**Yara Sluiskil**
**Management**

Class.: **OPEN**
**General rules**

# Work at heights

**4.Implementation and execution**
**4.6. Operation management**

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1. Work at heights definition
Work at heights, for which the use of fall protection equipment is mandatory, encompasses all operations carried out at heights of more than 2 m above ground or upper floor, if no sound work floor has been installed.

2. Objective
To maximally reduce the risk of falling by making the required fall protection equipment mandatory.

3. Responsibility
People working at heights under the conditions stated in the definition are obliged to conform to the contents of this procedure and to use the specified safety materials/fall protection equipment. Superiors/department managers are to ensure that this procedure is observed by all workers, that the necessary safety materials/fall protection equipment is available, that said materials/equipment are indeed used in accordance with regulations and that workers have been or are being trained to use the specified equipment.

All fall protection equipment provided by Yara is subject to checks and inspection conditions in accordance with the requirements laid down for all hoisting equipment. Only fall protection equipment issued with certificates of inspection and marked with inspection numbers may be used.
Checks and inspections are monitored and documented by the Central Workshop Maintenance Specialist, and the inspection certificates are stored at this workshop.

4. Required measures

## 4.1 Permanent platforms and walkways

Permanent platforms and walkways above ground must be fitted with effective railings. For work at height which is not done on platforms or walkways, the following equipment is available, to ensure maximum safety:

- Scaffolding
- Mobile scaffolding
- Mobile elevating work platform (MEWP) and scissor lift
- Man basket
- Ladders
- Fall protection equipment

For work that is carried out at a height of less than 2 meter on a work-permit basis, the persons responsible for its execution must indicate what protective equipment is to be used. Depending on the conditions (many people on a limited surface area, installation parts which are hard to reach, floors which are not level and present a higher risk of injuries when falling/jumping down) it may be necessary to apply measures similar to those applicable to work at or higher than 2 meter. This type of complex situation requires a Task Risk Analysis (TRA) to be carried out before a work permit is provided. Activities at a work floor height of more than 1 meter involving the use of electrical equipment, such as drills and angle grinders, may only be carried out on a work platform fitted with a railing.

Weather conditions (including rain, snow, ice and wind) may increase the risk of falling. They are to be taken into account when issuing a work permit.
When opening grates and railings, fall protection equipment must be used.
For operations on existing roofs and while constructing new buildings, care needs to be taken when securing walls and floors openings. See the Labour Inspectorate information sheets AI-15 “Safe working practices on roofs” and AI-16 “Securing wall and floor openings”.

### 4.2 Scaffolding

Scaffolding may be assembled by licensed scaffolders only, in accordance with applicable standards and possible additional requirements stipulated in contracts with scaffolding companies. Only approved scaffolding, furnished with a label of approval, may be walked upon.

Changes to scaffolding may only be made by scaffolders. When assembling, dismantling, changing or working on suspended or cantilever scaffolds higher than 2 meters, scaffolders must always use safety harnesses with standard life lines. Scaffolding requirements are listed in the HAE-027419 procedure.

#### 4.2.1 Scaffolding near railway tracks

Scaffolding in the vicinity of railway tracks must meet the following two requirements. Vertical standards or any other point of the scaffold must be at a minimum distance of 2 metres from the railway track, measured from the centre of the tracks. Scaffolding across the tracks must be at least 4.50 metres high. The reloading department must be informed via a TRA at all times and it must be informed of the final installation by way of a “yellow ticket”.

### 4.3 Mobile scaffolding

Prefabricated mobile scaffolds may only be used on even, paved surfaces at work-floor heights up to 4 metres. Scaffold wheels must be fitted with locking systems and wheel break supports. Users may assemble prefabricated mobile scaffolds. The latter may only be moved when nobody is on them. In addition, all equipment must be secured. If mobile scaffolds are higher than 4 metres, Labour Inspectorate information sheet AI-21 “Mobile scaffolding” applies.

### 4.4 Mobile elevating work platforms MEWP (Skylift)

#### 4.4.1 Use:

Only people who are trained according cat 1B, cat 3B and cat 3A  are allowed to use MEWP (and scissor lifts with a working platform) may operate them.

- Cat 3B work with mobile tree platform.
- Cat 3A operate with a vertical mobile platform (scissor lift and one person vertical lifts)
- Cat 1B work with static tree platform ( self-propelled, aerial platforms equipped with outrigger, truck-trailers)

1. A safety harness with a life line must be used at all times, including when driving MEWPs. Life lines must be long enough to allow workers to carry out their work, but short enough to prevent them from falling out of the man basket.
2. Securing safety harnesses is no longer obligatory if the work is being carried out above open water (quay). In that case, workers on the work platform must be provided with life jackets.
3. The MEWP’s maximum load may not be exceeded.
4. **Nobody may leave the platform when it is elevated.**
5. The use of mobile elevating work platforms is forbidden at wind speeds higher than force 6 on the Beaufort scale (12.5 m/s).
6. Before using the MEWP, it must be checked by using the checklist accompanying it.
7. The MEWP work area must be cordoned off with white and red tape.
8. MEWPs may not be used for hoisting purposes.
9. If the MEWP is standing on a road and there is a risk of it being hit by another vehicle, traffic barriers or cones must be placed in front of and behind it and the orange warning light on the platform must be switched on.
10. When operations are finished (the work is completed or the workday has ended), MEWPs must be parked in a safe place with the platform in is lowest position and the emergency stop engaged.

