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## Task 19.1—Perform Valve Body Winterization or Corrosion Inhibition

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### 1.0 Task Description

This task involves the activities required to protect a valve against freezing and/or internal corrosion.

This task begins with the verification of the valve number/nameplate. This task ends with the completion of the required documentation.

The performance of this covered task may require the performance of other covered tasks such as:

- Operate Valves Remotely on a Liquid Pipeline System (Reference Task 43.4).
- Operate Valves Locally on a Liquid Pipeline System (Reference Task 63.4).

### 2.0 Knowledge Component

This task prepares valves to continue functioning properly in freezing conditions and/or corrosive environments.

An individual performing this task must have knowledge of:

- Injection equipment
- Valve Types
  - o Single-seated valves
  - o Double-seated valves
- Valve operation

Terms applicable to this task:

#### **body bleed (depressurization)**

The action of opening a body drain or vent to bleed off (reduce) internal body pressure or double-seated valves in either the full-open or closed position.

#### **body or body cavity**

The principal pressure-containing part of a valve where the closure element and seals are located.

#### **drain and vent plug**

A mechanical device used to vent or bleed off internal valve body pressure.

#### **leak-by**

For double-seated valves, this is an internal valve leak condition in a gate or ball valve where hazardous liquid can leak past either the upstream or the downstream seal into the valve body, thereby pressurizing the valve body.

#### **leak-through**

A condition in a gate or ball valve where hazardous liquid can leak past both valve seats, causing the valve to leak from the high-pressure side to the low-pressure side when it is closed. For single-seated valves, such as check valves, a condition where hazardous liquid can leak by the valve seat, causing the valve to internally leak when it is in the closed position.

Abnormal operating conditions (AOC) associated with the performance of this task include:

AOC Recognition	AOC Reaction
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Unexpected release or discharge of product.	Notify the appropriate personnel to take actions as required.
Damage to valve or valve component.	Notify the appropriate personnel to take actions as required.
<p>Valve Inoperable—Valve will not operate as intended or will not fully close/open.</p> <p>EXAMPLES</p> <ul style="list-style-type: none"> <li>— Valve indicator does not show the intended position.</li> <li>— Unexpected pressure and flow outcomes.</li> <li>— Inoperable operator/actuator or hand wheel.</li> </ul> <p>Excessive differential pressure across valve prohibits its operation.</p>	<p>Make the condition safe to the extent possible and according to Operator's procedures. Assess condition for safety, environmental, or physical damage.</p> <p>Reactions could include the following:</p> <ul style="list-style-type: none"> <li>— retry operation,</li> <li>— relieve excessive differential pressure,</li> <li>— shut down system (if qualified).</li> </ul> <p>Make appropriate notifications.</p>
A valve fails to seal properly.	Notify the appropriate personnel to take actions as required.

### 3.0 Skill Component

To demonstrate proficiency of this task, an individual must perform the following steps:

Step	Action	Explanation
1	Verify the valve identifier.	Ensure that the proper valve is located.
2	Notify the control center, local operations (if applicable), and any affected personnel prior to performing any maintenance.	This step ensures that the task has been scheduled and communicated and that the operational status has been confirmed.
3	Position the valve to isolate the valve body from the line pressure, if required.	The individual must follow the manufacturer's recommendations and/or the Operator's procedures.
4	Depressurize the valve body; drain nonpetroleum material (such as water or sediment) from the valve body. Flush until clean product is observed, then close the drain valve.	This step confirms that all nonpetroleum material has been removed from the valve so leak-by or leak-through can be observed if present.
5	Check for leak-by and leak-through sealing of valve.	The individual must follow the manufacturer's recommendations and/or the Operator's procedures. NOTE If that the valve fails to seal, proper notification must be communicated as per the Operator's procedure.
6	Connect the injection equipment, if required.	Follow the Operator's procedures for the valve type and injection equipment.
7	Operate the injection equipment and inject appropriate antifreeze or corrosion inhibitor.	The individual must follow the manufacturer's recommendations and/or the Operator's procedures.
8	Notify the control center, local operations (if applicable), and any affected personnel per the Operator's procedures.	This communication provides notification to personnel that the valve can be put back into service.
9	Document task results as per the Operator's procedures.	Documentation provides historical data for future maintenance of the valve.

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## Task 19.2—Perform Valve Lubrication

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### 1.0 Task Description

This task involves the activities required to lubricate the components of a valve.

This task begins with the verification of the valve number/nameplate. This task ends with the completion of the required documentation.

### 2.0 Knowledge Component

This preventative maintenance task lubricates the components of a valve to provide reliable operation. An individual performing this task must have knowledge of:

- How to determine valve types. Common types of valves include:
  - ball,
  - gate,
  - butterfly,
  - plug,
  - globe.
- How to determine valve actuator/operator types. Common types of valve actuators/operators include:
  - mechanical/hand,
  - hydraulic,
  - electronic,
  - pneumatic.
- How to properly lubricate valves.
- Different types of lubricating equipment:
  - Manual
  - High-pressure

Abnormal operating conditions (AOC) associated with the performance of this task include:

AOC Recognition	AOC Reaction
Unexpected release or discharge of product.	Notify the appropriate personnel to take actions as required.
Damage to valve or valve component.	Notify the appropriate personnel to take actions as required.
Valve Inoperable—Valve will not operate as intended or will not fully close/open. EXAMPLES — Valve indicator does not show the intended position. — Unexpected pressure and flow outcomes. — Inoperable operator/actuator or hand wheel. Excessive differential pressure across valve prohibits	Make the condition safe to the extent possible and according to Operator's procedures. Assess condition for safety, environmental, or physical damage. Reactions could include the following: — retry operation, — relieve excessive differential pressure, — shut down system (if qualified). Make appropriate notifications.

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its operation.

### 3.0 Skill Component

To demonstrate proficiency of this task, an individual must perform the following steps:

Step	Action	Explanation
1	Verify the valve identifier.	Ensure that the proper valve is located. If the valve identifier is missing, replace per Operator's specifications.
2	Notify the control center, local operations (if applicable), and any affected personnel prior to performing any maintenance.	This step ensures that the repair has been scheduled and communicated and that the operational status has been confirmed.
3	Lubricate the valve stem, bearings, and associated components with the appropriate lubricant.	The individual must follow the manufacturer's recommendations and/or the Operator's procedures. If unable to lubricate one or more components, follow the manufacturer's recommendations and/or the Operator's procedures.
4	Notify the control center, local operations (if applicable), and any affected personnel per the Operator's procedures.	This communication provides notification to personnel that the valve can be put back into service.
5	Document task results as per the Operator's procedures.	Documentation provides historical data for future maintenance of the valve.

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## **Task 19.3—Perform Valve Seat Sealing**

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### **1.0 Task Description**

This task involves verification of valve sealing and the injection of seat sealing products into a valve.

