1.0 PURPOSE

The hazardous energy control program consists of lockout/tagout procedures, employee training and communication, and periodic inspections to ensure that hazardous energy sources are isolated and rendered inoperative before an employee performs service or maintenance on machines or equipment where the unexpected energization, startup, or release of stored energy could cause injury.

2.0 SCOPE

2.1 This section describes the minimum requirements for the lockout/tagout (LOTO) of hazardous energy sources and preventing the unexpected energization or startup of machines or equipment or release of stored energy. These requirements cover the servicing and maintenance of machines or equipment where the unexpected energization, startup, or release of stored energy could cause injury to employees. Servicing and maintenance activities include machine or equipment construction, repair, inspection, adjustment, modification, and routine activities such as lubricating or unjamming equipment. These requirements do not apply to the following:

- 2.1.1 New construction areas under the sole control of a contractor where there is no exposure to Toshiba International Corporation employees.
- 2.1.2 Installations under the exclusive control of electrical utilities for the purpose of power generation, transmission, and distribution.
- 2.1.3 Exposure to electrical hazards from work on, near, or with conductors or equipment in electrical utilization installations covered by the Toshiba International Corporation *Electrical Safe Work Practices Procedure* and the OSHA regulation 29 CFR 1910.302.
- 2.1.4 Work on cord and plug connected electrical equipment where the employee performing the servicing or maintenance effectively controls the exposure to hazards by unplugging the equipment from the energy source and keeping the plug under his/her exclusive control.

2.2 Normal production operations are not covered by this program. Servicing and/or maintenance which takes place during normal production operations is covered by this program only if:

- 2.2.1 An employee is required to remove or bypass a guard or other safety device; or
- 2.2.2 An employee is required to place any part of his/her body into an area on a machine or piece of equipment where work is actually performed upon the material being processed (point of operation) or where an associated danger zone exists during a machine operating cycle

2.3 Program Implementation

- 2.3.1 The key elements and requirements of the Toshiba International Corporation lockout/tagout program are detailed in this procedure. The various specific energy sources and means of disconnect associated with each type of machine tool or equipment are specified in the respective Specific Lockout Procedures (SLP's), where required. SLP's are maintained in hard copy form by designated personnel.

3.0 REFERENCE DOCUMENTS

3.1 Occupational Safety and Health Administration - The Control of Hazardous Energy (Lockout/Tagout). OSHA 29 CFR 1910.147.

3.2 Occupational Safety and Health Administration - Subpart S - Electrical. OSHA 29 CFR 1910.301-308, 399.

3.3 Electrical Safe Work Practices Procedure

3.4 Authorized 5kV Personnel List

3.5 QEHS Manual Section 19, *Additional Safety, Health, Environmental System Requirements*

3.6 Specific Lockout Tagout Procedures (SLP's)

3.7 LOTO Removal Form

3.8 LOTO Periodic Inspection Form

3.9 SLP Inspection Form

3.10 Records Management Procedure

4.0 DEFINITIONS

4.1 **5kV Access Lock.**

The Toshiba International Corporation designated RED padlock. This padlock is only used to restrict access to 5kV electrical substations, switchgear cages, switchgear, etc., to Qualified Employees. 5kV locks have multiple keys and multiple locks are keyed alike. 5kV locks may be found in padlocks, door locks and cage locks. (Refer to the Authorized 5kV Personnel List-Facilities, found in the Facilities Folder on the Document Control Drive for a list of those employees having keys and authorized access to 5kV electrical equipment.) 5kV Access locks ARE NOT to be used as a substitute for personal protection (i.e., as replacement for Personal Lockout Device / Padlock).

4.2 **Affected Employees.**

Every employee whose job requires him/her to operate or use a machine or equipment on which servicing or maintenance is being performed under lockout/tagout or whose job requires him/her to work in an area where lockout/tagout devices are used for servicing or maintenance.

4.3 **Authorized Employees.**

Every employee who has been given the authority, responsibility, and training to implement a lockout/tagout procedure before performing service or maintenance on machines or equipment

4.4 **Capable of being locked out.**

An energy isolating device is capable of being locked out if it has a hasp or other means of attachment to which, or through which, a lock can be affixed, or it has a locking mechanism built into it. Other energy isolating devices are capable of being locked out if lockout can be achieved without the need to dismantle, rebuild or replace the energy isolating device or permanetly alter its energy control capability.