Hoogwerker-checklist.doc

**4.4.2 Rules relating to work alone with mobile work platform:**

This is based on the advice of the occupational health, advice 14-05, and in line with HAE-028330 agreements on working alone in isolated circumstance.

Work alone with mobile platforms in isolated conditions, the following additional Hazards are possible:

- Crushing in installations while moving the mobile platform
- When falling from the mobile platform, the person (despite fall protection) may fall into a dangerous state (hang) if there is no help within 15 min.

We can distinguish two types of mobile platforms on the Yara site.

Type 1: Self-propelled telescopic and articulated booms we hire.
Many people on the factory are trained. All work in isolated
circumstance (without additional measures) is prohibited.
During the preparation of the work a risk analysis shows of the
level of risk is acceptable whether additional measures are needed. (see HAE-028330)

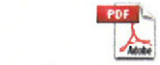
Type 2: Type of car car platform hired with driver (operator), which is used for great heights. These car platforms require specific control which basically trained. No people on the Yara site be trained for this specific work. The operator goes with the man basket upwards, usually others inn the man basket perform the work. Work alone with this car platform is prohibited.

### 4.4.3 Loading and unloading MEWPs

(Non-electrically powered) MEWPs may only be loaded and unloaded in the areas indicated on the site plan. They must also be parked in these areas again when operations have been completed. Should the work take up more than one day, MEWPs must still be parked in these fixed areas as often as possible.

Remarks:

1. If possible, avoid parking on thoroughfares.
2. Park under adequate lighting.
3. Consult with the department to determine where MEWPs may be parked inside the plants.
4. Electrical MEWPs may be unloaded at the work area.
5. After consultation with the department, they may be connected to a mains outlet.



Losplaats hoogwerkers.pdf

### 4.5 Man basket (working basket)

A safety harness must be worn when using a man basket. While the basket is hoisted, there must be visual contact and good communication between the crane operator and the workers in the man basket (e.g. via walkie-talkies). In principle, leaving an elevated man basket is not allowed.

It is forbidden to use man baskets at wind speeds stronger than force 6 on the Beaufort scale. See the Labour Inspectorate information sheet AI-17 “Hoisting and lifting equipment and safe hoisting” and HAE-026572 .

All work is prohibited in isolated conditions in a man basket (working-basket) See HAE-028330

### 4.6 Ladders

All ladders used on the Yara Sluiskil site must:

- be in good condition.
- stand on a solid surface and be fitted with anti-slip feet

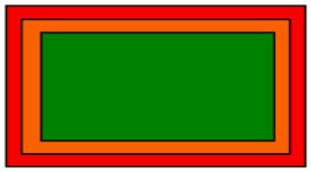
Furthermore, the following conditions must be met:

- Ladders must be set at a 70-75-degree angle.
- The maximum distance that may be covered by a ladder is 6 metres.
- Ladders must extend to at least 1 metre above the place to which they provide access.
- If a ladder cannot be fixed, it must be secured against slipping.
- It is forbidden to use metal ladders in open electrical installations.
- Aluminium ladders may not be used in corrosive environments.
- Wooden ladders must have a wash-paint finish.
- Both hands must be used when climbing a ladder. Equipment and tools must be either carried up in a belt, rucksack or similar equipment, or hoisted up.
- While working on a ladder, at least one hand must be holding the ladder and both feet must be on the rungs (3 support points). If this is not possible, fall protection equipment must be used.

**4.7 Working on roofs:**

**When working on flat roofs should take into account the following requirements:**

| | |
|---|---|
| Green<br><br>(distance between workplace and edge> 4 meters) | No personal protection necessary<br><br>Visually mark / demarcation at 4 meters.<br>Eg. signaling (red / white chain) or positioning lines |
| Orange<br><br>(distance between workplace and edge <4 meters and > 2 meters) | Marking physical / demarcation 2 mtr. (1 meter high) |
| Red<br><br>(distance between workplace and edge <2 meters) | Fall protection measures.<br><br>Eg. edge protection (fencing) or individually with harness + line with silencer or nonshute at anchorpoint . |



Entering weak roofs (roofs consisting weak coverage or roofing) without any protection equipment is not allowed.

