Rules for maintenance shutdown

References to other procedures

ID 81397	LSR Site Ste - Safe Work Permit
ID 81560	Form - Safe Work permit
ID 81562	RA form
ID 81276	LSR Site Ste - Hot work
ID 78915	LSR Site Ste - Working in confined space
ID 81068	Confined Space Entry Rescue Plan
ID 73839	Personal Protective Equipment
ID 83596	LSR Site Ste – LoToTo in decommissioned plants
ID 74725	LSR Site Ste – Safe line breakning
ID 19605	WO Process
ID 4897	Barriers (Ste)

1 PURPOSE AND GOAL

During a turnaround (TA), the normal management system applies, but with some exceptions depending on changed conditions. These exceptions are described in this procedure. In cases where there is a conflict between the normal management system and this routine, the latter applies.

It only applies to a defined area after formal approval.

The routine is motivated by changed conditions, which affect risks:

1. The affected area is mainly emptied, depressurized and cleaned, which significantly reduces the risk of emissions, fire/explosion and exposure.
2. More people present on site:
    a. Can lead to a greater consequence in the event of a serious accident.
    b. There is a greater need for coordination between different jobs
    c. Increased likelihood of occupational safety and health incidents
3. Significantly more work permits to handle, which can lead to waiting times, which in turn can create frustration and shortcuts being taken.
4. It cannot be ruled out that small amounts of chemicals remain in the affected area even though it has been decommissioned.

2 SCOPE

This procedure applies to site Stenungsund for the defined area where the maintenance shutdown (TA) is ongoing after formal approval and written notification.

3 ROLES AND RESPONSIBILITIES

Role	Responsibility
Production Manager (Asset Owner)	Approves that this procedure is applied in consultation with the Maintenance Manager and is responsible for coordination during the turnaround.
Production Manager (Flammable Goods Manager)	Approves deviations from the classification plan and that ordinary working methods for hot work are not applied.
Maintenance Manager	Approves that the procedure is applied in consultation with the Production Manager.
TA Project Manager	Make a plan for the turnaround that includes all necessary activities and to implement them.
Power of delegation	In cases where deviating delegations of power is required during the TA; For example, the authority to issue different types of safe work permits, this delegation must be clarified before the TA. Responsible for this is the party responsible for the overall coordination or a person appointed by him/her.

4 Description

4.1 Definition of maintenance shutdown (TA)

This procedure only applies to maintenance shutdowns (turnarounds) according to the following conditions:

The Production Manager and the Maintenance Manager make joint decisions about when and where these rules can be applied and when they expire. The decisions must be formal and communicated in writing.

Support for decisions and when it can come into action:

- The area must be clearly marked on a "plot plan" and in reality.
- Golden box is locked:
  - The process concerned must be drained, depressurized and cleaned
  - In the event that there is still equipment, within the TA area, that does not meet these conditions, this must **be clearly marked/delimited** to avoid unwanted activities in the process that is not shut down and uncontrolled entry into an active risk area (ATEX).
- It shall be clear to all concerned **where and when** these rules are to be applied.

These rules shall cease to apply when the Golden box is unlocked or when the Production Manager and Maintenance Manager so decide.

The ATEX classification is not formally removed during the shutdown, but the probability of an explosive environment occurring is significantly reduced.

The party responsible for the overall coordination during the shutdown is the Production Manager.

4.2 Control of who is on site

Everyone who is granted access to the site must register through card readers at the gate and/or entrance doors to the office building.

In the event of an emergency, the list from the card readers is compared with the list from assembly points to check that no one is left in on site. Safe work permits can also be helpful in an emergency.

4.3 Personal protective equipment

Personal protective equipment applies according to normal procedures with one exception:

- The Carbon monoxide (CO) sniffer does not need to be worn in the TA area when maintenance shutdown conditions apply.

4.4 Mobile phones

A mobile phone after a phone permit has been issued (not ATEX classified) may be used for work purposes without a safe work permit.

Phone permits can be issued by Perstorp's contact person. It can be granted if work can be carried out more efficiently. After submitting and signing a phone permit, a sticker is received for the helmet showing that you are approved to carry a phone on site. The names are entered in a common ledger. The TA Project Manager is responsible for ensuring that this works.

Photo permits apply according to normal routines.

4.5 Safe Work Permits (SWP)

4.5.1 Providers of safe work permits

The responsible SWP authorizer and all SWP authorizer must be named on the safe work permit.

4.5.2 Safe work permits for hot work

As a rule, a safe work permit is required for what is normally classified as **hot work**. However, the box for hot work does not need to be ticked as the risk of explosive atmospheres is greatly reduced. Gas detection measurements does not normally need to be done for every specific job; SWP authorizers decide whether gas-free measurement should still be carried out (e.g. if leaks are detected).

For **Hot work** , normal rules apply, with the exception that a fire guard can monitor several jobs if these are within a reasonable viewing distance. SWP authorizer determines when this is appropriate when issuing safe work permits. (The work of estimating how many fire guards are required is done in the planning for the shutdown in consultation with SWP authorizer.)