4.5 **Contractor.**

Any company or person who is not a direct employee, excluding temps or leased employees, of Toshiba International Corporation.

4.6 **Energy Isolating Device.**

A mechanical device that physically prevents the transmission or release of energy. Examples are:

a) manually operated electrical circuit breakers,
b) disconnect switches,
c) manually operated switches,
d) manually operated valves, and
e) blocks.

4.6.1 Electrical energy isolating devices must simultaneously disconnect all ungrounded supply conductors. Push buttons, selector switches, key switches and other control circuit devices are not energy isolating devices.

4.6.2 The handle of an energy isolating device or disconnect must not separate from the disconnect device when the enclosure door is opened unless the device itself has a means of locking out the separated section inside the enclosure.

4.6.3 When a machine tool is supplied with both normal power and Uninterruptible Power Supply ("UPS") power, the normal power main disconnect must deenergize the UPS power source. If it is not possible to deenergize the UPS power from the main disconnect, then warning labels shall be attached to the main disconnecting means, the UPS and those portions of the circuit that remain energized.

4.6.4 Air and gas pressure and chemical energy insolating devices must be capable of positively disconnecting the gas supply lines from the service. Examples of positive disconnect means include two valves (pneumatic, manual) in series and closed, disabled and locked / tagged with the gas contained, gas line purged, disconnected, and blocked.

4.7 **Energized.**

Connected to an energy source or containing residual or stored energy.

4.8 **Energy Source.**

Any source of electrical, mechanical, hydraulic, pneumatic, chemical, thermal, or other energy. Examples are:

4.8.1 energized electrical parts,
4.8.2 hydraulic or pneumatic pressure,
4.8.3 pressurized pipes (gases, liquid chemicals),
4.8.4 compressed or extended springs,
4.8.5 pressure below atmospheric (vacuum systems),
4.8.6 flywheels,
4.8.7 batteries,
4.8.8 capacitors,
4.8.9 thermal energy (e.g., residual heat, low temperature),
4.8.10 residual chemicals causing thermal or pressure buildups,
4.8.11 gravity,
4.8.12 static electricity, and
4.8.13 x-ray, radio frequency (RF), microwave, and laser sources.

4.9 **Equipment.**

A term used in this document to denote tools, appliances, machines, equipment, and piping systems that use or produce energy.

4.10 **Grounding Strap Lock.**

The Toshiba International Corporation designated GREEN padlock. These padlocks shall only be used to signify that grounding cables have been installed on deenergized circuits. Grounding Strap locks have multiple keys and multiple locks are keyed alike. Grounding Strap locks ARE NOT to be used as a substitute for personal protection (i.e., as replacement for Personal Lockout Device (Padlock)).

4.11 **Kirk-key devices**

A lockout device permanently installed in the cell of a vacumn breaker which is used to prevent moving the breaker from the disconnect position futher into the cell. Kirk-key devices are operated by keys which can only be removed when the breaker is not in the operating position. Kirk-key devices may have multiple locks and/or multiple keys. Kirk-key locks ARE NOT to be used as a substitute for personal protection (i.e., as replacement for Personal Lockout Device (Padlock)).

4.12 **Lockout/tagout (LOTO).**

The placement of a lockout device along with a completely filled out "DANGER" tag on an energy isolating device in accordance with an established procedure to ensure that the energy isolating device cannot be operated until the lockout device is removed.

NOTE: Equipment must never be locked in the "ON" position.

4.13 **Lockout Device.**
A device that utilizes a positive means, such as a lock, to hold an energy isolating device in the safe position and prevent the energizing of a machine or equipment. Included are blank flanges and bolted slip blinds.

4.13.1 **Personal Lockout Device (Padlock).**
The Toshiba International Corporation designated standard YELLOW safety lockout padlock (Figure 8.2 at end of Section). Personal Lockout Devices have only one key issued for each individual lock. NOTE: There are Master Keys for lockout locks. The listing of Master Keys and the employees issued them are found in the G6000 Master Key Program controlled by the Facility Supervisor.

4.13.2 **Group Lockout Hasp.**
An adaptor added to an energy isolating device which is capable of accepting multiple Personal Lockout Devices. (Figure 8.1 at end of Section - Master Lock Part # 420, 421 or an equivalent device may be used)

4.14 **Normal production operations**
The utilization of a machine or equipment to perform its intended production function.