**4.7.1 View weak rooftops**

An overview of the existing and known weak roofs are listed in the following table.

| Building | Commentary | Commentary |
|---|---|---|
| | 1 | 2 |
| Roof garage fire-department | Roof coated with corrugated iron with a base of binding agent. | |
| Roof Sipp | Roof coated with illuminated profiled plating. | |
| Roof Nitrate Warehouse 1 | Roof coated with corrugated iron with a base of binding | Corrugated iron covered with aluminium profiled plating |

| | | |
|---|---|---|
| | agent. | |
| Roof Nitrate Warehouse 2 | Roof coated with corrugated iron with a base of binding agent. | |
| Roof Boiler 7 | Concrete roof. | Concrete is affected at the entrance on roof from elevator shaft/ staircase. |
| Rail roof near loading area 2 | Roof coated with illuminated profiled plating. | |
| All roof pitches with an angle bigger than 15 degrees (e.g. all warehouses) | Fall danger effected by angle. | Mainly no fence on roofs |
| Roof compressor building 4,5 and 6 | Roof coated with illuminated profiled plating. | |
| Several tire galleries | Roof coated with illuminated profiled plating. | Roof coated with corrugated iron with a base of binding agent. |
| Roof around loading area 2 | Roof coated with profiled plating, which are coated underneath. If the roof is rusted, it can't be seen. | E.g. lower roof in front of warehouse 3, roof over entrance loading area 2 and roof over platform |
| Part of roof Central maintenance | Roof coated with illuminated profiled plating. | |
| Part of roof Central warehouse | Roof coated with illuminated profiled plating. | |
| Marley cooling tower | ''roof'' is plated with wood. Outside marked route not enterable. | On the Marley roof is a reinforced and marked route constructed. (02-15-2013). This allows operations to do their control route. |
| Roof Surpresseursbuilding | Concrete roof which is partly collapsed. | |
| Reforming C Machine Hall | Roof machine hall | |

### 4.7.2 TRA mandatory

Making a TRA is required for entering or working on/at weak roofs (as listed in the table).

While making the TRA, the following comments and steps must be handled.

1. First of all, try to do the work without entering the roof. E.g. working with an platform.
2. If number 1 is not possible and the roof has to be entered, then it is required to use a second protection equipment, next to the safety harness.
3. Walking on weak roofs, without using special equipment, is strictly forbidden. Wearing a safety harness combined with walking equipment is always required. Inform Golden Rule ‘’working at heights’’.

For this work with fall harness in isolated condition is forbidden, unless the TRA shows that appropriate measures are taken. See HAE- 028330.

### 4.7.3 Roof excess forbidden under these circumstances.

In some cases of weather it is forbidden to excess roofs, for safety reasons.

1. Wind speeds of 6 or higher.
2. Thunder or lightning.
3. Snow.
4. Glazed frost.
5. Dark, unlighted conditions.

## 4.8 Rope Access

Sometimes it may be necessary to Carry out work with a so-called Rope Access Team this should be determined by the client.

- The team must be trained according to the IRATA system.
- If the team is not trained according the IRATA system, the training and certificates are presented to be evaluated to by Yara.
- Yara will decide whether the program can be equated to the IRATA System.
- A practical demonstration may be past to the ability to demonstrate.

This work, Rope Access, is forbidden in isolated conditions See HAE- 028330.

## 4.9 Fall protection equipment

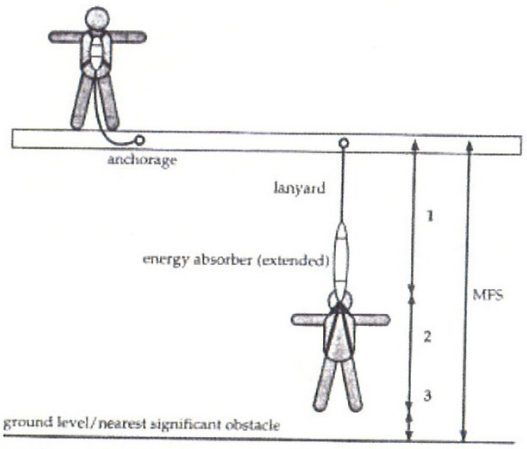
The following fall protection equipment is provided:

- Safety harness with a life line
- Fall arrest or self-retracting lifeline
- Tank safety harness

For this work with fall harness in isolated condition is forbidden, unless the TRA shows that appropriate measures are taken. See HAE- 028330.

### 5.10 Safety harnesses, self-retracting life lines, tank safety harnesses

Fall protection equipment must be anchored and the length of the fall arrest life line must be adjusted in such a way that one person working at a height cannot touch the ground during his fall.




| KEY: | | |
|---|---|---|
| 1) | Lanyard length + energy absorber extension | = 3.75 m |
| 2) | Harness stretch + distance between harness attachment point and feet | = 2.00m |
| 3) | Safety clearance | = 0.50m |
| | **Minimum Free Space (1 + 2 + 3)** | **= 6.25m** |

Before they are used, the user must visually inspect safety harnesses, self-retracting lifelines and tank safety harnesses, which must also be inspected by an independent body once a year. Records must be kept of such inspections. Equipment is to be replaced immediately if they have arrested a fall.

Only inspected and approved safety equipment may be used on the Yara site. The use of tank safety harnesses is discussed in the HAE-026168 safety work permit.

### 5.11 Lifejacket

When working on the quay and, among others, on ships, Yara workers must wear inspected and approved life jackets at all times. Life jackets must be inspected annually, at which time their $CO_2$ cartridge must also be replaced.

### 5.12 References

AI-15 “Safe working practices on roofs”
AI-16 “Securing wall and floor openings”
AI-17 “Hoisting and lifting equipment and safe hoisting”
AI-21 “Mobile scaffolding”