This task begins with the identification of the valve. This task ends with the completion of the required documentation.

The performance of this covered task may require the performance of other covered tasks such as:

- Operate Valves Remotely on a Liquid Pipeline System (Reference Task 43.4).
- Operate Valves Locally on a Liquid Pipeline System (Reference Task 63.4).

### **2.0 Knowledge Component**

Valve seat sealing is performed to complete a positive seal and prevent leak-by and leak-through conditions. An individual performing this task must have knowledge of:

- How to determine valve types. Common types of valves include:
  - ball,
  - gate,
  - butterfly,
  - plug,
  - globe.
- How to determine valve actuator/operator types. Common types of valve actuators/operators include:
  - mechanical/hand,
  - hydraulic,
  - electronic,
  - pneumatic.
- How to properly seal valves.
- Operation of high-pressure sealant injection equipment

Terms applicable to this task:

#### **leak-by**

For double-seated valves, this is an internal valve leak condition in a gate or ball valve where hazardous liquid can leak past either the upstream or the downstream seal into the valve body, thereby pressurizing the valve body.

#### **leak-through**

A condition in a gate or ball valve where hazardous liquid can leak past both valve seats, causing the valve to leak from the high-pressure side to the low-pressure side when it is closed. For single-seated valves, such as check valves, a condition where hazardous liquid can leak by the valve seat, causing the valve to internally leak when it is in the closed position.

#### **sealant**

Material injected into the valve seats to provide a temporary seal.

Abnormal operating conditions (AOC) associated with the performance of this task include:

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AOC Recognition	AOC Reaction
Unexpected release or discharge of product.	Notify the appropriate personnel to take actions as required.
Damage to valve or valve component.	Notify the appropriate personnel to take actions as required.
Valve Inoperable—Valve will not operate as intended or will not fully close/open. <b>EXAMPLES</b> — Valve indicator does not show the intended position. — Unexpected pressure and flow outcomes. — Inoperable operator/actuator or hand wheel. Excessive differential pressure across valve prohibits its operation.	Make the condition safe to the extent possible and according to Operator's procedures. Assess condition for safety, environmental, or physical damage. Reactions could include the following: — retry operation, — relieve excessive differential pressure, — shut down system (if qualified). Make appropriate notifications.

### 3.0 Skill Component

To demonstrate proficiency of this task, an individual must perform the following steps:

Step	Action	Explanation
1	Verify the valve identifier.	Ensure that the proper valve is located. If the valve identifier is missing, replace per Operator's specifications.
2	Notify the control center, local operations (if applicable), and any affected personnel prior to performing any maintenance.	This step ensures that the task has been scheduled and communicated and that the operational status has been confirmed.
3	Verify the valve is closed according to the manufacturer's instructions.	This step ensures that the valve is in the proper position to accept the sealant.  Manual control of the valve must be established to prevent inadvertent actuation of the valve during the performance of this task.
4	Position the valve to isolate the valve body from the line pressure.	The individual must follow the manufacturer's recommendations and/or the Operator's procedures.
5	Depressurize the valve body and drain nonpetroleum material (such as water or sediment) from the valve body, then close the drain valve.	The individual must follow the manufacturer's recommendations and/or the Operator's procedures.
6	Identify the appropriate type and amount of injection sealant at the proper injection pressure.	Sealants vary by manufacturer and application. This step ensures that the proper type and amount of sealant is used without damaging the valve.
7	Inject appropriate sealant into seats.	This step ensures that the valve can be properly sealed to prevent leak-by and leak-through.
8	Check for leak-by and leak-through sealing of valve.	The individual must follow the manufacturer's recommendations and/or the Operator's procedures.  NOTE In the event the valve fails to seal, proper notification must be communicated as per the Operator's procedure.
9	After confirming that a tight seal has been established, flush sealant from the injection ports and seats with grease cleaner/penetrant.	Sealants will dry out if not properly flushed and could plug injection passages.

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10	Notify the control center, local operations (if applicable), and any affected personnel per the Operator's procedures.	This communication provides notification to personnel that the valve sealing is complete.
11	Document task results as per the Operator's procedures.	Documentation provides historical data for future maintenance of the valve.

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## Task 19.4—Perform Valve Stem Packing Maintenance

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### 1.0 Task Description

This task involves identification of a valve stem seal and the injection of injectable packing into the valve stem seal gland.

This task begins with verification of the valve identifier. This task ends with the completion of the required documentation.

The performance of this covered task may require the performance of other covered tasks such as:

- Operate Valves Remotely on a Liquid Pipeline System (Reference Task 43.4).
- Operate Valves Locally on a Liquid Pipeline System (Reference Task 63.4).

### 2.0 Knowledge Component

Valve stem packing maintenance is performed to prevent leak-out and maintain proper valve function and integrity.

An individual performing this task must have knowledge of:

- How to determine valve types. Common types of valves include:
  - ball,
  - gate,
  - butterfly,
  - plug,
  - globe.
- How to determine valve actuator/operator types. Common types of valve actuators/operators include:
  - mechanical/hand,
  - hydraulic,
  - electronic,
  - pneumatic.
- How to properly insert packing.
- Operation of valve stem packing equipment

Terms applicable to this task:

**energized**

The act of maintaining the pressure of the injectable packing material.

**injectable packing**

Bulk material injected into the stem seal gland to provide a temporary or permanent seal.

**stem seal**

Seal surrounding the valve stem that prevents leakage.

Abnormal operating conditions (AOC) associated with the performance of this task include:

AOC Recognition	AOC Reaction
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Unexpected release or discharge of product.	Notify the appropriate personnel to take actions as required.
Damage to valve or valve component.	Notify the appropriate personnel to take actions as required.
<p>Valve Inoperable—Valve will not operate as intended or will not fully close/open.</p> <p>EXAMPLES</p> <ul style="list-style-type: none"> <li>— Valve indicator does not show the intended position.</li> <li>— Unexpected pressure and flow outcomes.</li> <li>— Inoperable operator/actuator or hand wheel.</li> </ul> <p>Excessive differential pressure across valve prohibits its operation.</p>	<p>Make the condition safe to the extent possible and according to Operator's procedures. Assess condition for safety, environmental, or physical damage.</p> <p>Reactions could include the following:</p> <ul style="list-style-type: none"> <li>— retry operation,</li> <li>— relieve excessive differential pressure,</li> <li>— shut down system (if qualified).</li> </ul> <p>Make appropriate notifications.</p>

### 3.0 Skill Component

To demonstrate proficiency of this task, an individual must perform the following steps:

Step	Action	Explanation
1	Verify the valve identifier.	Ensure that the proper valve is located. If the valve identifier is missing, replace per Operator's specifications.
2	Identify the type of valve stem seal.	This step determines the type of packing maintenance required.
3	Identify the appropriate type of injectable packing to be injected.	Stem packing varies per manufacturer and application.
4	Notify the control center, local operations (if applicable), and any affected personnel prior to performing any maintenance.	This step ensures that the task has been scheduled and communicated and that the operational status has been confirmed.
5	Insert the appropriate amount of injectable packing into valve stem packing gland.	Ensure that the insertion pressure does not exceed the manufacturer's instructions.
6	Operate the valve to observe stem movement.	This step ensures that the valve operates properly with no visible leakage and that the packing remains intact. If compressed packing or gaps are observed, repeat Step 5.
7	Notify the control center, local operations (if applicable), and any affected personnel per the Operator's procedures.	This communication provides notification to personnel that the maintenance is complete.
8	Document task results as per the Operator's procedures.	Documentation provides historical data for future maintenance of the valve.