4.15 **Setting up**
Any work performed to prepare a machine or equipment to perform its normal production operation.

4.16 **Servicing and/or Maintenance.**
A term used in this document to denote workplace activities such as constructing, installing, setting up, adjusting, inspecting, modifying, maintaining, and/or servicing machines or equipment. These activities include cleaning, lubricating, or unjamming machines or equipment, and making adjustments or tool changes where employees may be exposed to unexpected energization or startup of the machine or equipment or release of stored energy.

4.17 **Specific Lockout Procedure (SLP).**
The Toshiba International Corporation instruction sheet containing equipment specific instructions for LOTO of equipment.

4.18 **Tagout.**
The placement of a "DANGER" tag only, when it is not possible to install a lockout device, on an energy isolating device in accordance with an established procedure to indicate that the energy isolating device must not be operated until the tag is removed.

4.19 **Tagout Device.**
The Toshiba International Corporation standard "DANGER" tag. (Figure 8.3 at end of Section 8 Brady Signmark Div. Cat. # 65520 or an equivalent device may be used)

4.20 **Troubleshooting.**
Allows for the testing or positing of machines while energized, however, employees must be removed from the machine area (hazard zone) while the energization, testing and/or positioning occurs. In the event that it is impossible to remove employees from the machine area and still conduct inspection, alternative employee protection through the use of safeguarding must be used.

4.21 **UPS**
An uninterruptible power supply which contains stored electrical energy.

5.0 RESPONSIBILITIES

5.1 The Vice President/General Manager shall have overall responsibility for the implementation and enforcement of this policy.

5.2 The EH&S Manager shall have responsibility for monitoring implementation, coordinating training and maintaining records associated with these responsibilities.

5.3 Supervisors and Managers shall be responsible for the implementation and enforcement of this policy within their departments.

5.4 Plant Managers shall be responsible for the implementation and enforcement of this policy within their plants.

6.0 LOCKOUT/TAGOUT PROCEDURES

Energy isolating devices capable of being locked out shall be locked out and tagged according to the lockout/tagout procedure. Whenever equipment is installed, relocated, replaced, or undergoes major modification, renovation or repair, energy isolating devices shall be designed to meet the criteria specified in the Definitions section (Section 4.0 above) including the capacity to accept a lockout device.

6.1 Devices that will not accept the approved lock may be tagged out providing that full employee protection is achieved. When a tagout device is used on an energy isolating device that will not accept the approved lock, the tagout device shall be attached at the same location where the lock would have been attached.

6.2 When a tagout device alone is used because an energy isolating device is incapable of being locked out or incapable of accepting the approved lock, additional safety measures shall be taken to provide a level of safety equivalent to that obtained by using a lockout device (e.g., removing an isolating circuit element, blocking of a controlling switch, opening an extra disconnecting device, removing a valve handle).

6.3 Procedures shall be developed, documented, and used for the lockout/tagout of potentially hazardous energies during servicing or maintenance of machines or equipment. The Motor Plant Maintenance Manager, Facilities Supervisor, Control Plant Industrial Engineer, and Quality Control ("QC") Managers are responsible for developing and implementing an equipment-specific lockout/tagout SLP's for all machine or equipment systems under their control including those with multiple energy sources, using the standard SLP format, when required.

6.4 A SLP will not be required for a particular machine or equipment when all of the following conditions exist:

- 6.4.1 The machine or equipment has no potential for stored or residual energy or reaccumulation of stored energy after shutdown which could endanger employees;
- 6.4.2 The machine or equipment has a single energy source which can be readily identified and isolated;
- 6.4.3 The isolation and lockout of that energy source will completely deenergize and deactivate the machine or equipment;
- 6.4.4 The machine or equipment is isolated from that energy source and locked out during servicing or maintenance;
- 6.4.5 A single lockout device will achieve a complete locked out condition;
- 6.4.6 the lockout device is under the control of the AUTHORIZED EMPLOYEE who placed it and is performing the servicing or maintenance;
- 6.4.7 The servicing or maintenance does not create hazards for other employees; and
- 6.4.8 There have been no previous incidents involving the unexpected activation or re-energization of the machine or equipment during servicing or maintenance since the lockout/tagout procedure was written or last updated.

