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1.0 OVERVIEW

1.1 Purpose

This RSI provides a mechanism for ensuring that machines, equipment, and processes are isolated from energy sources and that all potential hazardous stored energy and residual energy is relieved, disconnected, restrained, and/or rendered safe before servicing begins.

1.2 Scope

This RSI applies to the servicing, maintenance or testing of all refinery equipment and machinery that may be subject to unexpected energizing or release of stored energy causing;

- a. injury to personnel,
- b. adverse environmental impact, or
- c. damage to equipment.

1.3 Out of Scope

This RSI does not apply to Minor Servicing Activities, Hot Taps, In-Service Welds and activities under Exclusive Control.

1.4 Records Retention

Printed copies of this document should not be retained more than 12 months. Any revision to this document will be retained indefinitely.

1.5 References

The following sections describe references used to generate this document.

1.5.1 Marathon Standards, Policies & Procedures

- RRD-1323-000 *Safe Equipment Preparation Guidelines*
- RSP-1121-10 *Blinding & Energy Isolation*
- RSP-1150-010 *Caustic and Utility Connections to Process Lines and Vessels*
- RSP-1162-000 *Electrical Safe Work Practice*
- RSP-1700-000 *Life Critical Safety Rules & Accountability*
- SAF-4007 *Control of Hazardous Energy Sources*
- SP-50-05 *Caustic and Utility Connections to Process Lines and Vessels*
- SP-50-39 *Pressure-Rated Blinds, Non-Rated Blinds, Vent (Bleeder) Blinds, and Bleed Rings*
- RSI 02-09 *Isolation of Relief Devices on In-Service Equipment*
- RSI 08-01 *Safe Work Permitting*
- RSI 08-04 *Hot Work Authorization*
- RSI 08-05 *Confined Space Entry Authorization*
- RSI 08-09 *Critical Safety Devices*
- RSI 08-20 *Variances from Rules and Standing Instructions*
- RSI 14-3-3 *Safety Relief Devices*

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1.5.2 Industry Standards

- American Petroleum Institute (API)
 - [API 570](#) *Piping Inspection Code: In-service Inspection, Rating, Repair, and Alteration of Piping Systems*
- American Society of Mechanical Engineers (ASME)
 - [ASME B16.5](#) *Pipe Flanges and Flanged Fittings NPS 1/2 Through NPS 24 Metric/Inch Standard*
 - [ASME B31.3](#) *Process Piping*

1.5.3 Government Regulations

- Cal-OSHA 8 CCR Subchapter 15 Petroleum Safety Orders, 6815 Opening Pipelines and Equipment
- Cal-OSHA 8 CCR Subchapter 15 Petroleum Safety Orders, 6816 Blinding or Isolating of Pipelines and Equipment for Entry
- Cal-OSHA 8 CCR Subchapter 7 General Industry Safety Orders, 5157 Permit Required Confined Spaces
- Cal-OSHA Process Safety Management for Petroleum Refineries {Title 8 of the California Code of Regulations (CCR) Section 5189.1}.
- Office of Emergency Services California Accidental Release Prevention (Cal-ARP) Program {Title 19 CCR Chapter 4.5}
- Environmental Protection Agency's (EPA) Risk Management Program – Accidental Release Prevention {40 CFR 68}
- Contra Costa County's Industrial Safety Ordinance No. 98-48 Chapter 450-8 Risk Management {450-8}
- OSHA Process Safety Management of Highly Hazardous Chemicals {29 CFR 1910.119}
- OSHA 29 CFR 1910.147 - The Control of Hazardous Energy Sources
- OSHA 29 CFR Subpart O - Machinery and Machine Guarding
- OSHA 29 CFR 1910 Subpart S – Electrical
- CCR Title 8 3314, GISO, Control of Hazardous Energy

1.6 Tags and Forms

- 1.6.1 The following tags are available for use with this procedure:
- Energy Isolation Device Tag
 - Energy Isolation Blind Streamer
 - Confined Space Blind Streamer
 - Do Not Operate Streamer
 - Hydrotest Streamer
 - Return-to-Service Checklist Tag

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- Energy Source Isolated Tag (Tagout)
 - Do Not Operate Tag
 - Group Lockout Tag
- 1.6.2 The following forms are available for use with this procedure:
- Energy Isolation List Form (RSI 08-02-F01)
 - Supplemental Energy Isolation List Form (RSI 08-02-F02)
 - Isolation Blind List Form (RSI-08-02-F03)
 - Supplemental Blind List Form (RSI 08-02-F04)
 - Status Change / Temporary Release Form (RSI 08-02-F05)
 - Lock or Tag Removal Notification Form (RSI 08-02-F06)
 - Hot Work Isolation by Engineered Plug Approval Form (RSI 08-02-F07)
 - Blinding and Energy Isolation Inspection Form (RSI 08-02-F08)
- 1.6.3 See Appendix D Tags starting on page 43 and Appendix E Forms starting on page 47 for examples.
-

2.0 DEFINITIONS

The following terms and definitions are used in this document.

Table 1 Terms and Definitions

Term	Definition
Affected Employee	An Affected Employee is an employee whose job requires them to operate or use a machine or equipment on which servicing or maintenance is being performed under lockout or tagout, or whose job requires them to work in an area in which such servicing or maintenance is being performed.
Angle Worm Cleaner	The common term here is "rod out tool". A device used to safely clean out and/or unplug bleeders. This is the proper tool to safely verify a bleeder is open and unplugged.
Authorized Employee	An Authorized Employee is a person who locks out/tags out or installs blinds on equipment in order to perform servicing or maintenance on that equipment. An affected employee becomes an authorized employee when that employee's duties include performing servicing or maintenance.

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Table 1 Terms and Definitions

Term	Definition
Bleeder Blind	A Bleeder Blind is a blind where the pipe nipple and valve are on the outer circumference of the blind with the vent hole drilled perpendicular to the vent port. This type of bleeder blind is intended to slip between two mating flange faces. Normally, pancake bleeder blinds are non-rated and considered as temporary devices typically used for equipment preparation and maintenance activities. Pancake bleeder blinds may be used as permanent components in a piping system if they are pressure-rated and designed according to SP-50-39 as a "pressure-rated" vent (bleeder) blind".
Bleeder Blind Flange	Bleeder Blind Flange is a blind designed for the isolation of a piece of equipment and contains a bleeder valve for the purpose of hydrotesting, steaming, purging, de-pressuring, etc. while still maintaining the energy isolation. Bleeder blind flanges may be used as a permanent piping component.
Blind	<p>A blind is the absolute closure of a pipe, line or duct achieved by fastening a solid plate, threaded plug or cap across its bore to completely cover it. The cover must:</p> <ol style="list-style-type: none"> at least cover the outer edge of a flange's mating surface, and be capable of withstanding the maximum upstream system pressure during normal operations. <p>Blinds include: blanks, slip plates, blind flanges, threaded caps, physical disconnects.</p> <p>The three types of blinds utilized include:</p> <ol style="list-style-type: none"> Isolation, Hydrotest, and Permanent <p>Blinds must be capable of holding the maximum pressure and temperature to which the blind will be exposed.</p> <p>Examples of acceptable handles are the "Spectacle," "T handle," or "J handle" design. To eliminate the possibility of confusing restriction orifices with blinds, blinds with straight tabs must not be used.</p>
Cold Work	<p>Cold Work is maintenance, repair, cleaning, or construction activity, not requiring the use of fire, hot surfaces, spark producing equipment, or electrical equipment that is not classified for use in the area.</p> <p>Examples: Vibration monitoring, control valve tuning, valve packing adjustment.</p>
Common Isolation Point	An isolation point, which serves two or more pieces of equipment. Common isolation points will be listed in the designated section of each piece of equipment's Energy Isolation / Isolation Blind list. Each common isolation point will have a separate isolation device attached to the common isolation point for each piece of equipment that is being serviced.
Confined Space Blind Streamer	A yellow Confined Space Blind Streamer will be securely attached to all blinds used for the isolation of a confined space. Each streamer is uniquely numbered and will be listed on the Isolation Blind List. Each streamer is uniquely numbered and contains a lower tear away stub that will be secured in the Secondary Lockbox. The stub replicates the information on the streamer and will be listed on the Isolation Blind List.
Confined Space Entry	Confined Space Entry means the action by which any part of a person passes through an opening into a permit-required confined space. Entry includes any work activities in that space and is considered to have occurred as soon as any part of the entrant's body breaks the plane of an opening into the space, whether or not such action is intentional or any work activities are actually performed in the space.

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Table 1 Terms and Definitions

Term	Definition
Continuity Lock	Lock used to ensure the integrity of the isolation when no work is being performed on the system. Silver in color and marked for maintenance use or turnaround, it will be the first lock on and the last lock off of the lockbox. Each individual lockbox is assigned a Continuity lock which is keyed alike per unit/complex. The Owning Department maintains the Continuity lock key.
Do Not Operate Tag	A yellow Do Not Operate tag will be installed on each individual personal lock that is attached to the Primary/Secondary Lockbox or to the Servicing Group lock on the Primary Lockbox.
Do Not Operate Streamer	A red Do Not Operate Streamer will be securely attached to all bleeders that need to remain open. Each tag is uniquely numbered and will be listed on the Energy Isolation List.
Double Block and Bleed	Double Block and Bleed is the closure of a line, duct or pipe by closing and locking two (2) in-line valves and by opening and locking a drain or vent valve in the line between the two closed valves. Twin Seal Valves are not considered Double Block and Bleed.
Energy Isolating Device (EID)	<p>Energy Isolating Device (EID) is a mechanical device that physically prevents the transmission or release of energy including but not limited to the following:</p> <ul style="list-style-type: none"> a. manually operated electrical circuit breaker, b. disconnect switch, c. manually operated switch that the conductors of a circuit can be disconnected from all ungrounded supply conductors and no pole can be operated independently, d. a line valve, e. a block valve, f. blind, and g. any similar device used to block or isolate energy. <p>Note: The following are not energy isolation devices:</p> <ul style="list-style-type: none"> 1) push buttons, 2) selector switches, and 3) other control circuit type devices.
Energy Isolation Blind Streamer	A red Energy Isolation Blind Streamer will be securely attached to all blinds used for energy isolation. Each streamer is uniquely numbered and contains a lower tear away stub that will be secured in the Secondary Lockbox. The stub replicates the information on the streamer and will be listed on the Isolation Blind List.
Energy Isolation List	Energy Isolation List is the standardized form used to document isolated energy sources (e.g., breakers, valves, blinds), isolation verification points and the means used to verify the control of hazardous energy. (Also referred to as Isolation List)
Energy Isolation Tag	A green Energy Isolation Tag will be securely attached to each energy isolation device of the equipment that is being serviced. Each tag is uniquely numbered and will be listed on the energy isolation list.
Energy Source	Any source of electrical, mechanical, hydraulic, pneumatic, chemical, thermal, radiation or other energy.