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## **Task 19.5—Adjust Actuator/Operator, Electric**

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### **1.0 Task Description**

This task involves setting/adjustment of valve actuator limit switches and torque switches.

This task begins with verification of the valve identifier. This task ends with the completion of the required documentation.

The performance of this covered task may require the performance of other covered tasks such as:

- Operate Valves Remotely on a Liquid Pipeline System (Reference Task 43.4).
- Operate Valves Locally on a Liquid Pipeline System (Reference Task 63.4).

### **2.0 Knowledge Component**

This task is performed to set the actuator limits and torque switch values to define the open and closed limits for the valve.

An individual performing this task must have knowledge of:

- How to determine valve types. Common types of valves include:
  - ball,
  - gate,
  - butterfly,
  - plug,
  - globe.
- Electric MOV (motor operated valve) actuator types.

Terms applicable to this task:

#### **function test**

Operate the valve to assure that it is performing its intended function as designed; this may include manually operating the valve or by the use of mechanical assistance such as an actuator/operator.

#### **hand clutch**

A mechanical means of disengaging the motor drive and engaging the hand wheel.

#### **limit switch**

A switch designed to cut off power automatically at or near the limit of travel of a moving object controlled by electrical means.

#### **mechanical stop**

A fixed or adjustable rigid mechanical device that prevents a valve actuator/operator from exceeding a fixed limit in the open or closed position.

#### **seat**

The part of a valve against which a closure element (gate, plug, ball, or clapper) makes contact contributing to a tight shut-off.

**NOTE** In many ball and gate valves, the seat is a floating member containing a soft seating element (usually an O-ring).

#### **torque switch**

A switch designed to sense the amount of torque being applied to a machine by an electric motor and to cut off power if torque exceeds a preset limit, preventing damage to the motor.

#### **valve actuator**

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A valve component that converts hydraulic, pneumatic, or electrical energy into mechanical motion to open and close a valve.

#### **valve operator**

A mechanical valve component that utilizes motion to open and close a valve. Abnormal operating conditions (AOC) associated with the performance of this task include:

<b>AOC Recognition</b>	<b>AOC Reaction</b>
Unexpected valve movement.	Return the valve to the proper position, if safe to do so. Immediately notify the Control Center (or appropriate field personnel) and execute applicable procedures.
Unexpected release or discharge of product.	Notify the appropriate personnel to take actions as required.
Damage to valve or valve component.	Notify the appropriate personnel to take actions as required.

### **3.0 Skill Component**

To demonstrate proficiency of this task, an individual must perform the following steps:

<b>Step</b>	<b>Action</b>	<b>Explanation</b>
1	Verify the valve identifier.	Ensure that the proper valve is located. If the valve identifier is missing, replace per Operator's specifications.
2	Notify the control center, local operations (if applicable), and any affected personnel prior to performing any maintenance.	This step ensures that the task has been scheduled and communicated and that the operational status has been confirmed.
3	Verify the proper isolation of the valve and actuator prior to performing an adjustment.	The valve actuator should be placed in local control to prevent remote operation of the valve. Operation of the valve must not adversely affect operations.
4	Verify the proper valve position, i.e. open or closed.	
5	Properly set the limit switches.	Follow the manufacturer's recommendations and/or the Operator's procedures.
6	Properly set the torque switches.	Follow the manufacturer's recommendations and/or the Operator's procedures.
7	Perform function testing to check the operation of the valve as per applicable procedures, including remote operation, if capable. Verify the valve status indication at all display points throughout the system.	This step ensures that the valve and status are in proper working order. If the valve is not in proper working order, investigate cause and rectify or notify the appropriate personnel to take actions as required.
8	Notify the control center, local operations (if applicable), and any affected personnel per the Operator's procedures.	This communication provides notification to personnel that the valve adjustment is complete.
9	Document inspection results as per the Operator's procedures.	Documentation provides historical data for future maintenance of the valve.

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## **Task 19.6—Adjust Actuator/Operator, Pneumatic**

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### **1.0 Task Description**

This task includes the setting/adjustment of the pneumatic actuator adjustment mechanisms and components.

This task begins with verification of the valve identifier. This task ends with the completion of the required documentation.

The performance of this covered task may require the performance of other covered tasks such as:

- Operate Valves Remotely on a Liquid Pipeline System (Reference Task 43.4).
- Operate Valves Locally on a Liquid Pipeline System (Reference Task 63.4).

### **2.0 Knowledge Component**

This task is performed to properly set the adjustment mechanisms for full open and closed positions. An individual performing this task must have knowledge of:

- How to determine valve types. Common types of valves include:
  - ball,
  - gate,
  - butterfly,
  - plug,
  - globe.
- Pneumatic MOV (motor operated valve) actuator types.

Terms applicable to this task:

#### **function test**

Operate the valve to assure that it is performing its intended function as designed; This may include manually operating the valve or by the use of mechanical assistance such as an actuator/operator.

#### **hand clutch**

A mechanical means of disengaging the motor drive and engaging the hand wheel.

#### **travel switch**

A switch designed to cut-off air automatically at or near the limit of travel of a moving object.

#### **mechanical stop**

A fixed or adjustable rigid mechanical device that prevents a valve actuator/operator from exceeding a fixed limit in the open or closed position.

#### **seat**

The part of a valve against which a closure element (gate, plug, ball, or clapper) makes contact contributing to a tight shut-off.

**NOTE** In many ball and gate valves, the seat is a floating member containing a soft seating element (usually an O-ring).

#### **valve actuator**

A valve component that converts hydraulic, pneumatic, or electrical energy into mechanical motion to open and close a valve.

#### **valve operator**

A mechanical valve component that utilizes motion to open and close a valve.

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Abnormal operating conditions (AOC) associated with the performance of this task include:

AOC Recognition	AOC Reaction
Unexpected release or discharge of product.	Notify the appropriate personnel to take actions as required.
Damage to valve or valve component.	Notify the appropriate personnel to take actions as required.
Unexpected valve movement	Return the valve to the proper position, if safe to do so. Immediately notify the control center (or appropriate field personnel) and execute applicable procedures.