6.5 The SLP's shall clearly and distinctly outline the scope, purpose, authorization, rules, and techniques to be applied, and measures to enforce compliance. The SLP shall include:

- 6.5.1 A specific statement about the intended use of the procedure;
- 6.5.2 specific steps for shutting down, isolating, blocking and securing machines or equipment to control all hazardous energy sources.
- 6.5.3 specific steps for the placement, removal, and transfer of lockout/tagout devices and the responsibility for them; and

6.5.4 specific requirements for testing equipment to determine and verify the effectiveness of lockout/tagout devices and other energy control measures.

6.6 Lockout or tagout shall be performed only by the AUTHORIZED EMPLOYEE performing the servicing or maintenance. The AUTHORIZED EMPLOYEE shall notify all AFFECTED EMPLOYEES, that are normally involved with the machine or equipment that is being locked/tagged out or are in the immediate vicinity, before lockout/tagout devices are applied and after they are removed. The lockout/tagout procedures shall cover the following elements and actions and shall be performed in the following sequence:

6.6.1 Before the machine or equipment is shut down, the AUTHORIZED EMPLOYEE shall know the magnitude, source, and hazards and the method or means to control each type of hazardous energy. Each authorized employee is required to review, understand and follow the machine or equipment specific lockout/tagout procedure (SLP), where applicable, including the location of each energy isolating device.

6.6.2 The Authorized Employee shall notify all Affected Employees, that normally operate the machine or equipment or are in the immediate vicinity, that a lockout/tagout procedure will be performed on the machine or equipment and the reason why it is being performed.

6.6.3 Operating machines or equipment shall be shut down using the normal stopping procedure to avoid any additional or increased hazard.

6.6.4 All energy isolating devices shall be located and operated such that the machine or equipment is isolated from every energy source.

6.6.5 A Toshiba International Corporation standard Personal Lockout Device (Padlock) and Tagout Device ("DANGERr" tag) shall be affixed to each energy isolating device by the Authorized Employee. 5KV padlocks, grounding strap padlocks and Kirk-key devices are not personal lockout devices. The Tagout Device shall be filled out with the name of the Authorized Employee installing the LOTO device, the department they work in, and the reason the LOTO is being performed.

6.6.6 The lockout device shall be affixed in a manner that will hold the energy isolating device in a "safe" or "off" position

6.6.7 A tagout device, where used without a lock, shall be affixed in a manner that will clearly indicate that the operation or movement of the energy isolating device from the "safe" or "off" position is prohibited (i.e. DANGER).

6.6.8 All potentially hazardous stored or residual energy shall be relieved, disconnected, restrained, or otherwise rendered safe.

6.6.8.1 Note 1: The lockout / tagout of air, gas and chemical pressure systems requires closing of at least one valve, releasing stored pressure and preventing the reacculmulation of pressure. Methods that accomplish this include double blocking and bleeding, installing blind/pancake flanges, disconnecting/misaligning pipes/hoses and self-bleeding valves. The method selected must not create additional hazards.

6.6.8.2 Note 2: If there is a possibility of reaccumulation of any type of stored energy (such as residual energy in shielded 5kV cables or capacitors) to a hazardous level, verification of isolation shall be continued until the servicing or maintenance is completed or the possibility of such accumulation no longer exists.

6.6.9 Prior to starting work on a machine or equipment that has been locked out or tagged out, the Authorized Employee shall verify that isolation and de-energization of the equipment has been accomplished by operating the normal controls, to make certain that the machine or equipment will not startup or cycle.

6.7 Before the lockout/tagout device is removed and energy is restored to the machine or equipment, the equipment-specific lockout/tagout procedure shall be followed and actions shall be taken to ensure that:

6.7.1 The work area is inspected by the AUTHORIZED EMPLOYEE to ensure that nonessential items have been removed and the equipment components, including all guards, are operationally intact and installed; and

6.7.2 AFFECTED EMPLOYEES, that are normally involved with the machine or equipment that is locked out/tagged out or are in the immediate vicinity, are notified by the AUTHORIZED EMPLOYEE that the lockout/tagout device is being removed and the work area shall be checked to ensure that all employees have been safely positioned or removed from the work area before the machine or equipment is started.

