagout (*a red & white Danger Do Not Operate tag*) will be utilized.

***It is important that the following limitations of tags be understood:***

- 1.) Tags are essentially warning devices affixed to energy-isolating devices and do not provide the physical restraint of a lock.
- 2.) Tags must be legible and understandable by all authorized workers, operations custodians and other employees whose work operations may be in the area.
- 3.) Tags and their means of attachment are to be made of materials that will withstand the environmental conditions of the workplace. (*plastic tags with tie wrap*)
- 4.) When a Danger Do Not Operate tag is attached to an isolating means, it is not to be removed except by the person or custodial group who applied it, it is never to be bypassed, ignored, or otherwise defeated.
- 5.) Tags must be securely attached so that they cannot be inadvertently or accidentally detached during use.
- 6.) Tags may evoke a false sense of security. They are only one part of the overall energy control program.

When Tagout is utilized, tags will be installed using the same procedure as locks. When necessary, additional safety measures are to be implemented which will provide a level of safety equivalent to that provided by a lock. This may include removing and isolating a

---

circuit element, blocking a controlling switch, opening an extra disconnecting device, or removing a valve handle to reduce the potential for any inadvertent energization.

## **Removing Locks and Tags**

The removing of locks and tags is to be performed upon completion of the maintenance work. When the job is complete, operations shall be notified and all craftsmen's locks and tags shall be removed. Each craftsman's lock and tag can only be removed from an isolation device by the authorized employee who applied it.

If an authorized worker's (*Maintenance employee*) lock is in place and the Maintenance employee is not available, every attempt must be made to contact the Maintenance employee. If the Maintenance employee cannot be located and a determination is made by the Operator and the area General Foreman or Shift Foreman that the lock must be removed, the supervisor of the Maintenance employee will be contacted and a complete on-site review must be made by the area Shift Foreman, the Maintenance supervisor and operations custodian. When they determine that it is safe to do so, the Maintenance employee's lock can be removed by cutting the lock off. If any locks are removed under these circumstances, it will be reported during the on-site review. The Maintenance employee whose lock was removed in this manner must be notified of the removal before starting his next shift by his supervisor. The supervisor will investigate why the Maintenance employee did not remove his lock.

When the entire job is complete and all non-custodian locks and tags have been removed, the Custodian must thoroughly check the equipment to ensure that all guards are replaced and that the equipment is ready for operation. That individual then removes the Custodian lock and tag and tests the equipment for proper operation if possible.

### ***The signing off of a work permit by the custodian confirms:***

- 1.) That the equipment has been inspected for job completion.
- 2.) That the work area has been inspected for housekeeping.
- 3.) That the custodian has removed their locks.
- 4.) That the equipment has been tried for proper operation. (*when possible*)

## **Locks**

Locks, multiple lockout hasps, and "Danger- Do Not Operate" tags will be consistent throughout the facility. Changes will not be made without the consensus of all areas involved. The locks are to be made of material able to withstand the elements it is exposed to for the duration of the lock out.

- 1.) Locks are assigned to an operations job area or other custodian group such as the Electrical Department that can be opened using one key.
- 2.) Locks are also assigned to individual authorized workers where upon installation they are the only employee able to remove their locks.
- 3.) Each maintenance foreman will be responsible for insuring that a proper inventory of locks and other supplies are maintained for their crafts work group.
- 4.) Each Operations area Training Foreman will be responsible for insuring that a proper inventory of locks, tags, hasps and other supplies are maintained for their respective areas.

### **Contractor Personnel**

Prior to beginning work on a job that requires lockout, the contractor shall be provided with a copy of this procedure. Normally this is done through the maintenance planner. The contractor shall conform to the requirements of this procedure as a minimum for all lockouts in the plant. All contractors working on a system will apply individual locks and tags on the equipment or will follow the Group Lockout procedure as deemed necessary by the area General Foreman and Grace Maintenance supervisor. The contractor will notify Grace at any time that he notices problems with the lockout/tagout procedure or its implementation.