### 3.0 Skill Component

To demonstrate proficiency of this task, an individual must perform the following steps.

Step	Action	Explanation
1	Verify the valve identifier.	Ensure that the proper valve is located. If the valve identifier is missing, replace per Operator's specifications.
2	Notify the control center, local operations (if applicable), and any affected personnel prior to performing any maintenance.	This step ensures that the task has been scheduled and communicated and that the operational status has been confirmed.
3	Verify the proper isolation of the valve and actuator prior to performing adjustment.	The valve actuator should be placed in local control to prevent remote operation of the valve. Operation of the valve must not adversely affect operations.
4	Verify the proper valve position, i.e. open or closed.	
5	Properly set the adjustment mechanisms for full open and closed positions.	Follow the manufacturer's recommendations and/or the Operator's procedures. If unable to achieve full open or full closed, investigate cause and rectify or notify the appropriate personnel to take actions as required.
6	Verify that the position status indication matches the valve position.	Follow the manufacturer's recommendations and/or the Operator's procedures.
7	Perform function testing to check the operation of the valve as per applicable procedures, including remote operation if capable. Verify valve status indication at all display points throughout the system.	This step ensures that the valve and actuator are in proper working order.
8	Notify the control center, local operations (if applicable), and any affected personnel per the Operator's procedures.	This communication provides notification to personnel that the valve adjustment is complete.
9	Document inspection results as per the Operator's procedures.	Documentation provides historical data for future maintenance of the valve.

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## Task 19.7—Adjust Actuator/Operator, Hydraulic

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### 1.0 Task Description

This task involves setting/adjustment of a hydraulic actuator adjustment mechanism and component.

This task begins with verification of the valve identifier. This task ends with the completion of the required documentation.

The performance of this covered task may require the performance of other covered tasks such as:

- Operate Valves Remotely on a Liquid Pipeline System (Reference Task 43.4).
- Operate Valves Locally on a Liquid Pipeline System (Reference Task 63.4).

### 2.0 Knowledge Component

This task is performed to properly set the adjustment mechanisms for full open and closed positions. An individual performing this task must have knowledge of:

- How to determine valve types. Common types of valves include:
  - ball,
  - gate,
  - butterfly,
  - plug,
  - globe.
- Hydraulic MOV (motor operated valve) actuator types.

Terms applicable to this task:

**function test**

Operate the valve to assure that it is performing its intended function as designed; this may include manually operating the valve or using mechanical assistance such as an actuator/operator.

**travel switch**

A switch designed to cut-off hydraulic power at or near the limit of travel of a moving object.

**mechanical stop**

A fixed or adjustable rigid mechanical device that prevents a valve actuator/operator from exceeding a fixed limit in the open or closed position.

**seat**

The part of the valve against which the closure element (gate, plug, ball, or clapper) makes contact contributing to a tight shut-off.

Note: In many ball and gate valves, the seat is a floating member containing a soft seating element (usually an O-ring).

**valve actuator**

A valve component that converts hydraulic, pneumatic, or electrical energy into mechanical motion to open and close a valve.

**valve operator**

A mechanical valve component that utilizes motion to open and close a valve. Abnormal operating conditions (AOC) associated with the performance of this task include:

AOC Recognition	AOC Reaction
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Unexpected release or discharge of product.	Notify the appropriate personnel to take actions as required.
Damage to valve or valve component.	Notify the appropriate personnel to take actions as required.
Unexpected valve movement.	Return the valve to the proper position, if safe to do so. Immediately notify the control center (or appropriate field personnel) and execute applicable procedures.

### 3.0 Skill Component

To demonstrate proficiency of this task, an individual must perform the following steps:

Step	Action	Explanation
1	Verify the valve identifier.	Ensure that the proper valve is located. If the valve identifier is missing, replace per Operator's specifications.
2	Notify the control center, local operations (if applicable), and any affected personnel prior to performing any maintenance.	This step ensures that the task has been scheduled and communicated and that the operational status has been confirmed.
3	Verify the proper isolation of the valve and actuator prior to performing an adjustment.	The valve actuator should be placed in local control to prevent remote operation of the valve. Operation of the valve must not adversely affect operations.
4	Verify the proper valve position, i.e. open or closed.	
5	Properly set the adjustment mechanisms for full open and closed positions.	Follow the manufacturer's recommendations and/or the Operator's procedures.  If unable to achieve full open or full closed, investigate cause and rectify or notify the appropriate personnel to take actions as required.
6	Verify that the position status indication matches the valve position.	Follow the manufacturer's recommendations and/or the Operator's procedures.
7	Perform functional testing to check the operation of the valve as per applicable procedures, including remote operation if capable. Verify the valve status indication at all display points throughout the system.	This step ensures that the valve and actuator are in proper working order.
8	Notify the control center, local operations (if applicable), and any affected personnel per the Operator's procedures.	This communication provides notification to personnel that the valve adjustment is complete.
9	Document inspection results as per the Operator's procedures.	Documentation provides historical data for future maintenance of the valve.



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## Task 19.1—Perform Valve Body Winterization or Corrosion Inhibition

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### 1.0 Task Description

This task involves the activities required to protect a valve against freezing and/or internal corrosion.

This task begins with the verification of the valve number/nameplate. ~~This task and~~ ends with the completion of the required documentation.

The performance of this covered task may require the performance of other covered tasks such as: ~~the following.~~

- Operate Valves Remotely on a Liquid Pipeline System (~~reference Reference~~ Task 43.4).
- Operate Valves Locally on a Liquid Pipeline System (~~reference Reference~~ Task 63.4).

### 2.0 Knowledge Component

This task prepares valves to continue functioning properly in freezing conditions and/or corrosive environments.

An individual performing this task must have knowledge of ~~the following.:~~

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- ~~Injection equipment~~
- ~~Valve Types~~
  - o ~~Single-seated valves~~
  - o ~~Double-seated valves~~
- ~~Valve operation~~

Terms applicable to this task ~~are as follows.:~~

**body bleed (depressurization)**

The action of opening a body drain or vent to bleed off (reduce) internal body pressure or double-seated valves in either the ~~full~~ full-open or closed position.

**body or body cavity**

The principal pressure-containing part of a valve where the closure element and seals are located.

**drain and vent plug**

A mechanical device used to vent or bleed off internal valve body pressure.

**leak-by**

For double-seated valves, this is an internal valve leak condition in a gate or ball valve where hazardous liquid can leak past either the upstream or the downstream seal into the valve body, thereby pressurizing the valve body.

~~NOTE For single-seated valves, see leak-through below.~~

**leak-through**

A condition in a gate or ball valve where hazardous liquid can leak past both valve seats, causing

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the valve to leak from the high-pressure side to the low-pressure side when it is closed. For single-seated valves, such as check valves, a condition where hazardous liquid can leak by the valve seat, causing the valve to internally leak when it is in the closed position.