6.8 Each lockout/tagout device shall be removed from each energy isolating device by the employee who applied it. If the employee who applied the lockout/tagout device is not available to remove it, the device may be removed only by the appropiate personnel (see note below this section) who shall:

6.8.1 verify that the employee who applied the lockout/tagout device is not on the site;

6.8.2 verify that it is safe to remove the lockout/tagout device and restore energy to the machine or equipment;

6.8.3 complete the Toshiba International Corporation Special LOTO Removal Form

6.8.4 make all reasonable efforts to contact the employee to inform him/her that the lockout/tagout device was removed; and

6.8.5 ensure that the employee knows that his/her lockout/tagout device was removed before he/she resumes work at the site

Table 1: Only the following personnel are authorized to approve removal of the personal lockout/tagout devices of the employees under their supervision:

	Motor Plant	Control Plant	Power Electronics Plant	HEV	Front Office
Maintenance Manager	**X**	**X**		**X**	
Plant Manager	**X**	**X**	**X**	**X**	
Assistant Plant Manager	**X**	**X**		**X**	
Facilities Manager					**X**
QC Manager			**X**		

7.0 TRAINING and COMMUNICATION

Training shall be coordinated by Toshiba International Corporation EH&S Department and/or responsible managers and Supervisors to ensure that the purpose and function of the energy control program are understood and that employees have the knowledge and skills required for the safe application, usage, and removal of energy controls. Training shall include the following:

7.1 **All employees** shall be instructed on the significance of lockout/tagout procedures and the purpose and function of lockout/tagout devices. They also shall be instructed to never disturb, bypass, defeat, tamper with, ignore or attempt to operate any devices or startup any equipment that has a "DANGER" tag affixed to it. The "DANGER" tag shall only be removed by the AUTHORIZED

EMPLOYEE who attached it or by personnel authorized to remove lockout locks and tags using the Toshiba International Corporation Special LOTO Removal Form.

7.2 **Affected Employees** shall be instructed on the purpose and use of lockout/tagout procedures and how to identify lockout/tagout devices.

7.3 **Authorized Employees** shall be instructed on the OSHA standard and Toshiba International Corporation procedure, how to recognize hazardous energy, the type and magnitude of the energy available, and the methods and means necessary for energy isolation and control.

7.4 Training shall be certified by Toshiba International Corporation by documentation containing the employee's name, employee number, date of training, and description of the training involved. The trainer is responsible for delivering the completed training documents to the Safety & Health Department.

7.5 The Safety & Health Department shall maintain copies of the employee training records according to the *Records Management Procedure.*

7.6 **Authorized and Affected Employees** shall also be trained in the following limitations of tags used without lockout devices:

7.6.1 Tags are essentially warning devices and do not provide the physical restraint that is provided by a lock

7.6.2 When a tagout device alone is used because an energy isolating device is incapable of being locked out or incapable of accepting the approved lock, additional safety measures shall be taken to reduce the likelihood of inadvertent energization (e.g., removing an isolating circuit element, blocking of a controlling switch, opening an extra disconnecting device, removing a valve handle).

7.6.3 Tags shall only be removed by the Authorized Employee who attached it, or their immediate manager or Supervisor (identified under section 6.8 of this procedure as Authorized Personnel for the removal of lockout locks under Special Conditions). The same form and procedure shall be followed for the removal of tags as is used for the removal of locks. They shall never be bypassed, ignored, or otherwise defeated.

7.6.4 Tags shall be legible and understandable by all employees

7.6.5 Tags and their attachment means shall be made of materials which will withstand the environmental conditions encountered in the workplace.

7.6.6 Tags may evoke a false sense of security, and their meaning needs to be clearly understood.

7.6.7 Tags shall be securely attached to energy isolating devices so they cannot be inadvertently or accidentally detached.

7.6.8 Appropriate retraining shall be provided for Authorized and Affected Employees under the following conditions;

7.6.8.1 there is a change in job assignment,

7.6.8.2 there is a change in the machine, equipment or process that presents a new hazard,

7.6.8.3 there is a change in the lockout/tagout procedure, a periodic inspection, near miss, or

7.6.8.4 Injury reveals that there are deviations from or inadequacies in the employees' use of the procedure.

7.6.8.5 Retraining shall re-establish employee proficiency and introduce new or revised control methods and procedures, as necessary.