### **Lockouts For New Equipment Installation:**

During construction and installation of new equipment, or the extensive modification of existing facilities, the Operations department will not have control of the equipment. However, a safe means of controlling electrical and other forms of energy until the equipment is turned over to the Grace Operation department must be implemented. In these cases, the following guidelines will apply:

- 1.) All equipment that has electrical energy connected to it will be locked out and tagged with a “Danger – Do Not Operate” tag. A list of energized equipment will be maintained for the duration of the project which clearly identifies energized equipment.
- 2.) The Project Engineer will appoint a Custodian for each piece of equipment. The Custodian has the responsibility to assure that the equipment is properly de-energized before maintenance work is performed. The Custodian will be responsible for maintaining the key for all system locks assigned to him either on his person or in a secure location during lockout, and for transferring responsibility to the on-coming

---

custodian at shift change or upon leaving the plant site. Custodians appointed by the project engineer may be contractor personnel. However, it must be assured that these persons are trained in their respective responsibilities under pertinent Safe Work procedures such as Hot Work, Lockout/Tagout and the Work Permit procedure.

- 3.) Energization of MCC Gear: All cabling will be tagged and megged out, and connectors verified. All 480 volt breakers at the MCC centers will be in the OFF position and locked and tagged out. A custodian will be appointed as stated in step 2. above to assure that all equipment stays de-energized until the equipment is turned over to the Grace Operations department.
- 4.) Rotation Checks: All cabling will be tagged and physically verified as to proper location and connections prior to energization. One qualified Electrician and the Custodian will be involved as per rotation checks. The Custodian will be notified and requested to remove the custodian lock from the breaker. Then the Electrician and Custodian will go to the switch and try the equipment to check rotation. If the equipment checks correct with the rotation and all work is finished the equipment should be ready for service. If the rotation is not correct then the breaker will then be re-locked and tagged by the Custodian and the Electrician and the wiring changed. Then the equipment will be re-checked again. If the equipment cannot be checked for rotation the Custodian will notify his Foreman

## **Plug And Cord Equipment**

Equipment that is connected to an electrical power supply by means of a plug and cord is excluded from Lock, Tag and Try requirements provided that two conditions are met:

- 1.) The equipment is unplugged and tagged during servicing. (*see tagout section*)
- 2.) The plug is under the exclusive control of the employee performing the servicing. (*Exclusive control is when the plug is physically in the possession of the employee or in arms reach and in the line of sight of the employee.*)

## **Non-Zero Energy Tags**

If for any reason something needs to have a tag installed that is not for Lockout/Tagout or Out of Service reasons, a Blue tag will be placed with a tie wrap. An example to ensure a valve is not accidentally opened and so on. On firewater lines that need to stay open, it will be tagged with a Blue tag and a breakaway lock added. Information to be on the tag are why you have installed it, the date and by whom. If for any reason the state of the equipment needs to be changed, the Blue tag will be removed first. At no time will a Lockout lock or lock out tag be used for non- zero energy tagging.

---

### Equipment Out of Service Tags

If for any reason a piece of equipment needs to be taken out of service because it is no longer being used, it will need to be tagged out with an Out Of Service Tag by the custodian responsible of that piece of equipment. The General Foremen of the area will inform the custodian when a piece of equipment will be taken out of service and needing to be tagged. At no time will a “Do Not Operate” tag be used for out of service reasons.

“Out of Service” tags should be properly filled out by the custodian indicating:

- 1.) Reason for Out of Service.
- 2.) Date of Out of Service.
- 3.) Signature of installer. *(This shall be clear and legible)*

### Troubleshooting of electrical or instrumentation equipment

Tasks that require the circuits to be energized in order to perform electrical or instrumentation troubleshooting are exempted as long as there is an approved maintenance procedure that is being followed by qualified personnel trained on the procedure. The approved maintenance procedures can be found on the Interlan under the maintenance department’s procedure list.