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Table 1 Terms and Definitions

Term	Definition
Energy Source Isolated Tag	A blue and white Energy Source Isolated tag will be securely attached to all energy isolating devices and to the group lock/personal locks located on the Primary Lockbox of the equipment being serviced to indicate that a lockout device cannot be applied. This tagout device is symbolic of a lock and should be treated as such. The energy isolating device and the equipment being controlled must not be operated until the ESI tag is removed.
Engineered Isolation Plug	An Engineered Isolation Plug is an engineered tool used to safely provide 100% positive pressure vapor barrier against residual contents in the pipe.
Equipment Isolation Locks	Equipment Isolation Locks are locks assigned to the Owning Department for the purpose of isolating equipment. Equipment Isolation Locks will be Red in color for regular maintenance and orange for turnaround activities. These locks will be placed on breakers, valves, etc. and are keyed alike per individual lockbox. Once the equipment isolation locks are applied, the key will be secured inside the Primary Lockbox with the use of the Continuity Lock, as well as any Personal Locks, while the equipment is being serviced.
Exclusive Control	Exclusive Control is work on cord-and-plug-connected electric equipment for which exposure to the hazards of unexpected energization or startup of the equipment is controlled by the unplugging of the equipment from the energy source and by the plug being under the exclusive control of the employee performing the servicing or maintenance.
Freeze Plug	Freeze Plug is the practice of freezing a section of the contents of a line (pipe) to isolate equipment.
Group Lock	Group Lock is a lock applied to the Primary Lockbox representing a Servicing Group. The group lock may be any color other than red or orange.
Group Lockout Tag	An alternate accountability tag used during identified and approved periods of turnarounds or major construction.
Hazardous Energy	Hazardous Energy is any energy, including mechanical, pneumatic, hydraulic, electrical, chemical, radiation, and thermal energies that could cause injury to workers.
High Pressure	Any system that operates or is rated to operate above 300 PSI.
Hot Work	Hot Work is repair, maintenance, or construction activity, which requires the use of spark-producing equipment or may create an ignition source.
Hydrotest Blind Streamer	A blue Hydrotest Blind Streamer will be securely attached to all blinds used for hydrotesting. Each streamer is uniquely numbered and contains a lower tear away stub that will be secured in the Secondary Lockbox. The stub replicates the information on the streamer and will be listed on the Isolation Blind List.
Invasive Work Risk Assessment (RAM)	Invasive Work Risk Assessment (RAM) refers to a tool to be utilized to determine mitigation actions that should be taken when doing any invasive work. Once the invasive work task has been identified, use the tool to generate a numerical value for the categories of exposure concern, volume and impact. These values can then be multiplied to generate the Risk Assessment Score. This overall score is applied to the Mitigation Levels that include clear definition on the type of PPE, tools, protective actions, and other mitigations that should be taken to complete the task.

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Table 1 Terms and Definitions

Term	Definition
Isolation	<p>The process by which a pipe, line, duct, or confined space is removed from service and completely protected against the release of energy and material into the space by such means as:</p> <ul style="list-style-type: none"> ➤ blanking or blinding; ➤ misaligning or removing sections of lines, pipes, or ducts; ➤ a double block and bleed system; ➤ lockout or tagout of all sources of energy; or ➤ blocking or disconnecting all mechanical linkages.
Isolation / De-isolation	Isolation / De-isolation is valve positioning, blinding, plugging, disconnecting, installation, or removal that requires process hazard lockout by its owner (Owning Department).
Isolation Blind List	The standardized form identifying all blinded isolation points associated with a piece of equipment or system. Lists include items such as blind, valves, caps, plugs, bleeders and vents.
Isolation Device	<p>A device installed on pipes lines or other equipment connections, used to prevent liquids, gases, or vapors from passing through a pipe, line, or nozzle.</p> <ul style="list-style-type: none"> ➤ "T" Handled Slip Blinds ➤ Spectacle Blinds ➤ Blind Flanges ➤ Threaded Caps and Plugs
Isolation Verification Point	Isolation Verification Point is a device within an isolated system that is used to verify that hazardous energy is being controlled, but it is not part of the lockout/tag out for the system because it remains in its original state/position during the servicing of the equipment. Isolation verification points are recorded on the Energy Isolation List.
Joint Job-Site Visit (JJSV)	<p>Joint Job Site Visit is a meeting between an Owning Department Representative and at least one Servicing Representative of all parties working off of the permit at the specific location where the job will be conducted.</p> <p>The meeting discussion will address the work scope and all safety aspects of the permit.</p> <p>The Servicing Representative that attends the Joint Job Site Visit must convey the information covered in the discussion to all members of their work party.</p>
Lockbox (Primary)	Primary Lockbox is a lockbox into which the keys from the equipment isolation locks securing the machines or equipment are inserted and which are secured by an Owning Department silver Continuity Lock and Servicing Representative Group Lock(s) or Servicing Representative individual lock(s). The Primary Lockbox is red in color and labeled with the unit/complex name, and a unique box number.
Lockbox (Secondary)	<p>Secondary Lockbox is a lockbox which is uniquely identifiable in which the keys to the Group Lock are placed and each authorized employee affixes their personal lock and tag(s). The lockbox is red in color and labeled with the unit/complex name and a unique box number. Secondary Lockboxes will be used in the following situations.</p> <ul style="list-style-type: none"> ➤ Servicing Representatives are using a box remotely (in the field). Servicing Representatives will maintain the secondary lockbox inside of the process area where the lockout is taking place. The Primary Lockbox will remain in possession of the Owning Department. ➤ The Secondary Lockbox will be used to contain the blind tag tear-away stubs for all Confined Space and Hot Work blinds. A Secondary Lockbox used for this purpose will remain in possession of the Owning Department Representative.

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Table 1 Terms and Definitions

Term	Definition
Lockout	Lockout is the placement of a lockout device on an energy-isolating device to ensure that the energy-isolating device and the equipment it controls cannot be operated until the lockout device is removed. Lockout devices use positive means such as locks, blank flanges and bolted slip blinds.
Minor Servicing Activities	Minor Servicing Activities, which take place during normal production operations, are not covered by this practice if they are routine, repetitive, and integral to the use of the equipment for production, provided that the work is performed using alternative measures which provide effective protection. Reference: A list of approved Minor Servicing Activities can be found in Appendix C.
MOC	Management of Change
Owning Department	Owning Department is the department that normally owns and operates equipment, machinery and/or systems at the physical location of the work.
Perimeter (Battery Limit) Blind	Perimeter (Battery Limit) Blind is a blind placed at the perimeter of a unit or system that will provide isolation for the entire unit/system. Perimeter blinding will typically occur during turnarounds.
Permanent Blind	Permanent Blind is a blind that is in place during normal operations. This includes blinds on drain piping, utility connections, and decommissioned equipment. This does not include blind flanges.
Personal Lock	A Personal Lock is a lock assigned to an employee that is individually identified and keyed. This lock will only be installed and removed by the assigned individual and is to remain in place while the individual is performing work on the isolated equipment. Personal locks will either be applied to the Primary or Secondary Lockboxes. MPC personal locks will be green in color, contractor personal locks may be any color other than red or orange.
Ping & Ding	Ping & Ding is a method used to check for loose bolts on flanges. A ball peen hammer is used to strike each bolt listening for a sound indicating the bolt is loose.
Plug	A threaded piece of solid round stock used to seal off open ends of piping such as sample points, drains, or bleeders.
Positive Isolation	Positive Isolation is regarded as the most secure method for isolation and preferred when developing all isolation points. The following methods are all considered positive isolation. <ul style="list-style-type: none"> ➤ Slip blinds inserted between flanges ➤ Blind Flange ➤ Disconnecting and plugging open ends Disconnection and removal of spool pieces, plugging/blinding ends
Primary Isolation Point (PIP)	➤ Primary Isolation Point (PIP) is the point of isolation located immediately adjacent to the hazardous energy source.
Return to Service Checklist Tag	A yellow Return to Service Checklist Tag will be securely attached to the Primary Lockbox of the equipment being serviced. The Return to Service Checklist will be completed by the Owning Department Representative and turned into operations supervision before the equipment is started.
RSO	Radiation Safety Officer. The authorized employee who will install the Purple RSO lock on radiation energy sources prior to servicing.

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Table 1 Terms and Definitions

Term	Definition
Servicing Representatives	Servicing Representatives are the individuals working on the equipment/process. This may include operations, blending, shipping, maintenance, contractors, and(s) salaried employees.
Single Energy Source Isolation	An energy isolation list is not required while working on equipment that has a single isolation point that is locked out and tagged. Examples include working on AC units, lighting circuits, etc.
Spool Piece Removal	The removal of a section of piping as a means of isolation.
Status Change/Temporary Release Form	Status Change/Temporary Release Form is the standardized form used to document the required steps for the temporary de-isolation of equipment for the purposes of testing, positioning, steaming, rinsing, purging, etc., and re-isolation prior to the authorized employees resuming work on the isolated equipment. This form is also used to document changes to the Energy Isolation List while the equipment / system is still isolated.
Supplemental Energy Isolation List	Supplemental Energy Isolation List is the standardized form used to document additional isolated energy sources (e.g., breakers, valves, blinds) and/or isolation verification points that are not able to be included on the Primary Energy Isolation List. This form is typically used during complex isolations.
SWP	Safe Work Permit
Tagout	The placement of an Energy Source Isolation (ESI) Tag to an energy isolating device to indicate that a lockout device cannot be applied (use tagout only if lockout is not possible). The energy isolating device and the equipment being controlled must not be operated until the ESI Tag is removed.
Verified Isolation Valve	The closure of a line, duct, or pipe by closing, locking and tagging one in-line valve and by opening and tagging a drain or vent valve between the isolation valve and the maintenance work.

3.0 ROLES AND RESPONSIBILITIES

3.1 Owning Department

- 3.1.1 The Owning Department oversees the entire Equipment Shutdown and Isolation Process.
- 3.1.2 The Owning Department Representative will track lockout/tagout devices using the *Energy Isolation List Form* (RSI 08-02-F01) with the following information (see Appendix E, Figure 10):
- Type of isolation/energy source,
 - Equipment Isolation Lock number,
 - Description of isolation point/type of service,
 - Date installed,
 - Installer,
 - Date removed,
 - Remover,

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- Description of isolation verification points, including the means used to verify control of hazardous energy, and
- Owning Department Energy Isolation List and verification approval signatures.

Note: *The Supplemental Energy Isolation List Form (RSI 08-02-F02) (see Appendix E, Figure 12), is to be used for additional isolation points and/or isolation verification points when unable to list all points on the Energy Isolation List.*

- 3.1.3 The Owning Department Representative will track blinds using the *Isolation Blind List Form* (RSI 08-03-F03) with the following information (see Appendix E, Figure 13):
- blind identifier (e.g., tag number),
 - blind location/description (Example: 3-inch 150 class heater fuel gas inlet),
 - installer/remover,
 - date installed/removed, and
 - Owning Department Blind Isolation List and verification approval signatures.

4.0 EQUIPMENT SHUTDOWN AND ISOLATION PROCESS

4.1 Preparation

- 4.1.1 The shutdown of refinery equipment, machinery, and/or systems, required for servicing/maintenance will be conducted by the owners of such equipment. Energy Isolation Lists must be prepared in advance by the Owning Department Representative and developed consistent with the Process/Energy Isolation Matrices (Appendix A). The Energy Isolation Lists will specify the energy isolation devices, isolation verification points and the means used to verify control of hazardous energy in order to safely prepare the equipment for the servicing representatives. The Energy Isolation List(s) must be approved by the supervisor prior to being used. The signature must be on the energy isolation list prior to being used in the field. The Energy Isolation and Blind Lists serve as supplemental procedures to this RSI for the isolation of specific equipment and systems.
- 4.1.2 The Owning Department Supervisor will field verify the Energy Isolation Plan to ensure the isolation is complete and the energy isolation devices on the Energy Isolation List will adequately isolate the equipment for the work being performed.
- Once the field verification of the Energy Isolation plan is performed, the Operations Supervisor will sign the Energy Isolation List.

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- Additions, deletions, and changes to isolation lists must be approved by Owning Department Supervision.