Abnormal operating conditions (AOC) AOCs associated with the performance of this task include the following:

AOC Recognition	AOC Reaction
Unexpected release or discharge of product, <u>related to task performance</u> .	Notify the appropriate personnel to take actions as required.
Damage to valve or valve component.	Notify the appropriate personnel to take actions as required.
<u>Valve Inoperable—Valve will not operate as intended or will not fully close/open.</u> <b>EXAMPLES</b> <u>— Valve indicator does not show the intended position.</u> <u>— Unexpected pressure and flow outcomes.</u> <u>— Inoperable operator/actuator or hand wheel.</u> <u>Excessive differential pressure across valve prohibits its operation.</u>	<u>Make the condition safe to the extent possible and according to Operator's procedures. Assess condition for safety, environmental, or physical damage.</u> <u>Reactions could include the following:</u> <u>— retry operation.</u> <u>— relieve excessive differential pressure.</u> <u>— shut down system (if qualified).</u> <u>Make appropriate notifications.</u>
<u>A valve fails to seal properly.</u>	<u>Notify the appropriate personnel to take actions as required.</u>

### 3.0 Skill Component

To demonstrate proficiency of this task, an individual must perform the following steps:

Step	Action	Explanation
1	Verify the valve identifier.	Ensure that the proper valve is located.
2	Notify the control center, local operations (if applicable), and any affected personnel prior to performing any maintenance.	This step ensures that the task has been scheduled and communicated and that the operational status has been confirmed.
3	<u>Verify proper isolation of the valve.</u>	
43	Position the valve to isolate the valve body from the line pressure, <u>if required</u> .	The individual must follow the manufacturer's recommendations and/or the <u>operator's-Operator's</u> procedures.
54	Depressurize the valve body; drain nonpetroleum material (such as water or sediment) from the valve body. <u>Flush until clean product is observed, then close the drain valve.</u>	<u>This step confirms that all nonpetroleum material has been removed from the valve so leak-by or leak-through can be observed if present.</u> <u>Flush until clean product is observed.</u> NOTE Ensure drain valve is closed prior to restarting.
65	Check for leak-by and leak-through sealing of valve.	The individual must follow the manufacturer's recommendations and/or the <u>operator's-Operator's</u> procedures. NOTE If that the valve fails to seal, proper notification must be communicated as per the <u>operator's-Operator's</u> procedure.
76	Connect the injection equipment, <u>if required</u> .	<u>Follow the Operator's procedures for the valve type and injection equipment.</u>

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<u>87</u>	Operate the injection equipment and inject appropriate antifreeze <del>and/or</del> corrosion inhibitor.	The individual must follow the manufacturer's recommendations and/or the <del>operator's</del> <u>Operator's</u> procedures.
<u>98</u>	Notify the control center, local operations (if applicable), and any affected personnel per the <del>operator's</del> <u>Operator's</u> procedures.	This communication provides notification to personnel that the valve can be put back into service.
<u>109</u>	Document task results as per the <del>operator's</del> <u>Operator's</u> procedures.	<u>Documentation provides historical data for future maintenance of the valve. This step documents the results per the operator's procedures.</u>

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## Task 19.2—Perform Valve Lubrication

### 1.0 Task Description

This task involves the activities required to lubricate the components of a valve.

This task begins with the verification of the valve number/nameplate. This task and ends with the completion of the required documentation.

### 2.0 Knowledge Component

This preventative maintenance task lubricates the components of a valve to provide reliable operation.

An individual performing this task must have knowledge of the following:

- How to determine valve types. Common types of valves include:
  - ball,
  - gate,
  - butterfly,
  - plug,
  - globe.
- How to determine valve actuator/operator types. Common types of valve actuators/operators include:
  - mechanical/hand,
  - hydraulic,
  - electronic,
  - pneumatic.
- How to properly lubricate valves.
- Different types of lubricating equipment:
  - Manual
  - High-pressure

Abnormal operating conditions (AOC) AOCs associated with the performance of this task include the following:

AOC Recognition	AOC Reaction
Unexpected release or discharge of product <u>related to task performance</u> .	Notify the appropriate personnel to take actions as required.
Damage to valve or valve component.	Notify the appropriate personnel to take actions as required.
<u>Valve Inoperable—Valve will not operate as intended or will not fully close/open.</u> <u>EXAMPLES</u> <ul style="list-style-type: none"><li>— <u>Valve indicator does not show the intended position.</u></li><li>— <u>Unexpected pressure and flow outcomes.</u></li></ul>	<u>Make the condition safe to the extent possible and according to Operator's procedures. Assess condition for safety, environmental, or physical damage.</u> <u>Reactions could include the following:</u>

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— Inoperable operator/actuator or hand wheel.

Excessive differential pressure across valve prohibits its operation.

— retry operation.

— relieve excessive differential pressure.

— shut down system (if qualified).

Make appropriate notifications.

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### 3.0 Skill Component

To demonstrate proficiency of this task, an individual must perform the following steps:-

Step	Action	Explanation
1	Verify the valve identifier.	Ensure that the proper valve is located. If the valve identifier is missing, replace per <del>operator's</del> <u>Operator's</u> specifications.
2	Notify the control center, local operations (if applicable), and any affected personnel prior to performing any maintenance.	This step ensures that the repair has been scheduled and communicated and that the operational status has been confirmed.
3	Lubricate the valve stem, bearings, and associated components with the appropriate lubricant.	The individual must follow the manufacturer's recommendations and/or the <del>operator's</del> <u>Operator's</u> procedures. If unable to lubricate one or more components, follow the manufacturer's recommendations and/or the <del>operator's</del> <u>Operator's</u> procedures.
4	Notify the control center, local operations (if applicable), and any affected personnel per the <del>operator's</del> <u>Operator's</u> procedures.	This communication provides notification to personnel that the valve can be put back into service.
5	Document task results as per the <del>operator's</del> <u>Operator's</u> procedures.	<u>Documentation provides historical data for future maintenance of the valve. This step documents the results per the operator's procedures.</u>

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## **Task 19.3—Perform Valve Seat Sealing**

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### **1.0 Task Description**

This task involves verification of valve sealing and the injection of seat sealing products into a valve.

This task begins with the identification of the valve. This task ends with the completion of the required documentation.

The performance of this covered task may require the performance of other covered tasks such as:

- Operate Valves Remotely on a Liquid Pipeline System (Reference Task 43.4).
- Operate Valves Locally on a Liquid Pipeline System (Reference Task 63.4).

### **2.0 Knowledge Component**

Valve seat sealing is performed to complete a positive seal and prevent leak-by and leak-through conditions.