4.5.3 LOTOTO

The person in a team per discipline who collects a safe work permit must hang their lock on the box in question. Everyone is allowed to hang their individual locks in accordance with LSR - LOTOTO but the requirement that everyone should do so is removed for the time that the rules for maintenance shutdown apply. The person who has collected the safe work permit is responsible for the lock.

4.5.4 Exemptions from safe work permit requirements

For approved individuals and tasks, no safe work permit is required during the maintenance shutdown.

Tasks that are exempt from safe work permit requirements:

- Visual inspection
- EHS&Q rounds
- Planning for future work

Approval is given by the TA Project Manager to those who can be exempted from the requirement for a safe work permit solely for the maintenance shutdown. The TA Project Manager keeps a ledger of approved contractors.

For Perstorp employees and those who normally have permission to use designated area card readers, the corresponding approval is given by SWP authorizer. The requirement to use designated area card readers is exempted during the maintenance shutdown.

4.5.5 Safe Work Permit (SWP) approval

A safe work permit is normally approved by the SWP authorizer when he or she is **together** with the executor in the Safe Work Permit Centre. If the rules in this procedure apply, the SWP authorizer can sign certain safe work permits in advance. This can be done when the risk is assessed as low. The handing out of safe work permits approved in advance should not take place uncontrolled. Factors such as changed conditions, new responsible executor and new executor must be taken into account.

The safe work permit is picked up by the responsible executor who signs and thus the work can start.

This can never be done for:

- Hot work with an open flame, work with an angle grinder or if work is done with tools that have a surface temperature above 100°C.
- A first issue of safe work permit for safe line breaking process including cutting of pipes (but may be OK for a second issue when the equipment is opened and decommissioned).
- Entry into confined space or pit deeper than 1.2 m.
- A first issue of safe work permits requiring LOTOTO, which is not covered by the Golden Box (e.g. electrical shutdown)
- Work at height
- Work with hoisting and lifting
- Digging
- When RA3 is required

Early approval is never done for first issue of a safe work permit.

The SWP authorizer assesses and decides whether early approval is not appropriate. However, the restrictions as above apply.

4.5.6 Safe work permits in several areas

During the shutdown, safe work permits can be issued for several areas. For example, for work at the cleaning area (flushing plate), including transport to and from the cleaning area (flushing plate) and (adjustment of) scaffolding.

4.5.7 Safe work permit planning

The number of safe work permits during a shutdown is very large. It is therefore important to have good planning ahead of time.

- All (planned) safe work permits should be risk assessed before starting a maintenance shutdown.
- All safe work permits for the following day must be notified to the safe work permit center and the Shift Supervisor no later than 16.00 the day before. The reason is to allow for the safe work permit centre and operators to be able to make appropriate preparations.
- For the following day's entries into confined spaces, an appointment must be booked for an confined space entry start-up meeting no later than the day before.
- The following day's work should be based on the work done rather than initial planning if the work requires certain work to have been carried out beforehand. (Example: Make sure that the vessel is unsealed before confined space entry is planned.)

4.6 Traffic plan

During the shutdown, the risk of ignition due to the internal combustion engine in vehicles is considered acceptable (see chapter **Plan for safety inspections**), which is why gas detection does not need to be done for every safe work permit. However, there is a need to limit and control traffic. Therefore, the requirement for a safe work permit remains and a traffic plan is drawn up including the following content:

- A plan for how passenger transport will take place; e.g. demarcated walkways
- A plan for how to limit vehicle traffic
- Permitted parking spaces
- Permitted parking spaces for cranes
- Roads covered by TA rules

A traffic plan is made well in advance of the maintenance shutdown and is approved by the party responsible for the overall coordination or a person appointed by him/her and drawn up by the TA Project Manager.

4.7 Plan for Field Safety Supervision

Field safety supervision means that a defined group of individuals perform certain tasks with the aim of reducing certain risks so that they become **acceptable**. These individuals can for example be production operators and/or external guards and must have good competence in current EHS&Q rules (especially the SWP routine), the site, "Lifesaving rules and personal protective equipment. It is preferable that the group is the same throughout the maintenance shutdown. This group will cooperate with the Safe Work permit center and is its extended arm in the field.

The field safety supervision plan must take into account the following risks:

- Ignition of flammable gases due to vehicle traffic, hot work and temporary electrical installations.
- Exposure to hazardous chemicals due to emissions.
- Coordination-related incidents
- Incidents related to deviations from applicable regulations and safe work permits

When developing a field safety supervision plan, it is important to take into account the plan for other inspections, such as Walk and talk, Take Care rounds and Safety inspections, in order to get an overview. Responsible for making a plan is the TA Project Manager. It must be approved by the party responsible for the overall coordination or a person appointed by him/her.