### **Minor Servicing Tasks**

Employees performing **minor** tool changes, adjustments, calibrations and/or other **minor** servicing activities during normal production operations that are **routine, repetitive, and integral** to the use of production equipment are not covered by the provisions of this procedure, provided that the work is performed using alternative measures that give effective protection. These alternative measures must be identified and addressed before a task will qualify for this exemption. Examples of acceptable alternative measures are procedures, administrative controls, engineering controls, or a combination of two or more of these measures.

<p><b>NOTE:</b> All tasks that are exempted by this paragraph must meet all of the criteria set forth before being considered for this exemption. These tasks must be ROUTINE. They must be REPETITIVE. These tasks must be INTEGRAL to the production equipment during NORMAL operations. The Safety Department will review tasks that qualify for this exemption and will assure that the tasks meet the acceptable criteria and that the alternative means used to afford protection is adequate.</p>
--

*Currently, tasks that qualify for this exception are: Refer to the Appendix A page at the bottom of the SOP.*

### **Working within ten (10) feet of unguarded, energized equipment**

Any person who will be required to work within ten (10) feet of an unguarded, energized piece of moving, rotating, or actuating equipment (including, but not limited to dampers, shafts, calciner trunions/tires, dissolver, sprockets/chains, fans, etc) must either:

- 1.) Lockout out the equipment and verify zero energy state prior to working within the ten (10) foot minimum clearance; or
- 2.) Adequately guard the moving, rotating or actuating equipment for protection from hazards such as those created by point of operation, ingoing nip points and rotating parts; or
- 3.) Obtain an approved Management of Change (as outlined in the Management of Change Procedure), which lists additional safeguards required to work within the ten (10) foot clearance from the unguarded, energized piece of moving, rotating, or actuating equipment.

### **Training**

Each employee involved with the Lock - Tag & Try procedure will be trained in his/her responsibilities under the procedure, and a record of this training shall be maintained. Retraining shall be provided to employees whenever changes in assignment, equipment, or process present new hazards, or whenever there is an indication of a lack of employee knowledge about the procedure.

*The current method of training is as follows:*

- 1.) When assigned to new areas employees are trained on lock out tag out of new equipment.
- 2.) A lock out tag out WBT (*a computer Web Based Training module*) is required to be taken annually for documentation by all personnel qualified to perform lock out tag out.
- 3.) Refresher training will be administered by the area Training Foreman whenever there is an indication of a lack of employee knowledge about the procedure.

---

## Audit of Compliance

Periodic inspections shall be performed and documented at least annually to assure that the energy control procedures continue to be implemented properly and that the employees are familiar with their responsibilities under those procedures. The Lock Out Tag Out Facilitator will initiate these periodic inspections.

*These annual inspections will include the following:*

- 1.) The machine or equipment on which the lock out is performed on.
- 2.) The date of the inspection.
- 3.) Name of person performing the inspection.
- 4.) A list of employees included in the inspection.
- 5.) A Review performed between the inspector and employee of the energy control procedure being inspected.

When a Tagout procedure is inspected, a review on the limitations of tags, between the inspector and the employees included in the inspection in addition to the above requirements, must also be included.

## Appendix A

*These task must have been approved and be covered in the SOP on how it is done and what PPE is needed. Currently, tasks that qualify for this exception are*

Nozzle work on dryers at Additives plant & DA.

Tasks that require the equipment to be energized (guarded or unguarded) in order to perform maintenance on trunions are exempted as long as they have approved & covered in the SOP in maintenance or operation procedure.

Cleaning strainers.

The cleaning of 4086 & A wetting screws at the Silicate plant.

8811 Spray Dryer – Cleaning build up from bottom of dryer

6802-6802A- 6802-B-6802-C – Media addition

6619- 6619A- 6619B- 6619C – Media addition

6623 – 6623A -6623B- 6623 D & 6623 T Media addition only.