An individual performing this task must have knowledge of:

- How to determine valve types. Common types of valves include:
  - ball,
  - gate,
  - butterfly,
  - plug,
  - globe.
- How to determine valve actuator/operator types. Common types of valve actuators/operators include:
  - mechanical/hand,
  - hydraulic,
  - electronic,
  - pneumatic.
- How to properly seal valves.
- Operation of high-pressure sealant injection equipment

Terms applicable to this task:

#### **leak-by**

For double-seated valves, this is an internal valve leak condition in a gate or ball valve where hazardous liquid can leak past either the upstream or the downstream seal into the valve body, thereby pressurizing the valve body.

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### leak-through

A condition in a gate or ball valve where hazardous liquid can leak past both valve seats, causing the valve to leak from the high-pressure side to the low-pressure side when it is closed. For single-seated valves, such as check valves, a condition where hazardous liquid can leak by the valve seat, causing the valve to internally leak when it is in the closed position.

### sealant

Material injected into the valve seats to provide a temporary seal.

Abnormal operating conditions (AOC) associated with the performance of this task include:

AOC Recognition	AOC Reaction
Unexpected release or discharge of product.	Notify the appropriate personnel to take actions as required.
Damage to valve or valve component.	Notify the appropriate personnel to take actions as required.
Valve Inoperable—Valve will not operate as intended or will not fully close/open. EXAMPLES — Valve indicator does not show the intended position. — Unexpected pressure and flow outcomes. — Inoperable operator/actuator or hand wheel. Excessive differential pressure across valve prohibits its operation.	Make the condition safe to the extent possible and according to Operator's procedures. Assess condition for safety, environmental, or physical damage. Reactions could include the following: — retry operation, — relieve excessive differential pressure, — shut down system (if qualified). Make appropriate notifications.

## 3.0 Skill Component

To demonstrate proficiency of this task, an individual must perform the following steps:

Step	Action	Explanation
1	Verify the valve identifier.	Ensure that the proper valve is located. If the valve identifier is missing, replace per Operator's specifications.
2	Notify the control center, local operations (if applicable), and any affected personnel prior to performing any maintenance.	This step ensures that the task has been scheduled and communicated and that the operational status has been confirmed.
3	Verify the valve is closed according to the manufacturer's instructions.	This step ensures that the valve is in the proper position to accept the sealant. Manual control of the valve must be established to prevent inadvertent actuation of the valve during the performance of this task.
4	Position the valve to isolate the valve body from the line pressure.	The individual must follow the manufacturer's recommendations and/or the Operator's procedures.
5	Depressurize the valve body and drain nonpetroleum material (such as water or sediment) from the valve body, then close the drain valve.	The individual must follow the manufacturer's recommendations and/or the Operator's procedures.
6	Identify the appropriate type and amount of injection sealant at the proper injection pressure.	Sealants vary by manufacturer and application. This step ensures that the proper type and amount of sealant is used without damaging the valve.
7	Inject appropriate sealant into seats.	This step ensures that the valve can be properly sealed to prevent leak-by and leak-through.

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8	Check for leak-by and leak-through sealing of valve.	The individual must follow the manufacturer's recommendations and/or the Operator's procedures. NOTE In the event the valve fails to seal, proper notification must be communicated as per the Operator's procedure.
9	After confirming that a tight seal has been established, flush sealant from the injection ports and seats with grease cleaner/penetrant.	Sealants will dry out if not properly flushed and could plug injection passages.
10	Notify the control center, local operations (if applicable), and any affected personnel per the Operator's procedures.	This communication provides notification to personnel that the valve sealing is complete.
11	Document task results as per the Operator's procedures.	Documentation provides historical data for future maintenance of the valve.

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## Task 19.4—Perform Valve Stem Packing Maintenance

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### 1.0 Task Description

This task involves identification of a valve stem seal and the injection of injectable packing into the valve stem seal gland.

This task begins with verification of the valve identifier. ~~This task and~~ ends with the completion of the required documentation.

The performance of this covered task may require the performance of other covered tasks such as ~~the following:~~

- Operate Valves Remotely on a Liquid Pipeline System (~~reference Reference~~ Task 43.4).
- Operate Valves Locally on a Liquid Pipeline System (~~reference Reference~~ Task 63.4).

### 2.0 Knowledge Component

Valve stem packing maintenance is performed to prevent leak-out and maintain proper valve function and integrity.

An individual performing this task must have knowledge of ~~the following:~~

- How to determine valve types. Common types of valves include:
  - ball,
  - gate,
  - butterfly,
  - plug,
  - globe.
- How to determine valve actuator/operator types. Common types of valve actuators/operators include:
  - mechanical/hand,
  - hydraulic,
  - electronic,
  - pneumatic.
- How to properly insert packing.
- Operation of valve stem packing equipment
- 

Terms applicable to this task ~~are as follows:~~

**energized**

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The act of maintaining the pressure of the injectable packing material.

**injectable packing**

Bulk material injected into the stem seal gland to provide a temporary or permanent seal.

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#### stem seal

Seal surrounding the valve stem that prevents leakage.

Abnormal operating conditions (AOC) ~~AOCs~~ associated with the performance of this task include ~~the following~~:

AOC Recognition	AOC Reaction
Unexpected release or discharge of product <del>related to task performance</del> .	Notify the appropriate personnel to take actions as required.
Damage to valve or valve component.	Notify the appropriate personnel to take actions as required.
<u>Valve Inoperable—Valve will not operate as intended or will not fully close/open.</u> <u>EXAMPLES</u> <u>— Valve indicator does not show the intended position.</u> <u>— Unexpected pressure and flow outcomes.</u> <u>— Inoperable operator/actuator or hand wheel.</u> <u>Excessive differential pressure across valve prohibits its operation.</u>	<u>Make the condition safe to the extent possible and according to Operator's procedures. Assess condition for safety, environmental, or physical damage.</u> <u>Reactions could include the following:</u> <u>— retry operation.</u> <u>— relieve excessive differential pressure.</u> <u>— shut down system (if qualified).</u> <u>Make appropriate notifications.</u>

### 3.0 Skill Component

To demonstrate proficiency of this task, an individual must perform the following steps:

Step	Action	Explanation
1	Verify the valve identifier.	Ensure that the proper valve is located. If the valve identifier is missing, replace per <del>operator's</del> <u>Operator's</u> specifications.
2	Identify the type of valve stem seal.	This step determines the type of packing maintenance required.
3	Identify the appropriate type of injectable packing to be injected.	Stem packing varies per manufacturer and application.
4	Notify the control center, local operations (if applicable), and any affected personnel prior to performing any maintenance.	This step ensures that the task has been scheduled and communicated and that the operational status has been confirmed.
5	Insert the appropriate amount of injectable packing into valve stem packing gland.	Ensure that the insertion pressure does not exceed the manufacturer's instructions.
6	Operate the valve to observe stem movement.	This step ensures that the valve operates properly with no visible leakage and that the packing remains <del>energized</del> <u>intact. If compressed packing or gaps are observed, repeat Step 5.</u>
7	Notify the control center, local operations (if applicable), and any affected personnel per the <del>operator's</del> <u>Operator's</u> procedures.	This communication provides notification to personnel that the maintenance is complete.
8	Document task results as per the <del>operator's</del> <u>Operator's</u> procedures.	<u>Documentation provides historical data for future maintenance of the valve. This step documents the results per the operator's procedures.</u>

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## Task 19.5—Adjust Actuator/Operator, Electric

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### 1.0 Task Description

This task involves setting/adjustment of valve actuator limit switches and torque switches.