Notes:

- 1) *Disconnected piping will be positioned so that it does not remain in alignment with or within close proximity to the isolated equipment.*
- 2) *An Energy Isolation List is not required while working on equipment that has a single isolation point that is locked out and tagged. Examples include working on AC units, lighting circuits, etc.*
- 3) *Equipment will be prepared for maintenance activities per refinery-specific operating procedures.*

- 4.1.3 All bleeders and valves used to verify that the equipment has been de-pressured and will remain open during the maintenance work must, at a minimum, be tagged open with a Do Not Operate Streamer (Figure 4) and listed on the Energy Isolation List in the section of the form designated "Energy Isolation Device Identification".

Note: *In some cases, the checks to ensure that a fully de-energized system exists will involve equipment that will not be locked or tagged out. Examples include bleeder valves that are opened to verify the system is de-pressured but will not remain open for the duration of the maintenance work or electrical motor switches that do not get locked out because the upstream electrical breaker is the energy isolation point. These isolation verification points are to be listed on the Energy Isolation List, along with the means used to verify control of the hazardous energy and any special instructions, in the section designated "Verification of Isolation".*

- 4.1.4 Tagging bleeders that will remain open during the maintenance work will help ensure the equipment / system remains in a controlled energy state. This practice will also help ensure that the valves are closed before the equipment / system is returned to operation.

Note: *When installing and removing primary isolation point (PIP) blinds, the appropriate vent/drain valve between the PIP and the blind must be opened prior to installing / removing the blind to verify the system is de-pressured. This valve only needs to remain open and tagged if continuous bleed is needed to facilitate the blind installation/removal.*

- 4.1.5 **The practices in paragraphs 4.1.3 and 4.1.4 of this stage only apply to routine (non-shutdown related) work.** For turnaround, major maintenance and project work, the elements discussed in this section should be included in the operating procedures, PSSR documentation, and/or functional checkout procedures.

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4.2 Isolation, De-Energization and LOTO

Owning Department Representative will perform the following:

- 4.2.1 Isolate the hazardous energy according to the Process/Energy Isolation Matrices (Appendix A) and the Energy Isolation List.
- In locations where tubing and pipes have been disconnected as part of isolation, they will be tagged and listed on the Energy Isolation List.
 - In locations where unions have been disconnected as part of isolation, they will be plugged, tagged, and listed on the Blind Isolation List.
 - If a "Common Isolation Point" is required, each affected equipment's Isolation list will be updated to show the common isolation point, and a separate Energy Isolation Lock and Energy Isolation Device tag must be attached to the common isolation point for each piece of equipment being serviced.
- 4.2.2 Following the Owning Department's isolation, arrange for the isolation of maintenance-required tasks such as blinding, high voltage breaker deactivation, plug installation, etc. as required by the isolation list(s) and in accordance with the Process/Energy Isolation Matrices (Appendix A)
- If a Blind is being used as an isolation point, an Energy Isolation Blind streamer must be attached, and be documented on the Isolation Blind List. If blinding for isolation of a confined space, a Confined Space Blind streamer must be attached, and documented on the Isolation Blind List.

Notes:

- 1) *When installing isolation blinds ALWAYS think about how the air free and blind removal procedure is going to be executed. The use of a bleeder blind should be considered where feasible, if:*
 - *a bleeder is not present to properly air free the system, or*
 - *an isolation valve is known to be leaking and there is not a bleeder present between this isolation valve and the blind location.*
 - *See Section 5.10 for additional guidelines on the use of Bleeder Blinds.*
- 2) *In some instances, the Owning Department Representative may require assistance in isolating the energy source (i.e., electrician to de-energize a circuit breaker, Radiation Safety Officer (RSO) or designee to isolate a radiation source).*

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- 4.2.3 All stored or residual hazardous energy (springs, elevated machine parts, flywheels, hydraulic systems, pipes, lines, capacitors, etc.) must be relieved or dissipated by using safe methods such as blocking, bleeding, venting, repositioning, grounding, etc.
- When locking out cooling tower fans, fin fans or other types of fans, the fan blades must be secured (tied or pinned) when personnel can be affected by potential energy of the blades.
 - Spring hangers, expansion loops, and counterweighted support systems will be isolated by pinning, compressing, blocking, cribbing, etc., pending their design and configuration.
- NOTE:** *These support devices will be tagged with the white Energy Source Isolated (ESI) Tag in the field and documented on the Energy Isolation List.*
- 4.2.4 Verify that equipment and/or piping is completely de-energized and de-pressured according to the "Verification of Isolation" section of the Energy Isolation List. This verification should include:
- At least one designated bleeder will be tagged in the open position to verify de-energization of a piece of equipment.
 - For large/complex systems multiple bleeders and valves should be opened to ensure entire system is de-energization.
 - Any bleeder or vent left open during the maintenance / servicing of a piece of equipment will be tagged and listed on the Energy Isolation List.
 - Pushing any start buttons on pumps, compressors, fans, etc.
 - Taking any other physical actions necessary or any actions outlined in Owning Department procedures.
- 4.2.5 All designated bleeders used to verify de-energization of the lockout must be demonstrated open by one of the following methods:
- Use of a bleeder reaming tool for initial verification
 - Visually observing a nitrogen, steam, or water flow exiting the bleeder intentionally used to demonstrate the bleeder is open and clear
- 4.2.6 If necessary, bleeders can remain in the closed position until the job is performed; however, bleeders must be tagged open with a Do Not Operate streamer prior to servicing if maintenance is performed on the equipment.

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NOTE: *If there is a possibility of re-accumulation of hazardous stored energy, verification of effective isolation will be continued (gas monitoring, visual inspection, etc.) until the servicing or maintenance is completed.*

- 4.2.7 If de-pressuring or de-energizing cannot be verified (e.g., absence of a bleeder to relieve pressure), then:
- Conduct and document a Risk Assessment (RAM) score with the Owning Department Representative and the Servicing Group Representative.
 - Have the Owning Department Supervisor and Maintenance Supervisor approve the work method and RAM score and sign the Safe Work Permit (SWP).
 - Follow the Owning Department Line Break Procedure.
- 4.2.8 Use a qualified electrician to test equipment as required.
- Note:** The potential for liquid to remain in a de-pressured system exists, the Owning Department Representative must ensure no liquid material remains or incorporate additional measures (PPE) to protect workers.
- 4.2.9 Affix Owning Department Equipment Isolation Locks and Energy Isolation tags to all subject valves, actuators, motor starters, circuit breakers, etc., according to the isolation list(s).
- 4.2.10 The Owning Department Representative will then put the key to the Equipment Isolation Locks into the Primary Lockbox and secure with a Continuity Lock and a Return to Service Checklist Tag.
- 4.2.11 The Owning Department Representative must ensure that all Servicing Group Representatives affix an individually identified lock and tag to the Primary Lockbox or Secondary Lockbox as needed. All locks must be tagged and labeled for identification. This requirement is in effect for normal operations and maintenance. During turnarounds and major construction projects, an alternative accountability procedure may be used. The requirements for alternative procedures are listed in Appendix B.
- 4.2.12 If an isolation extends outside of a unit boundary refer to Section 5.16, Lockout Spanning More Than One Operational Area.
- 4.2.13 The Owning Department Representative will conduct the Joint Job Site review of all isolation points with affected Servicing Group representatives as required by the Safe Work Permit.

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4.3 Verification

- 4.3.1 Before any actual maintenance or servicing work is started on the equipment, the Owning Department Representative will verify that de-energization and isolation has been effectively accomplished as follows:
- Check** that personnel are not in or on the machinery or equipment, or in the surrounding area in a position to possibly be injured by activation of the energy source.
 - Verify** de-energization by attempting to operate the start button, switch, or other normal operating control, verifying an open bleeder, or by other testing that will ensure that the machinery or equipment will not operate and that it is de-energized.
 - Recheck** all energy sources and lockouts if the equipment starts or energy is present when it is tried. No work may be performed on the equipment until a successful de-energization has been verified.
 - Document** on the Energy Isolation List that the isolation and de-energization is complete/verified and ready for servicing personnel to perform work.
- Note:** The Owning Department Representative must ensure that permissives to start have been satisfied.
- 4.3.2 The Owning Department Representative will verify the key to the Energy Isolation Devices is in the Primary Lockbox with a:
- Continuity lock
 - Return to Service Checklist Tag
 - Servicing Group Representatives personal locks and completed Do Not Operate Tag(s) attached to the box
 - Energy Source Isolated Tag on Servicing Group Representatives individually identified locks when tagout is being used
 - Physical possession of the continuity lock key will be maintained by the Owning Department Representative.
- 4.3.3 The Owning Department Representative will conduct a JJSV with the Servicing Group representative prior to work being performed on the piece of equipment.
- 4.3.4 The JJSV will include:
- A review of the Energy Isolation List.
 - A physical walk down of the isolation points listed on the Energy Isolation List.
 - A physical verification of energy isolation that is documented on the Safe Work Permit.
 - Verification of the correct number of locks on the proper lockbox.

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- e. If work will be invasive, identification of first line break must be agreed upon during the JJSV by the Owing Department and Servicing Group Representatives. A First Break Tag must be signed and dated before being hung on the first break location in accordance with *Safe Work Permit* RSI 08-01 First Break requirements. Owing Department Representative will be required to witness the first line break.
-

4.4 Servicing Group

- 4.4.1 Prior to the initial servicing or maintenance work, the Servicing Group Representative will verify that the equipment has been effectively isolated during the JJSV.
 - Each Servicing Group affected employee has the right to participate in the JJSV with the Owing Department Representative to identify the type of energy sources being de-energized and to verify that all energy sources have been de-energized.
 - 4.4.2 The Servicing Group Representative will place their individually identified locks/tags and ESI tag (if applicable) on the lockbox and sign the SWP to indicate the verification of isolation has been conducted for that shift.
 - Servicing Group Representative will work with the Owing Department Representative to determine if a Secondary Lockbox will be needed for:
 - Work requiring blinding
 - Remote Access (field located lockbox).
 - 4.4.3 All Servicing Group members will attach their individually identified locks and tags to the Primary lockbox or the Secondary Lockbox prior to performing work on isolated equipment or entering a confined space for which energy isolation is achieved by means of lockout or blinding.
 - 4.4.4 Equipment that is physically disconnected from the process and have no other energy sources associated with it are exempt from this requirement.
-

4.5 Shift – Change Procedures

- At the end of each shift:
- a. Servicing Group Representative(s) will remove their lock from the Primary or Secondary Lockbox.
 - b. The Owing Department Silver Continuity lock and equipment Return to Service Checklist Tag must remain on the Primary lockbox for the duration of the job.

NOTE: *Open ended piping or equipment that contains hazardous material and is only isolated by a single valve must be blinded if left unattended.*

- *This does not apply to bleeders used to verify de-energization.*
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4.6 De-Isolation

4.6.1 Servicing Group Representative

When all maintenance/servicing tasks are complete with the job, the Servicing Group Representatives will:

- a. Inform the Owning Department Representative that the:
 - work is complete, turn in your Safe Work Permit and all applicable documents and tags
 - equipment and systems are ready for removal of blinds/energy isolation devices at the Owner's discretion.
- b. Prepare for blind removal:
 - Participates in JJSV to identify blinds to be removed.
 - Removes personal locks and tags from Secondary Lockbox and installs them onto the Primary Lockbox.
 - Owning Department Representative removes Continuity Lock and blind tag stub(s) from Secondary Lockbox.
 - Owning Department Representative issues SWP and blind tag stubs to remove blinds.
- c. Following the removal of a bolted slip blind, blind flange, plug, etc.:
 - returns any blind identifiers (tags) to the Owning Department Representative, and
 - signs and dates the appropriate blind list at each listed blind point for which they removed a blind.
- d. After all work is completed, the Servicing Group Representatives removes their personal locks and tags from the Secondary Lockbox.
- e. The Servicing Group Representative removes the group lock from the Primary Lockbox.

