Asset Management / Koskinen Karri 07.11.2018

Suppliers' occupational safety group

Time 07.11.2018 9.00 am-4.00 pm

Place Caverion Suomi Oy, Lemminkäisenkatu 59, 20520 Turku

Present
Marko Elorinne, Eltel Networks Oy
Mikko Hakala, TLT-Building Oy
Kimmo Honkaniemi, Caverion Suomi Oy
Juha-Matti Huhtanen, ABB Oy
Toma Karkkulainen, Vattenfall Services Nordic Oy
Markku Linnanen, Siemens Osakeyhtiö
Teemu Palosaari, Destia Oy
Timo Pekonen, Empower PN Oy
Aleksi Peltola, VEO Oy
Jani Rintala, TMV Line Oy
Pasi Lehtonen, Fingrid Oyj
Karri Koskinen, Fingrid Oyj
Antti Linna, Fingrid Oyj

Absent Janne Ketola, Infratek Finland Oy

Matters to be dealt with

1 Meeting arrangements

Karri Koskinen acted as Chair and Secretary of the meeting. It was agreed that a memorandum of the meeting will be written and sent to the participants for commenting. The memorandum and other materials used in the meeting will be published on the Fingrid website.

In addition to the regular members of the occupational safety group, Fingrid's project manager Antti Linna participated in the meeting.

Aleksi Peltola is serving as the representative for VEO Oy at this time. A permanent member will be appointed later.

At the start of the meeting, the group was reminded of the guidelines on compliance with competition legislation and that only occupational safety matters would be discussed in the meeting and during breaks.

2 Memorandum from the previous meeting

We reviewed the memorandum from the previous meeting. We agreed that it would be a good idea to review all the memoranda from the previous meetings at a future meeting.

We dealt with the group members' proposal concerning the inspections performed on lines being dismantled and the suppliers' additional proposal regarding the contract terms for safety: "Wooden towers must primarily be taken down using a boom lift unless a risk assessment states otherwise." The matter has been addressed in Fingrid's transmission line team, which stated that Fingrid's transmission lines are inspected regularly and the condition information is saved in the asset management system. Based on the inspections, a climbing ban will be applied to towers that are considered dangerous. However, prior to climbing a tower, the employee must always check the condition of the tower at the time of climbing. The condition information recorded for the tower must also be checked in order to ensure that the observations recorded there do not have an impact on the safety of the planned work. Based on this, the above-mentioned change to the contract terms will not be made. In the future, Fingrid will add the condition reports for the line sections to be dismantled to its invitation to tender material. Karri Koskinen will determine whether it is possible to perform a special condition survey about one year prior to the planned dismantling project. The group commented that a lot can happen in one year. The group asked whether planned condition inspections are currently performed on the transmission lines to be dismantled. The answer to this was that condition inspections are performed normally on lines that are scheduled for dismantling. Mounting conductors on old foundations also requires knowledge of condition information. At one worksite, an old foundation rose up from the ground when the conductors were mounted on it. According to the suppliers, the old photo didn't provide an accurate picture of the foundation structure. Karri Koskinen will determine whether mounting on old foundations should be forbidden.

End plates on relay cabinets were discussed at the previous meeting. It was stated that these are ordered on a project-specific basis and agreed that someone would determine whether these could be introduced to the substation project description template. In the future, the ordering of end plates for relay cabinets will be added to the substation project description template.

During the previous meeting, we also discussed how to involve subcontractors in occupational safety work. It was agreed that, prior to the next meeting, the suppliers will find out which subcontractors could participate in the suppliers' occupational safety group meeting. The suppliers will report the candidates to Karri Koskinen.

At the previous meeting, we discussed a list of training events arranged by Fingrid. There are relatively few training events, so there is no need for a training list. We will strive to inform the suppliers of the training events as early as possible. The suppliers mentioned that all the training invitations do not always reach all of the intended people. It was stated that the suppliers' occupational safety group should review the upcoming training events and the group members will share information inside their own organisations.

The suppliers hoped that Fingrid would continue to distribute the occupational safety report. It was stated that Fingrid has a responsible person for this (Markku Pöysti), who ensures that the report is delivered to the suppliers via the Quentic reporting system. The suppliers requested that safety observations and near miss situations be divided by work stage in the report. We will try to develop this in 2019.

We continued to discuss the use of notification on machines used in transmission line work. Limiting devices can be electric or mechanical. A limiting device should not be blindly trusted. When using a mechanical limiting device, the scoop can rise higher than the limiting device allows if the machine is, for example, tilted. We also discussed model-based construction, in which 3D plans are uploaded to an excavator and if the machine does something that differs from the plan the limiting device stops the machine's movements.

We discussed the issues that should be taken into account when working below live transmission lines. It was agreed that issues to be considered when performing building/dismantling work under or near live transmission lines will be added to the suppliers' occupational safety group agenda. The group will also produce a checklist of the issues that must be taken into account. Risk assessment must take into account the work performed under conductors and actions, such as work machine earthing and safety distances. The height of conductors must be measured in advance and documented. In addition, the height of conductors in sections identified as entailing the greatest risk, such as the mid-span, must be measured right before the work begins and at regular intervals during the work. Another proposal involved adding a conductor height measurement report to Quentic. This will be considered, but the challenge is that the work groups do not necessarily have access to Quentic. The supplier must ensure that demanding tower sites are taken into consideration during the project's safety planning. A written risk assessment must be performed for sites that are particularly challenging / cause special danger. Karri Koskinen will create a work risk assessment form for Quentic.