This task begins with verification of the valve identifier. ~~This task and~~ ends with the completion of the required documentation.

The performance of this covered task may require the performance of other covered tasks such as ~~the following~~:

- Operate Valves Remotely on a Liquid Pipeline System (~~reference~~ Reference Task 43.4).
- Operate Valves Locally on a Liquid Pipeline System (~~reference~~ Reference Task 63.4).

### 2.0 Knowledge Component

This task is performed to set the actuator limits and torque switch values to define the open and closed limits for the valve.

An individual performing this task must have knowledge of ~~the following~~:

~~— How to determine valve types. Common types of valves include:~~

- ~~— ball,~~
- ~~— gate,~~
- ~~— butterfly,~~
- ~~— plug,~~
- ~~— globe.~~

~~— Electric MOV (motor operated valve) actuator types.~~

~~This section intentionally left blank.~~

Terms applicable to this task ~~are as follows~~:

#### **function test**

Operate the valve to assure that it is performing its intended function as designed; ~~—~~ This may include manually operating the valve or by the use of mechanical assistance such as an actuator/operator.

#### **hand clutch**

A mechanical means of disengaging the motor drive and engaging the hand wheel.

#### **limit switch**

A switch designed to cut off power automatically at or near the limit of travel of a moving object controlled by electrical means.

#### **mechanical stop**

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A fixed or adjustable rigid mechanical device that prevents a valve actuator/operator from exceeding a fixed limit in the open or closed position.

**seat**

The part of a valve against which a closure element (gate, plug, ball, or clapper) makes contact contributing to a tight shut-off.

**Note:** In many ball and gate valves, the seat is a floating member containing a soft seating element (usually an O-ring).

**torque switch**

A switch designed to sense the amount of torque being applied to a machine by an electric motor and to cut off power if torque exceeds a preset limit, preventing damage to the motor.

**valve actuator**

A valve component that converts hydraulic, pneumatic, or electrical energy into mechanical motion to open and close a valve.

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### valve operator

A mechanical valve component that utilizes motion to open and close a valve. [Abnormal operating conditions](#)

[\(AOC\)](#) AOCs associated with the performance of this task include ~~the following:~~

AOC Recognition	AOC Reaction
Unexpected valve movement.	Return the valve to the proper position, if safe to do so. Immediately notify the <a href="#">Control Center (or appropriate field personnel)</a> <del>operator</del> and execute applicable <del>emergency</del> procedures.
Unexpected release or discharge of product <del>related to task performance.</del>	Notify the appropriate personnel to take actions as required.
Damage to valve or valve component.	Notify the appropriate personnel to take actions as required.

## 3.0 Skill Component

To demonstrate proficiency of this task, an individual must perform the following steps:

Step	Action	Explanation
1	Verify the valve identifier.	Ensure that the proper valve is located. If the valve identifier is missing, replace per <del>operator's</del> <a href="#">Operator's</a> specifications.
2	Notify the control center, local operations (if applicable), and any affected personnel prior to performing any maintenance.	This step ensures that the task has been scheduled and communicated and that the operational status has been confirmed.
3	Verify the proper isolation of the valve and actuator prior to performing an adjustment.	<del>The valve actuator should be placed in local control to prevent remote operation of the valve.</del> Operation of the valve must not adversely affect operations. <del>The valve actuator should be placed in local control.</del>
4	Verify the proper valve position, i.e. open or closed.	
5	Properly set the limit switches.	<del>The individual must f</del> Follow the manufacturer's recommendations and/or the <del>operator's</del> <a href="#">Operator's</a> procedures.
6	Properly set the torque switches.	<del>The individual must f</del> Follow the manufacturer's recommendations and/or the <del>operator's</del> <a href="#">Operator's</a> procedures.
7	Perform functional testing to check the operation of the valve as per applicable procedures, including remote operation, if capable. Verify the valve status indication at all display points throughout the system.	This step ensures that the valve and status are in proper working order. If the valve is not in proper working order, investigate cause and rectify or notify the appropriate personnel to take actions as required.
8	Notify the control center, local operations (if applicable), and any affected personnel per the <del>operator's</del> <a href="#">Operator's</a> procedures.	This communication provides notification to personnel that the valve <del>sealing</del> <a href="#">adjustment</a> is complete.
9	Document inspection results as per the <del>operator's</del> <a href="#">Operator's</a> procedures.	<del>Documentation provides historical data for future maintenance of the valve. This step documents the results per the operator's procedures.</del>

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## Task 19.6—Adjust Actuator/Operator, Pneumatic

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### 1.0 Task Description

This task includes the setting/adjustment of the pneumatic actuator adjustment mechanisms and components.

This task begins with verification of the valve identifier. This task—and ends with the completion of the required documentation.

The performance of this covered task may require the performance of other covered tasks such as ~~the following~~:

- Operate Valves Remotely on a Liquid Pipeline System (~~reference~~ Reference Task 43.4).
- Operate Valves Locally on a Liquid Pipeline System (~~reference~~ Reference Task 63.4).

### 2.0 Knowledge Component

This task is performed to properly set the adjustment mechanisms for full open and closed positions.

An individual performing this task must have knowledge of ~~the following~~:

— How to determine valve types. Common types of valves include:

- ball,
- gate,
- butterfly,
- plug,
- globe.

— Pneumatic MOV (motor operated valve) actuator types.

~~This section intentionally left blank.~~

Terms applicable to this task ~~are as follows~~:

#### **function test**

Operate the valve to assure that it is performing its intended function as designed; ~~—~~ This may include manually operating the valve or by the use of mechanical assistance such as an actuator/operator.

#### **hand clutch**

A mechanical means of disengaging the motor drive and engaging the hand wheel.

#### **travel switch**

A switch designed to cut-off air automatically at or near the limit of travel of a moving object.

#### **mechanical stop**

A fixed or adjustable rigid mechanical device that prevents a valve actuator/operator from exceeding a fixed limit in the open or closed position.

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#### seat

The part of a valve against which a closure element (gate, plug, ball, or clapper) makes contact contributing to a tight shut-off.

**Note:** In many ball and gate valves, the seat is a floating member containing a soft seating element (usually an O-ring).