NOTES:

- 1) *Removal of blinds/energy isolation devices is a permitted activity and the Servicing Group Representative will need to ensure a valid Safe Work Permit including a RAM Score and a JJSV takes place. Verification of isolation during JJSV of breaking containment to remove devices is also required.*
- 2) *Servicing Group Representatives are not authorized to remove blinds, plugs, etc. without being in possession of a valid SWP and the corresponding blind tag stubs per the isolation list of the system being serviced.*

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4.6.2 Owning Department Personnel

When all maintenance/servicing tasks are complete with the job, the Owning Department Representative will:

- a. Verify work is complete by conducting a close out Joint Jobsite Visit with the Servicing Group Representatives.
- b. Ensure all signatures and approvals have been completed on the Energy Isolation Lists.
 - Obtain secondary operations authorized signatures to verify energization of the isolation device is complete (RSO, electricians, etc.) when required.
- c. Prepare equipment and systems for the removal of blinds per Owning Department procedures.
- d. Prior to the removal of any personal locks, issues the servicing representatives a work permit and applicable blind tag stubs per the Isolation Blind List of the system being serviced and directs the removal of blinds/energy isolation devices and reconnection of electrical power, hydraulic/pneumatic lines and re-energization of breakers according to the isolation list(s).
- e. Prior to removing Owning Department Energy Isolation Locks, at a minimum, one of the following methods will be completed to verify that the equipment is fit for service following maintenance activities:
 - **P&ID Walkdown:** Utilize the complete system P&ID to verify and document that all affected bleeders / valves are closed, plugged and capped and all flanges parted have been checked to ensure the gasket is installed correctly and have been checked for loose bolts by completing a QC inspection. A completed and signed P&ID will be turned into the Owning Department supervision for review.
 - **Pressure Leak Test:** The equipment and/or piping within the maintenance scope will be leak tested by either:
 - 1) Pressuring the system with a utility (steam, soft water, condensate) and visually checking for leaks or;
 - 2) Pressuring the system with nitrogen and complete a hold step:
 - a. During the hold step, the system pressure should be monitored closely. Flanges parted and other connections made up during the maintenance work will be checked for leaks using a leak detection solution (e.g., Snoop).

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- b. If the hold step cannot be completed, a system walk must be completed to identify potential leak source(s).
- c. The use of air is not a recommended practice. The use of air requires the completion of a hazard assessment and approval of the Owning Department Area Supervisor.

NOTE: *The P&ID requirements outlined in this section apply to routine maintenance or servicing activities in which energy isolation was applied and invasive work was performed. Further, the requirements only apply to work performed on equipment in hydrocarbon, corrosive, toxic or hot service (>140°F) and are applicable to activities performed by either Maintenance or Operations/Product Control. The following items are not subject to these requirements:*

- 1) *Equipment in utility service with an operating temperature below 140°F.*
 - 2) *Items considered as minor servicing activities or exclusive control. These are not subject to energy isolation.*
 - 3) *For turnaround, major maintenance and project work, the elements discussed in this section must be incorporated into the operating procedures, PSSR documentation, and/or functional checkout procedures.*
- f. Removes the operations department lockout device(s) and tag(s) from the energy isolation devices.
 - g. After all locks/tags have been removed, the Owning Department Representative must record the date and time of the removal and sign the Energy Isolation List.
 - h. The Return to Service Checklist tag will be completed and turned in to Operations Supervision before the equipment is started.

4.7 Lock/Tag Removal in the Absence of the Servicing Group Representative

In the event the Servicing Group Representative is not available to remove an individual lock, tagout device or Group Lockout Tag, that device or tag may be removed only after confirmation that the Servicing Group Representative is not at the facility and only after every reasonable effort to locate them has failed.

The lockout or tagout device may then be removed, only under the direction of the Owning Department Representative responsible for coordinating the lockout/tagout activities in that operating area, after confirming that the work is complete. The Servicing Group Supervisor of the employee whose lock is being removed must also be present.

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A representative of Operations Supervision must always be present and be personally aware that the device is being removed.

The Operations Supervisor will then fill out the *Lockout or Tag Removal Form* (RSI 08-02-F06) and give this to the employee's supervisor whose lock or tag was removed.

The Servicing Group Supervisor will then hand this form to the Servicing Group Employee prior to returning to this job.

The Servicing Group Employee will sign and date this form stating that they were informed of their lock or tag removal prior to any resumption of work and return the form to the Safety Department for retention.

4.8 Energy Isolation by Tagout

4.8.1 Tagout procedures will only be used when an energy source is incapable of being locked out (i.e., underground water lines, rope utilized to tie fin fans, etc.).

NOTE: *When tagout is used, additional safety measures will be used such as the removal of an isolating circuit element, blocking of a control switch, opening of an extra disconnecting device, or the removal of a valve handle (underground water lines or T-handle valves) to reduce the likelihood of an inadvertent energization.*

4.8.2 The Owning Department Representative will:

- a. Isolate and de-energize the equipment and place a blue ESI Tag "**ENERGY SOURCE ISOLATED BY TAGOUT**" in the field.

NOTE: *Tags and their means of attachment must be able to withstand the environment and be secured so they cannot be inadvertently or accidentally detached during use.*

- b. Document each tagout isolation point on the Energy Isolation List.

4.8.3 The Servicing Group Representative(s) will place their individually identified lock/tag and ESI tag on the lockbox after the Energy Isolation List has been walked down and de-energization verified.

5.0 MISCELLANEOUS REQUIREMENTS

5.1 Blinding Open Ended Lines or Equipment

5.1.1 Open ended piping or equipment that is only isolated by a single valve must be blinded if left unattended.

Notes: *Double block and bleed may be used in place of a blind in accordance with Section 5.7 as long as the work does not involve hot work or confined space entry.*

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- 5.1.2 This requirement only applies to the following services:
- hydrocarbons,
 - corrosives, and
 - toxics
 - high temperature steam and condensate
- 5.1.3 This requirement does not apply to turnaround and project work when perimeter isolation/blinding and decontamination has been completed.
- 5.1.4 Bleeders and valves that are tagged open as part of the energy isolation process (e.g., to verify equipment is de-energized / de-pressured) are not subject to this requirement.
- 5.1.5 If a blind is installed, it must be located between the isolated valves and the equipment being worked on. Ensure verification with a bleeder before removal.
- 5.1.6 When installing and removing primary isolation point (PIP) blinds, the appropriate vent/drain valve between the PIP and the blind must be opened prior to installing/removing the blind to verify the system is de-pressured. This valve only needs to remain open and tagged if continuous bleed is needed to facilitate the blind installation/removal.

5.2 Hot Work and Blinding

- 5.2.1 Blinds will be installed according to the Process/Energy Isolation Matrices (Appendix A) and at the closest flange to the hot work. If blinding at the closest flange creates additional risk, exceptions must be reviewed and approved by the Operations and Maintenance Foremen by performing a RAM score assessment.
- Note:** *Blind location requirements do not apply when perimeter or battery limit blinds are utilized, and the unit has been decontaminated.*
- 5.2.2 The area between the blind and the hot work will be cleaned and gas freed and tested per the requirements in RSI 08--04 Hot Work Authorization.
- Note:** *Testing should be done in close proximity to the hot work location. If bleeders are not available at the location, consideration should be given to drill a hole in the line, part flange, etc. in order to verify no hazards are present. This is especially important on long piping runs or complex systems.*
- 5.2.3 Upon installation of the blind by the Servicing Craft the Owning Department Representative will verify blind installation and remove the tear away stub of the Energy Isolation Blind Streamer. The streamer stub will be secured into a Secondary Lockbox and secured with an Owning Department Continuity Lock and Energy Isolation Device Tag.

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5.3 Confined Space Blinding

- 5.3.1 Blinds will be installed according to the Process/Energy Isolation Matrices (Appendix B).
- 5.3.2 The isolation blind for a confined space must be tagged with a Confined Space Blind Streamer, (Figure 3) listing the date installed, installed by and a brief description of the equipment. This isolation point (blind, plug, physical separation, etc.) cannot be removed / reconnected until receiving approval from the Owning Department Representative issuing a Safe Work Permit.
- 5.3.3 Upon installation of the blind by the Servicing Craft, the Owning Department Representative will verify blind installation and remove the tear away stub of the Confined Space Blind Streamer. The streamer stub will be secured into a Secondary Lockbox and secured with an Owning Department Continuity Lock and Energy Isolation Device Tag.
- 5.3.4 Vessel appendages (e.g., sight glasses, level bridles) must be properly decontaminated and, if required, blinded / disconnected prior to entry. Blinding or disconnection should be the preferred method and documented on the Energy Isolation List and Blind List. Install blinds at the closest flange to the confined space. Where this is not feasible, use the following process:
- Operations and Maintenance must agree to the alternate location, sign the Safe Work Permit and document changes clearly on the Energy Isolation / Blind list.
 - The piping between the vessel and the blind will undergo the same preparation as the vessel (i.e., wash, steam, etc.).
 - Spacers must be installed on the vessel side of the blind, unless there is another means (bleeder) proximal to the blind which allows proper piping preparation and internal gas detection.
 - The Permit Writer will check the opening of the piping at the blind with a gas detector.
 - The atmosphere must meet the same minimum requirements as the vessel prior to confined space entry permit being issued.

5.4 Energy Isolation Verification Inspection

- 5.4.1 Energy Isolation Lists will be field verified by the Owning Department Representative and Servicing Group Representative on the first day and night shift (if applicable), prior to working on equipment to verify that energy isolation is accurate and complete.
- 5.4.2 Isolation verification should occur as part of the Joint Job Site Visit (JJSV). Documentation of this verification will be on the Safe Work Permit and the Joint Job Site Visit AGREED Tag in accordance with RSI 08-01. If isolation

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changes occur, the energy isolation points altered/changed will be re-verified and walked down with the Owning Department Representative and the Servicing Group Representative as part of the JJSV before work is continued and on the first affected (day or night) shift following the change. Examples of changes that would require the isolation verification inspection to be repeated include:

- Removing a lock to exercise a valve or breaker, or
- Opening a lockbox.

5.5 Engineered Isolation Plugs

- 5.5.1 Equipment isolation by blinds, threaded caps/plugs and/or physically disconnected equipment is recommended versus using an engineered isolation plug. The *Hot Work Isolation by Engineering Plug Approval Form* (RSI 08-02-F07) (see Figure 18) must be completed prior to utilizing an engineered isolation plug.
- 5.5.2 If a flanged connection is unavailable for blinding, an engineered isolation plug may be used in place of a blind for hot work.
- 5.5.3 An engineered plug may also be utilized when there is significant risk associated with the installation of the necessary blinds. An explanation of the risk / hazards of blinding will be included on the *Hot Work Isolation by Engineering Plug Approval Form* (RSI 08-02-F07) (see Figure 18)
- 5.5.4 In order to use engineered isolation plugs as the only isolation for Hot Work:
- *Hot Work Isolation by Engineering Plug Approval Form* (RSI 08-02-F07) will be completed by the Maintenance Foremen, contain all required signatures (see Figure 18), and
 - Engineered isolation plugs must have two seals and be designed and pressure rated for the potential pressure of the line. (**Important:** The plug must also be applicable to the equipment service (e.g., liquid, vapor, corrosive, etc.)).
- Note:** *Single sealing, sewer/plumber's plugs will not be used for hot work.*
- 5.5.5 If a line cannot be made hydrocarbon free, the end of the line on which the hot work is to be performed will be sealed with an Engineered plug.