7.6.9 SLP's that are implemented less frequently than once a year must be reviewed prior to implementation by the AUTHORIZED EMPLOYEE(S) involved in implementing the procedure.

7.7 This process shall be used by managers to conduct periodic inspections of the SLP's, at least annually. The inspection shall ensure that the procedure is implemented properly, the AUTHORIZED

EMPLOYEE(S) are familiar with their responsibilities, and the procedure is adequate and provides the required protection. The inspection shall be conducted by an AUTHORIZED EMPLOYEE other than the manager of the employee using the procedure being inspected. Inspection results shall be used to correct any deviations or inadequacies observed. The inspection shall include a review of responsibilities with each AUTHORIZED EMPLOYEE who uses the specific procedure. If tagout only is used for energy control, the inspection shall also include a review of responsibilities with each AFFECTED EMPLOYEE.

7.7.1 Periodic inspections shall be certified. The certification shall identify the machine or equipment on which the SLP was being used, the inspection date, the employees included in the inspection, and the name of the person conducting the inspection.

7.7.2 **Additional Requirements**

When a lockout/tagout device must temporarily be removed from the energy isolating device and the machine or equipment energized to test, position, troubleshoot or debug the machine or equipment or a component thereof, the following sequence shall be followed:

7.7.2.1 Clear the machine or equipment of tools and materials.

7.7.2.2 Notify all affected employees in the work area

7.7.2.3 Remove employees from the equipment area.

7.7.2.4 Remove the lockout/tagout device.

7.7.2.5 Energize the machine or equipment and proceed with testing, positioning, troubleshooting or debugging.

7.7.2.6 Deenergize all systems and reapply energy control measures following the SLP for the machine or equipment for LOTO before continuing servicing or maintenance.

7.7.3 **Outside Personnel (Contractors)**

7.7.3.1 Whenever Contractors are engaged in servicing or maintenance of machines or equipment, the contractor and the designated Toshiba International Corporation representative, named in the Contract, shall inform each other of their respective lockout/tagout procedures. Contractors shall submit a copy of their Hazardous Energy Control program conforming to 29 CFR 1910.147 to Facilities Department prior to performing work involving LOTO on the Toshiba International Corporation site.

7.7.3.2 Contractors are responsible for training their employees and providing them with the appropriate lockout/tagout devices including locks, tags and adapters.

7.7.3.3 When performing work jointly on the same project, the more stringent of the Hazardous Energy Control Programs of Toshiba International Corporation and the Contractor will be followed by both parties. Before service or maintenance work is started by a Contractor, the designated Toshiba

International Corporation representative shall verify that Toshiba International Corporation's AFFECTED EMPLOYEES understand and comply with the contractor's lockout / tagout program if it is selected to be used for the control of hazardous energy

7.7.3.4 If the Contractor is found to be non-compliant, all work by the Contractor shall be stopped immediately. The equipment shall be immediately lockedout/tagged out in accordance with the appropiate procedure. No work shall be allowed until such time as the problem is resolved and a determination made that

it is safe, for both Toshiba International Corporation's employees and the Contractor's employees, for the Contractor to resume work. The Contractor shall be formally warned in writing that a future breach of the lockout/tagout procedure shall be cause for the removal of the Contractor from the Job.

7.7.4 **Group Lockout/Tagout**

7.7.4.1 When servicing or maintenance is performed by more than one AUTHORIZED EMPLOYEE, the lockout/tagout procedure used shall afford a level of protection equivalent to that provided by the implementation of a personal lockout/tagout device. The lockout/tagout procedure used shall comply with the following specific requirements:

7.7.4.2 Primary responsibility for implementing the procedure shall be assigned to one lead authorized employee who shall attach a group lockout device to each energy isolating device.

7.7.4.2.1 The lead authorized employee shall ascertain the exposure status of each of the other employees in his/her department.

7.7.4.2.2 When more than one entity (e.g., subcontract personnel and Toshiba International Corporation employees) is involved in the servicing or maintenance activity, one lead authorized employee shall be designated to coordinate the overall activity and ensure continuity of protection.

7.7.4.2.3 Each authorized person shall affix his/her personal lockout device to each group lockout device, may verify that isolation and de-energization have been effectively accomplished before starting work if so desired and shall remove their lockout device(s) when he/she completes working on the machine or equipment.