#### valve actuator

A valve component that converts hydraulic, pneumatic, or electrical energy into mechanical motion to open and close a valve.

#### valve operator

A mechanical valve component that utilizes motion to open and close a valve.

Abnormal operating conditions (AOC) AOCs associated with the performance of this task include ~~the following:~~

AOC Recognition	AOC Reaction
Unexpected release or discharge of product <del>related to task performance.</del>	Notify the appropriate personnel to take actions as required.
Damage to valve or valve component.	Notify the appropriate personnel to take actions as required.
Unexpected valve movement	Return the valve to the proper position, if safe to do so. Immediately notify the <del>operator</del> control center (or appropriate field personnel) and execute applicable <del>emergency</del> procedures.

### 3.0 Skill Component

To demonstrate proficiency of this task, an individual must perform the following steps:

Step	Action	Explanation
1	Verify the valve identifier.	Ensure that the proper valve is located. If the valve identifier is missing, replace per <del>operator's</del> Operator's specifications.
2	Notify the control center, local operations (if applicable), and any affected personnel prior to performing any maintenance.	This step ensures that the task has been scheduled and communicated and that the operational status has been confirmed.
3	Verify the proper isolation of the valve and actuator prior to performing adjustment.	<del>The valve actuator should be placed in local control to prevent remote operation of the valve.</del> Operation of the valve must not adversely affect operations. <del>The valve actuator should be placed in local control.</del>
4	Verify the proper valve position, i.e. open or closed.	
5	Properly set the adjustment mechanisms for full open and closed positions.	<del>The individual must follow</del> Follow the manufacturer's recommendations and/or the <del>operator's</del> Operator's procedures. If unable to achieve full open or full closed, investigate cause and rectify or notify the appropriate personnel to take actions as required.
6	Verify that the position status indication matches the valve position.	<del>The individual must follow</del> Follow the manufacturer's recommendations and/or the <del>operator's</del> Operator's procedures.
7	Perform functional testing to check the operation of the valve as per applicable procedures, including remote operation if capable. Verify valve status indication at all display points throughout the system.	This step ensures that the valve and actuator are in proper working order.
8	Notify the control center, local operations (if applicable), and any affected personnel per the <del>operator's</del> Operator's procedures.	This communication provides notification to personnel that the valve <del>sealing</del> adjustment is complete.
9	Document inspection results as per the <del>operator's</del> Operator's procedures.	<del>Documentation provides historical data for future maintenance of the valve.</del> This step documents the



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		<del>results per the operator's procedures.</del>
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## Task 19.7—Adjust Actuator/Operator, Hydraulic

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### 1.0 Task Description

This task involves setting/adjustment of a hydraulic actuator adjustment mechanism and component.

This task begins with verification of the valve identifier. This task ~~and~~ ends with the completion of the required documentation.

The performance of this covered task may require the performance of other covered tasks such as ~~the following~~:

- Operate Valves Remotely on a Liquid Pipeline System (~~reference~~ Reference Task 43.4).
- Operate Valves Locally on a Liquid Pipeline System (~~reference~~ Reference Task 63.4).

### 2.0 Knowledge Component

This task is performed to properly set the adjustment mechanisms for full open and closed positions.

An individual performing this task must have knowledge of ~~the following~~:

— How to determine valve types. Common types of valves include:

- ball,
- gate,
- butterfly,
- plug,
- globe.

— Hydraulic MOV (motor operated valve) actuator types.

~~This section intentionally left blank.~~

Terms applicable to this task ~~are as follows~~:

#### **function test**

Operate the valve to assure that it is performing its intended function as designed; ~~this~~ This may include manually operating the valve or by the use of mechanical assistance such as an actuator/operator.

#### **travel switch**

A switch designed to cut-off hydraulic power at or near the limit of travel of a moving object.

#### **mechanical stop**

A fixed or adjustable rigid mechanical device that prevents a valve actuator/operator from exceeding a fixed limit in the open or closed position.

#### **seat**

The part of the valve against which the closure element (gate, plug, ball, or clapper) makes contact contributing to a tight shut-off.

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**Note:** In many ball and gate valves, the seat is a floating member containing a soft seating element (usually an O-ring).

**valve actuator**

A valve component that converts hydraulic, pneumatic, or electrical energy into mechanical motion to open and close a valve.

**valve operator**

A mechanical valve component that utilizes motion to open and close a valve. [Abnormal operating conditions](#)

[\(AOC\)](#) AOCs associated with the performance of this task include ~~the following:~~

AOC Recognition	AOC Reaction
Unexpected release or discharge of product <del>related to task performance.</del>	Notify the appropriate personnel to take actions as required.
Damage to valve or valve component.	Notify the appropriate personnel to take actions as required.
Unexpected valve movement.	Return the valve to the proper position, if safe to do so. Immediately notify the <del>control center (or appropriate field personnel) operator</del> and execute applicable <del>emergency</del> procedures.

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### 3.0 Skill Component

To demonstrate proficiency of this task, an individual must perform the following steps:-

Step	Action	Explanation
1	Verify the valve identifier.	Ensure that the proper valve is located. If the valve identifier is missing, replace per <del>operator's</del> <u>Operator's</u> specifications.
2	Notify the control center, local operations (if applicable), and any affected personnel prior to performing any maintenance.	This step ensures that the task has been scheduled and communicated and that the operational status has been confirmed.
3	Verify the proper isolation of the valve and actuator prior to performing an adjustment.	<del>The valve actuator should be placed in local control to prevent remote operation of the valve.</del> Operation of the valve must not adversely affect operations. <del>The valve actuator should be placed in local control.</del>
4	Verify the proper valve position, i.e. open or closed.	
5	Properly set the adjustment mechanisms for full open and closed positions.	<del>The individual must f</del> Follow the manufacturer's recommendations and/or the <del>operator's</del> <u>Operator's</u> procedures. If unable to achieve full open or full closed, investigate cause and rectify or notify the appropriate personnel to take actions as required.
6	Verify that the position status indication matches the valve position.	<del>The individual must f</del> Follow the manufacturer's recommendations and/or the <del>operator's</del> <u>Operator's</u> procedures.
7	Perform functional testing to check the operation of the valve as per applicable procedures, including remote operation if capable. Verify the valve status indication at all display points throughout the system.	This step ensures that the valve and actuator are in proper working order. <del>NOTE— This is a separate covered task.</del>
8	Notify the control center, local operations (if applicable), and any affected personnel per the <del>operator's</del> <u>Operator's</u> procedures.	This communication provides notification to personnel that the valve <del>sealing</del> <u>adjustment</u> is complete.
9	Document inspection results as per the <del>operator's</del> <u>Operator's</u> procedures.	<u>Documentation provides historical data for future maintenance of the valve.</u> <del>This step documents the results per the operator's procedures.</del>

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