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- 5.5.6 The following precautions will be in place before hot work begins:
- The open end must be made hydrocarbon free and scale removed.
 - The engineered isolation plug will be installed past the heat-affected zone to ensure that the hot work will not burn or melt the sealing surfaces of the plug.
 - Provisions will be made for the continuous venting of any accumulation of gases or vapors to a safe location away from the hot work.
- Note:** *When it is deemed necessary to establish a purge through the engineered isolation plug, the vent line will be safely vented to assure a flow is maintained. The method of venting the purge will be indicated on the Hot Work Isolation by Engineering Plug Approval Form (RSI 08-02-F07) (see Figure 18).*
- If applicable, the Engineered Isolation Plug will be equipped with a means to monitor and verify the sealing pressure to ensure maintenance of the 100% positive pressure vapor barrier. Also, a means to monitor the buildup of pressure behind the plug is required to prevent exceeding the plug specifications.
 - A flammable gas test will be made around the plug as part of the permit.
 - The location of the engineered isolation plug must be tagged with an Energy Isolation Blind Tag and entered into the corresponding energy isolation blind lists for the job.
 - Engineered isolation plugs used on lines containing flammable vapors will not be left unattended work will continue until completed and system is sealed or blinded).

5.6 Isolation using Freeze Plug

- 5.6.1 In rare cases, a freeze plug may be used to isolate a section of piping as a last resort.
- 5.6.2 A variance must be completed for any isolation utilizing a freeze plug. The following factors must be satisfied prior to using a freeze plug:
- There are no valves available to isolate the line or the valves are not operating properly,
 - The line contains a freezable product. The flow/velocity in the line is at an acceptable rate for freezing,
 - The line pressure and metallurgy allow for the use of a freeze plug,
 - Only cold work is allowed on lines containing hydrocarbons, and

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5.6.3 Continuous monitoring of the line atmosphere and plug is required to verify the plug remains in place.

5.7 Double Block and Bleed Valves

The use of locked, double block-and-bleed valve alternatives in place of blinding equipment with a blank, slip plate, blind flange, threaded cap/plug, and/or physical disconnect is only allowed in those situations listed in the Process/Energy Isolation Matrices, Minimum Energy Isolation Requirements Matrices (see Appendix A).

5.8 Permanent Blinds

Permanent isolation blinds may be installed for the isolation of equipment or piping during normal production operations and for equipment that is taken permanently out of service. The permanent blind will be identified with an Energy Isolation Blind Tag. The Owning Department will maintain a record of all permanent blind locations and the following requirements will be applied:

- Permanent blinds will be shown on P&IDs and included on a permanent blind list.
- An MOC will be generated when a permanent blind is installed or removed.
- Permanent blinds will be verified as often as necessary to ensure compliance, but no less than once per year.

5.9 Electrical LOTO for TARs

5.9.1 The refinery Electrical Department will work with the Owning Department Representative to coordinate all work and energy isolation within substations.

5.9.2 The Owning Department Representative will prepare unit equipment for maintenance and perform isolation and LOTO per normal procedures.

5.9.3 When the Electrical Department must isolate an MCC for electrical maintenance, the needed loads will be transferred to a temporary distribution source, and the MCC main breaker will be placed in an electrically safe working condition and LOTO installed.

Note: When temporary power is utilized, extreme cautioned must be exercised to ensure that electrical power is not being supplied to isolated equipment.

5.9.4 The Electrical Department will coordinate with the Owning Department Representative to have all previously installed LOTO locks and tags removed from the MCC individual breakers and transferred to the lockbox for the MCC main breaker. This will ensure that the energy source remains isolated at all times protecting the persons performing work in the field.

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	<p>5.9.5 When the MCC is to be re-energized, the Owning Department Representative will remove any locks and tags on the lockbox for the MCC main breaker and install their locks on the original equipment breaker for any work being performed in the field.</p> <p>5.9.6 For situations where isolated equipment must be tested, positioned, temporarily operated, etc., the removal of locking devices and de-isolation must be managed via the “Temporary Release” procedures and the task may be performed during shift change to minimize work disruptions.</p>
5.10 Bleeder Blind Guidelines	<p>5.10.1 Where feasible, bleeder blinds should be used in situations where:</p> <ul style="list-style-type: none"> ➤ Bleeders are not present to properly air free the system, or ➤ An isolation valve is known to be leaking and there is not a bleeder present between this isolation valve and the blind location. <p>5.10.2 Bleeder blinds should not be used in heavy product service or in other services that are prone to plugging.</p> <p>5.10.3 Bleeder blinds will be designed per SP-50-39.</p>
5.11 Exclusive Control	<p>5.11.1 The “exclusive control” exception may only be applied to cord and plug electrical equipment. Examples include drill presses, saws, copiers, etc. that possess a cord and plug.</p>
5.12 Minor Servicing Activities	<p>5.12.1 This RSI does not apply to tasks classified as Minor Servicing Activities.</p> <p>5.12.2 Tasks designated as Minor Serving Activities (routine, repetitive, integral to the process) are listed in Appendix C.</p> <p>5.12.3 Alternative protective measures have been developed for Minor Servicing Activities and included in Appendix C.</p> <p>5.12.4 Minor Servicing Activities must be attended at all time. If left unattended for any reason (breaks, lunch, relief, etc.) lockout must be applied.</p>
5.13 Criteria for using a Relief Valve as an Energy Isolation Device (EID)	<p>5.13.1 Relief valves are not to be used as hazardous energy isolating devices except for the sole purpose of installing blinds on the first flange on the protected, or upstream, side of the relief valve, when no block valve is available for isolation.</p> <p>5.13.2 Blinding of relief valves will be permitted separately from any other work and not combined with other isolation points on the same permit.</p>

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5.14 Temporary Release of LOTO

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- 5.13.3 Supplied air will be required, as a minimum, plus any other appropriate PPE based upon exposure potential.
 - 5.13.4 Process operation must be monitored continuously during the installation of blinds to warn workers of any process upsets. The relief valve will be listed as an Energy Isolation Device on the Energy Isolation List and must be tagged.
 - 5.13.5 For more information, see RSI 08-09 *Critical Safety Devices*, RSI 02-09 *Isolation of Relief Devices on In-Service Equipment*, and RSI 14-3-3 *Safety Relief Devices*.
-
- 5.14.1 A temporary release will be used when a piece of equipment that has been serviced under lockout or tagout must be temporarily energized for testing, positioning, steaming, rinsing, purging, etc.
 - 5.14.2 The Owning Department will ensure:
 - a. All affected employees are clear of the area.
 - b. All locks/tags are removed from the lockbox.
 - c. Any item or equipment that could present a hazard during the re-energization is removed from the area.
 - 5.14.3 Owning Department will:
 - a. Assign a Temporary Release number and document the Reason for Temporary Release on the *Status Change/Temporary Release Log* (RSI 08-02-F05).
 - b. Remove lock and keys from Primary Lockbox.
 - c. Remove locks/tags from those devices necessary for re-energization.
 - d. Record the Temporary Release/Status Change number for each EID on the LOTO log sheet.
 - e. Sign and date the Temporary Release section of the *Status Change/Temporary Release Log* (RSI 08-02-F05) in the Equipment/Area Safe column to indicate re-energization is ready to commence.
 - f. After the temporary release is complete, replace locks and tags after EIDs are returned to proper status. (If locks/tags are reused, the name/date on the tags does not need to be changed.)
 - g. Test to verify that the equipment is isolated and de-energized.
 - h. Lock Primary Lockbox with lock and any associated ESI tags.
 - i. Sign and date the Isolation Restored section of the *Status Change/Temporary Release Log* (RSI 08-02-F05).
-

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5.15 Status Change / Relocation of LOTO

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- 5.14.4 After the temporary release has been performed the Owning Department Representative and the Servicing Group Representative will:
- a. Verify that equipment is isolated and de-energized.
 - b. Lock/tag Primary Lockbox and install associated ESI tags.
-
- 5.15.1 A status change will be used when an Energy Isolation Devices must be inspected, repaired, removed, replaced, etc., and results in a change to the LOTO plan by transferring LOTO hardware from that Energy Isolation Device to other Energy Isolation Devices to ensure the same integrity of the LOTO system is maintained.
- A status change will also be used to document the removal of a piece of equipment from the LOTO. (i.e., removing a sight glass, removing a spool piece, etc.)
- 5.15.2 Owning Department will:
- a. Identify isolation points required to maintain the integrity of the existing work scope.
 - b. Assign a Status Change number and document the Reason for Status Change on the *Status Change / Temporary Release Log* (RSI 08-02-F05).
 - c. Field verify the status change with the Shift Supervisor or Ops designee who will sign the EID verification section on the *Status Change / Temporary Release Log* (RSI 08-02-F05).
 - **Note:** For work on MCC's and starter rack breakers, an Electrical Department representative will be present during field verification to provide approval to proceed.
 - d. Complete those LOTO requirements and note the Status Change number for each EID necessary for the relocation on the LOTO log sheet.
 - e. Line preparation and de-energization must be completed to ensure safe condition of any additional lines and/or equipment included in the new LOTO system.
 - f. Sign and date the Status Change Complete section of the *Status Change / Temporary Release Log* (RSI 08-02-F05).
 - g. Remove LOTO equipment from the Energy Isolation Device that is now part of the work scope.
- 5.15.3 Review the change with the Maintenance Authorized Employees associated with the job.
-

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5.16 Lockout Spanning More Than One Operational Area

- 5.16.1 The Primary Owning Department Representative is the employee responsible for the lockout where the physical location of the work is to be performed.
- 5.16.2 The Primary Owning Department Representative will maintain the Primary Lockbox and energy isolation list in their possession.
- 5.16.3 The Primary Owning Department Representative will provide all locks and tags for the energy isolation devices (including those used by the secondary operator(s) outside of their unit.)
- 5.16.4 The Primary Owning Department Representative will coordinate the Isolation Plan with the Secondary Operator outside their unit.
- 5.16.5 The Secondary Operator will identify, isolate, de-energize, and apply the supplied Primary Owning Department locks and tags. The Primary Owning Department Representative will document the energy isolation devices, locks/tags, numbers, etc. on their energy isolation.
- 5.16.6 The Secondary Operator will initial the energy isolation list installation column of the energy isolation list when the lockout of their energy isolation devices is complete.
 - The Secondary Operator is also required to initial the Energy Isolation Device Removal section of the energy isolation list after the locks and tags are removed from their energy isolation devices.
- 5.16.7 The Secondary Operator will attach a Secondary Unit Continuity Lock and green Energy Isolation Device Tag to the Primary Owning Department lockbox.
- 5.16.8 The Primary Owning Department Representative will sign the Owning Department verification section after all locks have been installed and the equipment has been verified clear of energy.
- 5.16.9 The Primary Owning Department Representative and Secondary Operator will both participate in the Joint Job Site Visit. It is acceptable for the Operations Supervisor to fill this role for single person units or when an Owning Department Representative is not available.

5.17 Electrical Equipment

- 5.17.1 Electrically powered devices will be locked out by disconnecting the main breaker and then attaching a lockout device and lockout tag to the breaker to prevent energizing of the equipment.
 - Locking out the local Start/Stop switch is not an acceptable lockout point.