7.8 Shift or Personnel Change

7.8.1 Specific procedures shall be used during shift or personnel changes to ensure the continuity of lockout/tagout protection, including provision for the orderly transfer of lockout/tagout device protection between outgoing and incoming employees to minimize exposure to hazards from unexpected energization or startup of machines or equipment or release of stored energy. Each lockout/tagout device shall be removed from each energy isolating device by the employee who applied it before the end of the employee's shift after being replaced with the lockout/tagout device of the employee who will be working on the machine or equipment during the shift immediately following. If there is not a shift immediately following the shift where the employee has his/her lockout/tagout device installed, then the employee shall leave his/her lockout/tagout device installed on the machine or equipment at the end of their shift. Each authorized employee shall verify that isolation and de-energization have been effectively accomplished before starting servicing/maintenance work.

7.9 Other Hazards

Materials having toxic, caustic, or asphyxiant properties can present serious hazards beyond the scope of this procedure. Consult with Safety & Health for additional requirements which must be met prior to starting work.

7.10 Protective Materials and Hardware

Locks, tags, chains, wedges, key blocks, adapter pins, self-locking fasteners, or other hardware shall be provided for isolating, securing, or blocking machine or equipment energy sources. Personal locks and tagout devices shall be singularly identified, the only devices used for controlling energy, and not used for other purposes. Lockout/tagout devices shall meet the following requirements:

7.10.1 Lockout/tagout devices shall be capable of withstanding the environment to which they are exposed for the maximum period of time that exposure is expected. Tagout devices shall withstand exposure to weather conditions and wet or damp locations without deteriorating or becoming illegible.

7.10.2 Personal locks and tagout devices shall be standardized in color, shape, or size. Tagout device print and format shall be standardized. A tag with the legend "Danger" or a yellow lock (personal lockout lock) and a tag are the devices used at Toshiba International Corporation.

7.10.3 Lockout devices shall be substantial enough to prevent removal without the use of excessive force or unusual techniques. Tagout devices, including their means of attachment, shall be substantial enough to prevent inadvertent or accidental removal. The tagout device attachment means shall be a self-locking, non-reusable nylon cable tie with a minimum unlocking strength of 50 pounds.

7.10.4 Lockout and tagout devices shall indicate the identity of the employee applying the device(s). Tagout devices shall warn against hazardous conditions if the machine or equipment is energized and shall include the legend: "DANGER".

8.0 Records

8.1 LOTO Removal Form, exemption and inspection records will be retained according to the *Records Management Procedure.*

8.2 Training documents shall be retained according to the *Records Management Procedure.*

9.0 Figures

Figure 8.1, Toshiba

Figure 8.2, Toshiba International

Figure 8.2, Toshiba International Corporation
Designated Yellow Personal Lockout Lock

10.0 Revision History

Rev	Date	Description
0	11/1/04	Original Release
1	01/10/05	Revised Section 2.0: Changed "1910 Subpart S" to "1910.302"; 4.17: Moved info to 6.5; 5.0: Changed "provided/directing" to "coordinating"; 6.5.2: Moved info to Section 6.6.8; 6.6.8: Added "Note" sections; 7.0: Changed "provided" to "coordinated"
2	9/8/08	Revised formatting in scope section from bullets to numbering Eliminated secondary title to scope of program Eliminated bolding throughout procedure Revised references to safety and health to EH&S Incorporated SLP Review Form Added document retention time to section 8
3	10/12/09	Formatting changes as identified by PAR 4440, Revision change not required. **12-27-10 reviewed by Shane Daniels** **3/2/12 reviewed by Shane Daniels** **Reviewed 12/31/12 by Shane Daniels**
4	12/12/2013	Removed 3.8 Updated Tagout requirements 4.12 Updated Tagout requirements 4.18 Updated Tagout requirements 4.19 Updated Tagout requirements 6.6.5 Updated Tagout requirements 6.6.7 Updated Tagout requirements 7.1 Updated Tagout requirements 7.10.2 Updated Tagout requirements 7.10.4 Removed 8.2 Updated formatting
5	2/13/2014	Added 4.20 Updated 6.8 Table1 Updated 7.7.2 Added 8.3 Reviewed 12/23/14 by Shane Daniels
6	1/4/16	Combined 8.1 and 8.2 and referenced the records management procedure Added 8.2 for training records Added 3.10 as a reference