The plan must contain a description of how the field safety supervision should be carried out:

- Which activities are to be performed
- How often
- How they are documented
- How collaboration with the safe work permit center will take place

The plan should focus on the following activities:

- Manage the risks of leaking chemicals from parts of the plant (e.g. tank area) that are not decommissioned.
    - Can possibly be handled to some extent with temporarily installed gas detectors.
    - Regular gas measurement shall be done at defined intervals
- Other chemical leakage from defined maintenance shutdown area
    - Regular gas measurement must take place
- Coordination of work:
    - Work at height
    - Safe line breaking process including cutting pipes
    - Hot work
    - Other jobs that can affect each other.
- Check barriers
- Control and assist in compliance:
    - Of safe work permits
    - Order and tidiness
    - Other EHS&Q rules including "Life saving rules"

4.8 Temporary installation and electrical installations

4.8.1 Temporary installations

All temporary placements must be risk assessed and documented on a list and map in the Safe Work Permit Centre. A person who wishes to have a temporary placement must:

- Specify the position of temporary placement on a map/plot plan
- Describe allowed activities and tools
- Conduct a risk assessment (ordered and planned in the same way as a process risk analysis via the Process Risk Analysis Group - PRAG)
- Set duration

The party responsible for the overall coordination or a person appointed by him/her makes a decision based on the above and ensures that the placement and documentation are documented.

Temporary placements can be:

- Field workshops
- Coffee/food areas/tents/barracks/building
- Tool container and storage
- Place for smoking
- Changing rooms
- Other tents/buildings used for work purposes
- Weather protection
- Temporary toilet
- Chemical container (the Flammable Goods Manager should be contacted if relevant)

4.8.2 Temporary electrical installations

Temporary installations such as construction power, submersible pumps and lighting do not require a permit in the affected area. The TA Project Manager is responsible for maintaining the list/board with positions and type. Power is allowed to be turned on for the duration of the shutdown. EX sockets may be used for welding etc.

4.9 Working in confined space

4.9.1 Confined space entry start-up meetings

Present at confined space entry start-up meetings during the shutdown must **minimum be** representative SWP authorizer, Responsible Executor, Confined Space Attendant and representative from the Rescue Team. The responsible executor is responsible for communicating the contents of the safe work permit and rescue plan to the other executors who are to make entry.

A person in the safe work permit center must be dedicated to holding confined space entry start-up meetings and issuing confined space entry safe work permits.

4.9.2 Rescue plan

Rescue plans for each planned entry must be completed before the shutdown. (This means that it must be planned well in advance which specific entries are to be made).

The work order responsible is the person who ensures that a rescue plan is initiated. The SWP authorizer is responsible for the content of the rescue plan.

The following shall, at a minimum, participate:

- Representative SWP authorizer
- Rescue Team Representative
- If necessary, the work order responsible and other relevant resources can be included.

Prior to the development of a rescue plan, information is required from the work order responsible, such as: description of the work steps, number of people involved in the confined space entry and any equipment required to carry out the job.

It is the responsibility of the SWP authorizer to ensure that the rescue team is prepared to rescue for a specific safe work permit.

A rescue plan must include:

1. How to raise the alarm and who raises the alarm	General part of the Rescue Plan
2. Who coordinates a rescue operation (Shift Supervisor)	General part of the Rescue Plan
3. How to alert the emergency services (Shift Supervisor)	General part of the Rescue Plan
4. How to alert the Rescue Team	General part of the Rescue Plan
5. Radio channel for communication.	General part of the Rescue Plan
6. How to act in the event of a power failure and if any lighting in the confined space ceases (an approved flashlight must be available in the confined space)	General part of the Rescue Plan
7. How to ensure safe rescue (save those who rescue)	General part of the Rescue Plan
8. Rescue equipment: equipment needed for rescue in the confined space and a description of how the rescue is to be carried out (appropriate anchor point, etc.)	Specific part of the Rescue Plan

Other risks are handled in the safe work permit.

The specific part of the Rescue Plan can be common to vessels of the same type.

4.9.3 Rescue team

A separate rescue team must be available during daytime during the shutdown or other times by separate agreement. This team must have relevant expertise. At other times, the operation of the rescue team is according to normal routines.

4.10 Respiratory protection

Prior to the maintenance shutdown, a cheat sheet is produced that describes the type of respiratory protection required in different situations; especially for safe line breaking working in confined spaces. This will be based on:

- The nature of the substance; potential impact on humans, physical properties, etc
- How well the presence of the substance can be detected
- Cleaning and decommissioning routines
- Type of work (the work may add chemicals; e.g. welding, dry ice blasting and use of chemicals)

Responsible for this is the party responsible for the overall coordination or a person appointed by him/her.

Upon entry into confined spaces, measuring chemical concentration (if possible) should primarily determine which respiratory protection is required.

4.11 Education

Everyone affected by this procedure should receive appropriate training about this procedure and other site rules. A training plan is developed well in advance of the shutdown by the TA Project Manager. This is approved by the party responsible for the overall coordination or a person appointed by him/her.