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- 5.17.2 Motor starter and panel board breakers will be de-energized by either the Owning Department or a qualified electrician.
 - Owning Department can only switch motor starter circuit and panel board breakers labeled 480 volts and below.
 - If the breaker is above 480 volts it must be operated by a qualified electrician. Proper PPE per RSP-1162 is required to operate a circuit breaker.
 - 5.17.3 The Electrical Department is responsible for maintaining the lockout on substations, power transmission, and distribution systems inside the refinery.
 - 5.17.4 For electrical equipment and instrumentation working on less than 50 volts, a maintenance supervisor will make a determination on whether it is required to be locked out.
 - This determination will be based off whether sufficient energy is present to harm employees.
 - 5.17.5 For isolation scenarios when working on substation / MCC / starter racks during TAR, see Section 5.9, Electrical LOTO for TARs.
-

5.18 Electrical Troubleshooting

- 5.18.1 Electrical work requiring the circuit to remain energized for the purpose of troubleshooting (i.e., using electrical testing equipment) will be allowed and the *Electrical Safe Work Practices*, RSP-1162-000, Sections 7.1.5 will be followed.
 - 5.18.2 Electrical troubleshooting will require a safe work permit and only be performed by qualified personnel as defined by the *Electrical Safe Work Practice*, RSP-1162-000.
-

5.19 Single Energy Source Isolation

- 5.19.1 Any work performed on equipment under single energy source isolation will be locked and tagged by the Servicing Department Representative.
 - Each employee working on the equipment is required to have an individually identified lock/tag.
 - De-energization will be verified prior to performing work.
 - 5.19.2 If more than one lock is required to isolate the equipment, the normal Lockout procedure will apply.
-

5.20 Owning Department Performed Work

- 5.20.1 Lockout is required for all jobs not listed as a Minor servicing activity in Appendix C.
 - 5.20.2 The Owning Department will isolate, de-energize and lockout each piece of equipment before work is performed.
 - 5.20.3 If more than one Owning Department Representative assists in the servicing work, they will apply an individually identified lock/tag on the lockbox.
-

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6.0 TRAINING

6.1 Training Requirements

A comprehensive training program ensures that employees and contractors understand the purpose and requirements of the Control of Hazardous Energy and LOTO RSI. Training will include the following:

- a. Owning Department Representatives will receive training on this RSI and in the recognition of applicable hazardous energy sources, the type and magnitude of the energy available in the workplace, and the methods and means necessary for energy isolation and control.
- b. Each affected employee will be instructed in the purpose and use of this RSI and regarding the prohibition relating to attempts to restart or reenergize machines or equipment which are locked out or tagged out.
- c. Servicing Groups performing work involving energy isolation and LOTO must be trained and knowledgeable in the requirements of Control of Hazardous Energy and Lockout/Tagout, including the local RSI.
- d. Non-compliance with any portion of this RSI will be evaluated to determine violation(s) of a Life Critical Safety Rule (see [RSP-1700-000](#)).

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7.0 INSPECTIONS AND AUDITS

7.1 Inspection and Audit Requirements

- 7.1.1 Periodic audits of the LOTO program will be conducted as described in the Tier I Safety Audit Program.
- 7.1.2 Annual inspections will be conducted by the Safety Department to verify:
 - a. the steps in the energy control program are being properly followed,
 - b. the authorized employees involved know their responsibilities under the procedure, and
 - c. the procedure is adequate to provide the necessary protection and to identify what changes, if any, are needed.
- 7.1.3 The annual inspection will review the following items:
 - a. Trends/significant findings identified from:
 - Monthly LOTO audits
 - Contractor Field Safety Tier I LOTO audits
 - b. OSHA LOTO citations
 - c. PSM Tier I Safe Work Practices audit
 - d. Tier II audit findings
 - e. Tier III audit findings
 - f. Life Critical LOTO incidents
 - g. Intalex incidents related to LOTO
- 7.1.4 The *Safe Work Permit Audit Checklist* (RSI 08-01-F03) is available for conducting this audit.

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8.0 REVIEW AND REVISION HISTORY

8.1 History of Revisions

The Table 2 provides the revision history for this document.

Table 2 Revision History

Revision	Date	Change Author	Reason for Change
0			Original Issue

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APPENDIX A - PROCESS/ENERGY ISOLATION MATRICES

Table 3 Minimum Energy Isolation Requirements

	Electrical	Radiation	Mechanical	Hydraulic	Pneumatic
Work Activity/Type of Energy	Motor Circuits, Busses, Battery Circuits, Feeders, Control Circuits, Etc.	Laboratory Instrumentation, Level Measure Devices, Etc.	Flywheels, Trolleys, Spring-Tensioned Equipment, Clutches, Elevated Machine Members, Pump Impellers, Etc.	FCCU Slide Valves(s) Control System, Hydraulic Motors, Other Hydraulic Systems, Etc.	Air Driven Actuators, Etc.
Cold Work	Lockout (Note 6)	Lockout	Lockout	Lockout	Lockout
Hot Work	Lockout (Note 6)	Lockout	Lockout	Blind	Blind
Confined Space Entry	Lockout (Note 6)	Lockout	Lockout	Blind	Blind

Stream Type:	Corrosives	Hazardous Waste	High Temp. or Pressure	Hydrocarbon	Toxics	Non-Flammable	Utilities	Other
Work Activity / Process Stream Characterization	Sulfuric, Phosphoric, Spent or Fresh Caustics	API, DAF, Waste-Water Liquids & Solids	BFW, Steam, Condensate (>300°F)	Hydrogen, Fuel Gas, Flue Gas, LPG, Lube Oil, Naphtha, Crude, Slurry, Etc.	Antimony, Ammonia, Hydrogen Sulfide, Amine, Chlorine, Benzene, Nitrogen (Note 3)	Cooling Water, Fresh Glycol	Instrument Air, Plant Air, Utility Water, Firewater	Misc. Additives
Cold Work	Lockout	Lockout	Lockout	Lockout	Lockout	Lockout	Lockout (Note 4/ Note 5)	Lockout
Hot Work	Blind	Blind	Blind	Blind	Blind	Lockout	Lockout (Note 4/ Note 5)	Blind
Confined Space Entry (Note 8)	Blind	Blind	Blind	Blind	Blind	Blind (Note 1/ Note 7)	Blind (Note 1/ Note 2)	Blind

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Stream Type:	Isolation requirements for energy sources that fall under more than one category are set by the requirements for the most hazardous component.
Minimum Isolation Requirements:	Higher level protection can always be used. Lower level isolation than is listed requires a variance. (See RSI 08-20 and form 08-20 A)
Cold Work:	Any maintenance, repair or construction activity that is not hot work or does not involve confined space entry. Invasive work on equipment containing Corrosives, Hydrocarbons, and Toxics will not be left unattended unless blinded. Additionally, if there are any indications of primary isolation not holding (e.g. leaking by), blinding will be required by the Owning Department.
Hot Work:	Any maintenance, repair or construction activity involving the use of open flames, spark or heat producing equipment.
Confined Space Entry:	The action by which a person passes through an opening into a confined space. Entry is considered to have occurred as soon as any part of the entrant's body breaks the plane of an opening into the space.
Double Block & Bleed:	If unable to blind the alternate use of locked double block & bleed valves is acceptable if: <ol style="list-style-type: none"> Block valves verified closed & tight. Bleed valves and piping verified open & clear. Block valves are locked closed & the bleed valve is locked open. RSI Variance (RSI 08-20 and 08-20 A form) is completed.

Note 1: For hot work and confined space entry into cooling towers, clarifiers, clear-wells, and reactivator, Lockout is acceptable.

Note 2: Lockout is acceptable for entry into an excavation considered a confined space where a fire water main will be opened.

Note 3: Exception - Nitrogen is used for inert entries and may be used as a purge gas for safe equipment preparation.

Note 4: Lockout exception – Instrument air on equipment such as control valves, purge panels, pneumatic controllers and transmitters.

Note 5: Utility Streams may not be configured for Lockout isolation. In the rare event Lockout cannot be utilized then Tagout methods are acceptable.

Note 6: Electrical situations that cannot be locked out, an additional measure of isolation must be implemented (e.g., removal of circuit element, removal of fuse, disconnect wire, opening a second disconnecting device).

Note 7: Entry into the shroud area of cooling towers (e.g., for gear box repairs, motor PMs) does not require blinding. The water to the cell must be locked out and the fan must be locked out. Entry into an in-service cooling tower is acceptable, if the following conditions are met:

- Water to the cell is locked out,
- Platforms and walkways are structurally sound, and
- Appropriate PPE is utilized.

Note 8: Lockout/Tagout is acceptable for confined space entry above the roof on internal and external floating roof tanks.

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APPENDIX B - ALTERNATIVE GROUP LOCKOUT/TAGOUT PROCEDURES

B.1 When the use of the Group Lockout Tag is Permitted

- B.1.1 When complex equipment is being serviced or maintained, when there are many sources of energy, and/or when servicing/maintenance work extends over multiple shifts, OSHA permits employers to utilize an alternative procedure to each employee applying personal locks. During these periods of high maintenance, the Group Lockout Tag may be used to account for Servicing Group Representatives.
- B.1.2 The following factors will be evaluated to determine whether the equipment being serviced or maintained is so complex as to necessitate a departure from the conventional group lockout/tagout procedures:
- a. Physical size of the equipment,
 - b. Number of employees performing the servicing/maintenance,
 - c. Number of energy isolating devices to be locked/tagged out, and
 - d. Interrelationship of the components in the system or between different systems.
- B.1.3 The use of the Group Lockout Tag will be approved by the Martinez site HESS Manager.

B.2 Elements to be in Place for Alternative System

- In order to achieve the same protection as that provided by the application of personal locks, the following elements must be in place in the alternative system to be considered similar to the normal Primary Lockbox and Secondary Lockbox system.
- a. The Servicing Group Representative who is acting as the permit receiver will fill out the front portion of the Group Lockout Tag in the "Craft Acceptance" section.
 - b. Each Servicing Group employee working on the isolated equipment is responsible for signing onto the Group Lockout Tag as if they were applying a personal lock to the box.
 - c. Each Servicing Group Representative at the conclusion of their job, shift, or involvement will sign off of the Group Lockout Tag as if they were removing a personal lock.
 - d. The Lock/Tag Removal in the Absence of the Servicing Group Representative process will be applied for any Servicing Group Representative not signing off of a Group Lockout Tag.
 - e. After work is completed, the Group Lockout Tag will be attached to the appropriate work permit so that the accountability of exposed employees is maintained.

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APPENDIX C - APPROVED MINOR SERVICING ACTIVITIES

C.1 Matrix

Table 4 is the Approved Minor Servicing Activities Matrix. This table is applicable to both Operations and Maintenance activities.