6623B & 6623 D screen changes using bump pedal

4741, 4741A, 4741B, 4714C, 4741D & 4741E cleaning or changing die plates

Cleaning screen on load out at Super D, disconnect on 3045 blower

Cleaning feed hopper on Extruders at HPC disconnect added.

Gauging Silos and Tanks

Equipment lubrication routes

Equipment lube

PDM routes

Balancing rotating equipment

PM rotary valves

Packing adjustment

PM screws and cleaning

Changing belt filter cloths

Adjust tracking of cloth and drainage belt

PM elevators and adjusting

Hose pumps replace hose

Adjust packing on pumps

Trouble shoot gas fired equipment and trouble shoot electrical equipment.

Sampling off belt 4744A at HPC in sample port.

Cleaning Glass around 4091 & 4093 Conveyors and under 1061 dissolver

During the PM of the Security gates by the back Guard house that they will not be locked out. Gates have to be moved as they are greased & inspected.

Sampling off belt 6707 & 4707 at sample area.

**REVISION HISTORY**

Revision date	DESCRIPTION OF CHANGE
2/14/07	Changed procedure to show that blind point tags will be installed before the blind is installed.
01/29/08	Added two statement on page 11 & 12 about checking off revision box
01/29/08	Change wording page 13 #3.
08/18/08	Added the statement about the safety department be reasonable for Lockout/Tagout for the Admin. building, Rec. building, River house, Change house and Guard house at the construction gate on page one.
08/18/08	Electrical Department Yellow Caution Tags added
08/18/08	Note was added <u>NOTE</u> : Group lockout check box added to data sheet
08/18/08	What type of stored energy check box was added to data sheet
08/18/08	This note was added <u>NOTE</u> : – The electrical department will install a custodial lock or locks anytime they verify zero energy and it will stay on the system until the job is complete.
03/10/09	Added section for working within ten (10) feet of unguarded, energized equipment
03/18/09	Added statement on page 19 # 5 about exception on unguarded, energized equipment
06/23/09	Update on locks & tags removal on shutdown lasting more than 24 hours.
06/23/09	Update on rotation checks.
06/23/09	Removed exception on page 6 about not installing tags on equipment that carrying over to the next shift or on overtime.
02/10/11	Changed from reviewed date to revision date.
11/29/11	Reviewed with full MOC and updated with changes
05/15/12	Note added that one hold will always be left open on a lockout hasp for the additional of an additional hasp.
12/10/12	Added notes about check valves.
09/20/13	Added note about disconnects on 4740,A,B,C,D
10/21/13	Added Gauging with silo specific gauges in App #4 exceptions list
10/31/13	Added list of minor servicing task for the maintenance to exceptions list Equipment lubrication routes and Equipment lube, PDM routes, balancing rotating equipment, PM rotary valves and packing adjustment, PM screws and cleaning, Changing belt filter cloths, adjust tracking of

	cloth and drainage belt, PM elevators and adjusting, Hose pumps replace hose, Adjust packing on pumps, Trouble shoot gas fired equipment and trouble shoot electrical equipment
1/13/14	Added Equipment Out Of Service Tags section and In the Piping section added statement about working behind a single block valve with instructions.
5/1/14	Added to Appendix A Sampling off belt 4744A at HPC
6/06/14	Added to Appendix A not locking out Security gates by the back Guard house during PM or service.
4/16/15	Change Step # 9 LOTO Data Sheet section
6/26/15	Added to Appendix A Cleaning Glass Around 4091 & 4093 Conveyors and under 1061 dissolver.
2/1/16	Added to Multiple Day Shutdowns Section : That Danger Do not operate tags do not have to be signed every 12 hours but the operator must verify the locks or still in place and sign the Data sheet stating so.
4/20/16	Added Sampling off belt 6707 & 4707 at sample area.
4/5/17	Grammar & Typo's (No Changes to Procedure)
11/7/17	Added to Appendix A LOTO exception list to allow A/C contractors to lock out A/C units without a custodial lock. <b>MOC # LOTO 1701</b>

**END**