Table 4 Approved Minor Servicing Activities Matrix

Activity	Justification	Alternative Measures to LOTO
Replacing pressure gauge and servicing pressure transmitters	<ul style="list-style-type: none"> ➤ Done during normal production (intended function of process equipment un-interrupted) ➤ Routine, Repetitive and Integral – action is repeated on a regular basis during routine technician rounds to ensure equipment and process monitoring is available 	<ul style="list-style-type: none"> ➤ Verification that isolation valve is closed ➤ Ensure not in line of fire
Light bulb replacement (bulbs not broken)	<ul style="list-style-type: none"> ➤ Done during normal production (intended function of process equipment un-interrupted) ➤ Routine, Repetitive and Integral – action is repeated on a regular basis during routine technician rounds to ensure safety and equipment/process monitoring 	<ul style="list-style-type: none"> ➤ Verification that power is off (switch, etc.) ➤ Wear proper hand protection
Installing and removing utility hoses, fire water hoses and drain hoses/tubing. This includes small bore piping (valves, check valves and other fittings) that are required to connect utility hoses and drain hoses to the process.	<ul style="list-style-type: none"> ➤ Done during normal production (intended function of process equipment un-interrupted) ➤ Routine, Repetitive and Integral – action is repeated on a regular basis during routine operator rounds to ensure equipment and process monitoring is available and during equipment troubleshooting 	<ul style="list-style-type: none"> ➤ Verification that isolation valve is closed ➤ Ensure not in line of fire ➤ Reference RSP-1150-010 and SP-50-05 (Caustic and Utility Connections to Process Lines and Vessels)
Removing plugs and caps from bleeders/valves	<ul style="list-style-type: none"> ➤ Done during normal production (intended function of process equipment un-interrupted) 	<ul style="list-style-type: none"> ➤ Verify the isolation valve is closed ➤ Ensure not in line of fire
Installing and removing bleeder cleaner tools	<ul style="list-style-type: none"> ➤ Routine, Repetitive and Integral – action is repeated on a regular basis during routine operator rounds for equipment or process monitoring and during equipment troubleshooting 	<ul style="list-style-type: none"> ➤ Installing bleeder cleaners and conducting gauging actions - operating guidelines / training documents must be in place to define actions and safety provisions to be followed.
Gauge catalyst hopper, salt drier, tank, etc.		

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Table 4 Approved Minor Servicing Activities Matrix

Activity	Justification	Alternative Measures to LOTO
Removing blind flange to back flush a cooling water exchanger	<ul style="list-style-type: none"> ➤ No potential for release of hazardous material ➤ Done during normal production (intended function of process equipment un-interrupted) ➤ Routine, Repetitive and Integral – activities are repeated during routine operator rounds or PM frequency, monitor process conditions or ensure integrity of system 	--
Remove coupon holder in cooling water circuit		
PM or pH probes in cooling water circuits		
Replacing small cooling water PSVs (3/4"x1")	<ul style="list-style-type: none"> ➤ No potential for release of hazardous material ➤ Done during normal production (intended function of primary process un-interrupted) ➤ Routine, Repetitive and Integral – action is repeated based on a PM frequency to ensure adequate relief protection is in place. 	Refer to local policies and procedures for relief valve isolation.
Steam trap replacement and cold work steam tracing repairs (systems that can be isolated by two valves)	<ul style="list-style-type: none"> ➤ Done during normal production (intended function of primary process un-interrupted) ➤ Routine, Repetitive and Integral – action is repeated on a regular basis based on observations from routine operator rounds. Properly operating steam tracing is essential to operation of the process. 	<ul style="list-style-type: none"> ➤ Verify system is isolated and de-pressured ➤ PPE requirements include typical Class D PPE nitrile insulated gloves and a face shield
Remove and clean lube oil filters and "Y" strainers.	<ul style="list-style-type: none"> ➤ Done during normal production (intended function of process equipment un-interrupted) ➤ Routine, Repetitive and Integral – action is repeated on a regular basis during routine operator rounds to ensure integrity of system 	Operating guidelines or training documents must be in place to adequately define actions and safety provisions that must be followed.
Connect hoses for caustic, acid and chemical deliveries	<ul style="list-style-type: none"> ➤ Done during normal production (intended function of process equipment un-interrupted) ➤ Routine, Repetitive and Integral – action is repeated on a regular basis and is inherent for process operations 	<ul style="list-style-type: none"> ➤ Verify isolation valve(s) is isolated ➤ Operating Procedures and/or guidelines must be in place to adequately define actions and safety provisions to be followed.
Completing hose loops for product transfer		

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Table 4 Approved Minor Servicing Activities Matrix

Activity	Justification	Alternative Measures to LOTO
Blow down sight glass	<ul style="list-style-type: none"> ➤ Done during normal production (intended function of process equipment un-interrupted) ➤ Routine, Repetitive and Integral – action is repeated on a regular basis during routine rounds to ensure process monitoring is available and during troubleshooting 	<ul style="list-style-type: none"> ➤ Verify system is blocked in (if applicable) ➤ Additional PPE will be utilized based on Invasive Work Risk Assessment Matrix, other form of hazard review, or other policy ➤ Ensure not in line of fire
Steaming out sight glass, control valve, etc.		
Blow down high and low side taps of flow cell		
Troubleshooting/servicing transmitters with a manifold between root valves & transmitter that allows for isolation	<ul style="list-style-type: none"> ➤ Done during normal production (intended function of process equipment un-interrupted) ➤ Routine, Repetitive and Integral – action is repeated on a regular basis during routine rounds to ensure process monitoring is available and during troubleshooting 	<ul style="list-style-type: none"> ➤ Verification that isolation valves are closed ➤ Additional PPE will be utilized based on Invasive Work Risk Assessment Matrix, other form of hazard review, or other policy ➤ Required safety measures must be documented on the work permit ➤ Ensure not in line of fire
Calibration and repair of equipment in analyzer buildings		
Changing motor and blower air filters	<ul style="list-style-type: none"> ➤ Done during normal production (intended function of process equipment un-interrupted) ➤ Routine, Repetitive and Integral – action is repeated on a regular basis during routine operator rounds to maintain condition of equipment. 	--
Blinding small bore fuel gas piping to process heaters	<ul style="list-style-type: none"> ➤ Done during normal production (intended function of process equipment un-interrupted) ➤ Routine, Repetitive and Integral – action is done based on observations from routine operator rounds to maintain equipment reliability. 	<ul style="list-style-type: none"> ➤ Verification of isolation ➤ Guideline or training document must be in place to adequately define actions and safety provisions that must be followed.
Repair/Cleaning of tips or replacement of flex hoses for burners or process heaters		
Replace Pin orifice in reboiler CO ₂ vent	<ul style="list-style-type: none"> ➤ Done during normal production (intended function of primary process un-interrupted) ➤ Routine, Repetitive and Integral – action is repeated on a regular basis based on observations from routine operator rounds for equipment reliability. 	<ul style="list-style-type: none"> ➤ Verify isolation valve is isolated. ➤ PPE requirements include typical Class D PPE nitrile insulated gloves and a face shield

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Table 4 Approved Minor Servicing Activities Matrix

Activity	Justification	Alternative Measures to LOTO
Perform maintenance or calibration of control valves by blocking in and disconnecting the supply air tubing	<ul style="list-style-type: none"> ➤ Done during normal production (intended function of process equipment un-interrupted) ➤ Routine, Repetitive and Integral – action is repeated on a regular basis to ensure equipment is available ➤ No potential for release of hazardous material 	<ul style="list-style-type: none"> ➤ Verification that isolation valves are closed ➤ Additional PPE will be utilized based on Invasive Work Risk Assessment Matrix, other form of hazard review, or other policy ➤ Required safety measures must be documented on the work permit ➤ Ensure not in line of fire

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APPENDIX D –TAGS

D.1 Tags

The following tags are available for use in support of this procedure. Examples are provided in Figures 1 through 8.

- Energy Isolation Device Tag
- Energy Isolation Blind Streamer
- Confined Space Blind Streamer
- Do Not Operate Streamer
- Hydrotest Streamer
- Return-to-Service Checklist Tag
- Energy Source Isolated Tag (Tagout)
- Do Not Operate Tag
- Group Lockout Tag

These tags are available at the Marathon Martinez Warehouse.



Figure 1 Energy Isolation Device Tags (Example)

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Figure 2 Energy Isolation Blind Streamer Tag (Example)



Figure 3 Confined Space Streamer Tag (Example)



Figure 4 Bleeder Tag (Example)



Figure 5 Hydrotest Tag (Example)

beAed BN# 258-0290-19

**MPC EQUIPMENT
RETURN TO SERVICE CHECKLIST**

Equipment Name/Number: _____

Check Item	Verification
1. Review job location, area housekeeping acceptable. If "NO", notify supervisor.	<input type="checkbox"/> YES <input type="checkbox"/> N/A
2. Rotating equipment guards and insulation are in place for personnel protection.	<input type="checkbox"/> YES <input type="checkbox"/> N/A
3. Temporary piping or tubing has been removed from the equipment.	<input type="checkbox"/> YES <input type="checkbox"/> N/A
4. Verify blinds are removed and/or permanent blinds are reinstated.	<input type="checkbox"/> YES <input type="checkbox"/> N/A
5. Verify gaskets are installed.	<input type="checkbox"/> YES <input type="checkbox"/> N/A
6. Bolts verified tight.	<input type="checkbox"/> YES <input type="checkbox"/> N/A
7. Complete system P&ID walk down has been completed (print, sign, attach to this checklist.)	<input type="checkbox"/> YES <input type="checkbox"/> N/A
8. Final leak testing has been completed and any leaks found have been repaired.	<input type="checkbox"/> YES <input type="checkbox"/> N/A
9. Verify all bleeders/vents are closed, plugs and caps installed.	<input type="checkbox"/> YES <input type="checkbox"/> N/A
10. Relief paths including PSV(s) are open and secured.	<input type="checkbox"/> YES <input type="checkbox"/> N/A
11. Has MOC been approved for startup?	<input type="checkbox"/> YES <input type="checkbox"/> N/A

Owner: _____ Date: _____

Figure 6 Return-to-Service Tag (Example)

beAed BN# 258-0290-18

TAG# _____

DANGER

DO NOT OPERATE

ENERGY SOURCE ISOLATED BY
TAG OUT

CRAFT/GROUP: _____

SIGNATURE: _____ DATE: _____

TYPE OF ENERGY SOURCE: _____

beAed

DANGER

DO NOT OPERATE

ENERGY SOURCE ISOLATED BY
TAG OUT

THIS TAG IS
SYMBOLIC
OF A LOCK



Figure 7 Energy Source Isolated Tag (Tag Out) (Example)



Figure 8 Do NOT Operate Tag (Example)




Figure 9 shows two 'Group Lockout' tags. The left tag is labeled 'BN# 258-0290-20' and 'Martinez Refinery'. It has fields for 'DATE:', 'TIME:', 'LOCKBOX #:', 'CRAFT REPRESENTATIVE:', 'CRAFT:', and 'CONTACT INFORMATION:'. The right tag is labeled 'BN# 258-0290-20' and has a table for 'WORKERS PROTECTED BY THIS LOTO DEVICE:' with columns for 'NAME (print)', 'ACCEPT (initial)', and 'RELEASE (initial)'.

Figure 9 Group Lockout Tag (Example)

Figure 11 provides instructions and examples for completing the Energy Isolation List Form.

Figure 10 Energy Isolation List Form (RSI 08-02-F01) (Example)

 Marathon Petroleum Company LP	RULES & STANDING INSTRUCTIONS	08-02-F01
MARTINEZ REFINERY	Energy Isolation List	

Unit:	Equipment No:	Equipment Description: <i>Name of the equipment or service the equipment is in.</i>	Sheet #
Job Description: <i>Maintenance Scope, Job Card #, Work Order #, etc.</i>			_____ of _____
Lockbox No. / Location: <i>Location will be necessary if using a satellite lockbox or have lockboxes in more than one area.</i>			

Energy Sources Locked/Tagged							
<input type="checkbox"/> Process	<input type="checkbox"/> Electrical	<input type="checkbox"/> Steam	<input type="checkbox"/> Water	<input type="checkbox"/> Air	<input type="checkbox"/> Nitrogen	<input type="checkbox"/> Radiation	<input type="checkbox"/> Hydraulic
<input type="checkbox"/> Other:							

Energy Isolation Device Identification								
Lock / Tag No.	Location / Description of Isolation Point	Status On/Off Open/Closed	Installation		Removal		Status Change / Temporary Release	
			Initials	Date	Initials	Date	Number	Initials
<i>List lock and/or tag numbers here</i>	<i>Describe each isolation point here. The description should have enough information to make the isolation point easily identifiable. (e.g. 6" suction line, electrical breaker in substation, 2" warm up line)</i>	<i>Status required for maintenance</i>						
1111	8" Suction Line	Closed					<i>Status Change1</i>	
2222	6" Discharge Line	Closed						
3333	Electrical Breaker at Switch Rack 1234	Open/Off						
4444	2" Flare Line	Closed					<i>Temp Release1</i>	
5555	Low Point Bleeder on Pump Case	Open					<i>Temp Release1</i>	

Verification of Isolation (List all Isolation Verification Points that are used in the preparation of the equipment)							
Location / Description of Isolation Verification Point	Means Used to Verify Control of Hazardous Energy	Initials	Date	Location / Description of Isolation Verification Point	Means Used to Verify Control of Hazardous Energy	Initials	Date
<i>Pump Switch for 1-P-0001</i>	<i>Push start button</i>			<i>High Point Vent</i>	<i>Vent line until no pressure remains</i>		
<i>Bleeder between check valve & discharge valve</i>	<i>Use bleeder reamer to verify valve is not plugged; has a history of plugging</i>						

Note: If there are not adequate means to verify that the equipment is isolated, requirements in RSP-1121-10, Section 3.1, must be followed.

Owning Department Supervision Approval of Isolation and Verification of Isolation Plan		
By signing below, owning department supervision is approving the plan documented on this isolation list that will be used to isolate the equipment and to verify the equipment is de-energized following isolation		
Date:	Time:	Owning Department Supervision Signature:

Owning Department Verification of Isolation		
By signing below, the owning department representative is confirming that the equipment has been isolated and de-energized according to the plan documented on this isolation list		
Date:	Time:	Owning Department Representative Signature:

Servicing Group Verification of Isolation (Verification signatures may be documented on work permit if allowed by site)					
Date:	Time:	Signature/Company:	Date:	Time:	Signature/Company:
Date:	Time:	Signature/Company:	Date:	Time:	Signature/Company:
Date:	Time:	Signature/Company:	Date:	Time:	Signature/Company:

Safety Comments:

RSW-ESS-08-02-RSI-MZ-F01 Energy Isolation List Form Rev 0--w instruc.docx
(Rev 0) 7/23/2020

Figure 11 Instructions for Completing the Energy Isolation List Form (RSI 08-02-F01) (Example)

E.2 Supplemental Energy Isolation List Form




E.4 Supplemental Isolation Blind List Form

The following is an example of the Supplemental Isolation Blind List Form (RSI 08-02-F04).

[illegible]

Figure 14 Supplemental Blind List Form (RSI 08-02-F04) (Example)

[illegible]

 Marathon Petroleum Company LP		RULES & STANDING INSTRUCTIONS				08-02-F05	
MARTINEZ REFINERY		Status Change/Temporary Release Log					

Unit:	Equipment No:	Equipment Description:	Sheet #
Job Description:			___ of ___
Lockbox No. / Location:			

Temporary Release							
Temporary Release Number	Reason for Temporary Release	Equipment/Area Safe for Temporary Release			Isolation Restored		
		Date	Time	Owning Department	Date	Time	Owning Department
# from LOTO List	If a temporary release must occur for the purpose of testing, positioning, steaming, rinsing, purging, etc. it will be documented here.			Note #1			Note #2
	Example						
1	The bleeder and flare line were required to be opened for additional decontamination because the equipment started to pressure up during maintenance.						

Status Change							
Status Change Number	Reason for Status Change	Energy Isolation Verification Complete			Status Change Complete		
		Date	Time	Owning Department Approval Supervision	Date	Time	Owning Department
# from LOTO List	If a status change must occur it will be done in accordance with RSP-1121-010 Section 4.6 and documented here. A status change is an actual change to the isolation and isolation list, such as removing an isolated valve and replacing it with a spool piece.			Note #3			Note #4
	Example						
1	The suction valve was found to be leaking causing the equipment to pressure up. A second block valve was closed and locked.						
Note #1	Prior to releasing the isolation, an owning department rep will verify that the servicing group is accounted for and that the equipment is in a safe state to release the isolation.						
Note #2	Once the isolation that was released is restored an owning department rep will verify the isolation and sign the list.						
Note #3	A Shift Foreman or higher-level employee is required to approve a status change.						
Note #4	An owning department rep will sign this section once the status change has been performed and the isolation is verified.						


RSW-ESS-08-02-RSI-MZ-F05 Status Change Form Rev 0 w Instruc.docx (Rev 0) 7/23/2020

Figure 16 Instructions for Completing the Status Change / Temporary Release Form (Example)

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E.6 LOTO Lock, Shift or Personnel Change Tag Removal Notification

Figure 17 is an example of the LOTO Lock, Shift, or Personnel Change Tag Removal Notification Form (RSI 08-02-F06).

 Marathon Petroleum Company LP	RULES & STANDING INSTRUCTIONS		08-02-F06	
MARTINEZ REFINERY	LOTO Lock, Shift, or Personnel Change Tag Removal Notification		Page 1 of 1	
RESPONSIBLE DEPT.	CONTENT STEWARD	APPROVED BY		
Environment, Health, Safety & Security				
ORIGINAL ISSUE:	LATEST REVISION:	NEXT REVIEW:		

SECTION A To be Completed by Operations Department				
	YES	NO		
Lock / Tag Must Be Removed So Equipment Can Be Returned to Service:	<input type="checkbox"/>	<input type="checkbox"/>		
Lock / Tag Must Be Removed So Equipment Can Be Temporarily Energized:	<input type="checkbox"/>	<input type="checkbox"/>		
Lock / Tag Must Be Removed So Additional LOTO Equipment Can Be Added:	<input type="checkbox"/>	<input type="checkbox"/>		
Individual or Craft is Not Available to Remove Lock / Tag:	<input type="checkbox"/>	<input type="checkbox"/>		
Attempt(S) Made to Contact Individual/Craft: <input type="checkbox"/> Radio <input type="checkbox"/> Phone <input type="checkbox"/> Page <input type="checkbox"/> Other:				
LOCK / TAG REMOVAL				
Lock / Tag Removed Time: AM / PM	Lock / Tag #:	Lock / Tag Owner:		
Lock / Tag Removed Date:				
ISOLATION POINTS THAT WERE REMOVED, ALTERED OR ADDED				
Lock/Tag #:	Description:			
Lock/Tag #:	Description:			
Lock/Tag #:	Description:			
Lock/Tag #:	Description:			
Lock/Tag #:	Description:			
Lock/Tag #:	Description:			
Lock/Tag #:	Description:			
Lock/Tag #:	Description:			
Lock/Tag #:	Description:			
Lock/Tag #:	Description:			
Lock/Tag #:	Description:			
TITLE	PRINTED NAME	SIGNATURE	DATE	TIME
Operation Supervisor				AM / PM
Unit Operator				AM / PM
AFTER COMPLETING SECTION A, ENSURE FORM IS GIVEN TO CRAFT EMPLOYEE'S SUPERVISOR PRIOR TO EMPLOYEE STARTING NEXT SHIFT				

SECTION B To be Completed by Employee Whose Lock / Tag Was Removed				
	YES	NO		
I was informed of the removal of my Lock/Tag before returning to this job.	<input type="checkbox"/>	<input type="checkbox"/>		
TITLE	PRINTED NAME	SIGNATURE	DATE	TIME
Employee				AM / PM
FORWARD TO SAFETY DEPARTMENT WHEN COMPLETED				


RSW-ESS-08-02-RSI-MZ-F06 LOTO Lock-Tag Removal Notice Rev 0.docx (Rev 0) 7/23/2020

Figure 17 LOTO, Lock, Shift, or Personnel Change Tag Removal Notification Form (RSI 08-02-F06) (Example)

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E.7 Hot Work Isolation by Engineering Plug Approval Form

Figure 18 is an example of the Hot Work Isolation by Engineered Plug Approval Form (RSI 08-02-F07).

 Marathon Petroleum Company LP	RULES & STANDING INSTRUCTIONS	08-02-F07
MARTINEZ REFINERY	Hot Work Isolation by Engineered Plug Approval Form	Page 1 of 1

Job Description/Scope of Work:		
Material in Line:		
Line Location:		
CHECKLIST		YES
Can lines be blinded?		
If yes, explain why engineered plug is being requested		
Is sealing gasket surfaces of the engineered plug compatible for the temperature and service of the line?		
Has the proper size of the engineered plug been determined?	Size Required:	
Is there any pressure on the system that will exert pressure on engineered plug? (If purge is used, a gauge must be used to ensure that the pressure does not exceed the manufacturer's pressure rating)		
Have arrangements been made to vent the engineered plug or the line upstream of the engineered plug and has the vent been verified to be unobstructed (e.g., by bubbling through water, using a bleeder reamer, etc.)?		
Have arrangements been made to monitor the line pressure? Provide details:		
Have stress relieving requirements been designated & implemented?		
List requirements:		
APPROVALS		
MPC Maintenance Planner/Foreman:	_____	Date: _____
MPC Engineer:	_____	Date: _____
MPC Day Foreman:	_____	Date: _____
MPC Safety Representative:	_____	Date: _____
Engineered Plug Contractor Representative:	_____	Date: _____
Maintenance Manager:	_____	Date: _____
Operations Manager:	_____	Date: _____
Attach the completed form to the Safe Work Permit		


RSW-ESS-08-02-RSI-MZ-F07 Hot Work Isolation by Eng Plg App Form Rev 0.docx (Rev 0) 7/23/2020

Figure 18 Hot Work Isolation by Engineering Plug Approval Form (RSI 08-02-F07)
(Example)

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E.8 Blinding and Energy Isolation Inspection Form

Figure 19 is an example of the Blinding and Energy Isolation Inspection Form (RSI 08-02-F08).

 Marathon Petroleum Company LP	RULES & STANDING INSTRUCTIONS	08-02-F08
MARTINEZ REFINERY	Blinding and Energy Isolation Inspection Form	Page 1 of 1

Equipment Type:	Equipment Name:	Date:
Equipment Number:	Work Permit Number:	

Attach the appropriate Energy Isolation List used during the inspection.

This equipment, its energy isolating devices, involved personnel, and applicable energy control procedure (isolation list) have been inspected and evaluated.

The conclusions are:	Yes	No	N/A
Did the authorized employee performing the inspection walk down the job to verify each energy isolation device (i.e., valve, disconnect, etc.) is de-energized and locked / tagged properly?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were appropriate isolation locks used on the energy isolation devices?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Did each individual apply a personal lock on the lockbox?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If contractors were involved, were locks/tags appropriate (identified owner)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Did all involved employees and contractors (authorized and affected) understand their responsibilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Was the Blinding and Energy Isolation Procedure(s) properly followed by everyone involved?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were all the energy sources properly isolated and is the equipment specific energy control procedure adequate?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Provide details for any NO responses above and include corrective actions and/or recommendations:

List the names of the Authorized Personnel performing the lockout/tagout:

CERTIFICATION OF ENERGY ISOLATION INSPECTION	
Authorized Employee Signature:	Date:

RSW-ESS-08-02-RSI-MZ-08 Blinding and Energy Isolation Inspection Form Rev 0.docx (Rev 0) 7/23/2020

Figure 19 Blinding and Energy Isolation Inspection Form (RSI 08-02-F08) (Example)