Some hengenvaara.fi campaign booklets, which contain voltage distance stickers, are still available from Fingrid. The booklets were distributed to members of the suppliers' occupational safety group at the meeting and more can be requested from Fingrid's communications department. We discussed whether the stickers should be added to the Work safely on transmission lines and at substations brochures. Personal working distances can also be added to these stickers. Pasi Lehtonen will examine implementation.

The suppliers requested that piling under live transmission lines and outages would be visible in the invitation to tender material. Piling work should be done during outages.

Hoists and radio telephones operating on the same frequency can cause danger at worksites. It was stated that the main contractor must check the machines and devices operating on radio frequencies and used at the worksite, and coordinate the activities.

3 Current occupational safety matters and changes to the contract terms concerning safety / Karri Koskinen

Karri Koskinen delivered the following presentation: Current occupational safety matters and change to the contract terms concerning safety and Pasi Lehtonen reviewed the events related to electricity. It was stated that the number of lost-time injuries has decreased significantly, but quite a lot of near miss situations have been reported at Fingrid worksites.

We discussed a near miss situation that occurred at a Fingrid worksite, in which technicians installing eaves were working on the roof while live reactor feeds were under the work area. It is very important that to ensure that work groups are not allowed to work at a substation without the presence of electricity professionals. It is also important to always arrange a transmission outage whenever possible and when required to ensure safe performance of the work.

We discussed a safety observation made by a supplier, which involved an employee who was working without fall protection on a tower that was lying on the ground. People were reminded that a penalty was not applied in this case because the supplier reported the matter to Fingrid. Suppliers are not punished for reporting such events and these observations are always dealt with in a positive manner. This should be communicated to the projects and maintenance so that everyone will report their safety observations to Fingrid. It was agreed that efforts will be made to add a personal protective gear theme week to the ongoing safety observation campaign. Fingrid's safety expert Markku Pöysti had held a toolbox talk about the safety observation campaign for one supplier. This was considered a good practice. If necessary, Markku can provide the campaign materials or a toolbox talk by, for example, video link.

A significant number of slipping and tripping accidents are caused by a lack of cleanliness and order at worksites. It was agreed that the suppliers will communicate to their own organisations about the fact that cleaning days must be arranged before the snow arrives in order to reduce the risk of slipping and tripping.

It was stated that it is very important to provide induction for goods suppliers and other external drivers. For example, nothing can be unloaded under a live Fingrid transmission line without supervision or guidance, and in this case a risk assessment must be performed for the unloading. Nothing can be stored under transmission lines owned by other parties without special permission from the transmission line owner. We also discussed how participation in the online school can be required from people such as waste management drivers. For example, the online school must be completed if a risk assessment reveals the possibility of touching live parts. Karri Koskinen will prepare clear instructions for e.g. drivers concerning when the online school must be performed and which modules must be completed. The suppliers requested an automatic notification when completion of the online school decreases.

3.1 Changes to the contract terms

We reviewed the changes to the contract terms concerning safety for 2019 and all the suppliers agreed that the following changes are justified and approved them (The changes are underlined in the text):

10.1 Personal protective gear

- A helmet featuring a strap or other mechanisms to prevent the helmet from falling off the head unintentionally, safety footwear, high-visibility clothing, and eye protection must be used at all sites. ~~Eye protection must be worn at construction worksites.~~ If the Supplier's work planning and risk assessment processes reveal a work phase in which the use of a certain piece of protective gear would cause a

safety hazard or significant hindrance, the Supplier can agree to omit this piece of gear in the particular task. The risk assessment must be documented and delivered to the client for information purposes. The Client does not require the use of the above-specified protective gear inside working machines and vehicles, or in indoor premises comparable to office conditions where there is no construction or installation work in progress. Furthermore, the use of protective gear is not required in personnel premises or when moving to the personnel premises directly from the parking area. If there is no construction in progress at the worksite, the Client does not require the use of eye protection, helmets or safety footwear during terrain inspections, measurements or cross-over surveys of transmission lines.

- Unless official requirements call for class 3 protection, the requirement for the Client's worksites is a high-visibility work jacket, vest or similar upper body clothing with visibility of at least class 2.

17 Penalties for safety violations

- A fine of EUR 1,000 for the Supplier for each individual violation case. If the deficiency can be considered slight carelessness that does not cause immediate danger, the Client can, on a case-specific basis, issue only a written notification to the person who caused the violation.

- The person guilty of the violation is given a written notification for the first violation. If the same person violates safety rules again, he/she is given a written notification and removed from the site for the remainder of the day. If the same person violates safety rules at Fingrid's site for the third time, he/she is banned from Fingrid sites for a maximum of two years.

- In serious cases of violation, the guilty party is immediately banned from Fingrid sites for a maximum of two years. Serious violations include neglect of the "Always attached" method, connecting earthing in a prohibited way or failing to connect it at all, failing to use a helmet and lack of high-visibility clothing. The duration of the ban from sites may be re-considered on a case-by-case basis, and extenuating circumstances may be taken into consideration.

We also discussed possible changes to the contract terms concerning subcontracting and the use of labour: People under the age of 18 are not allowed to work at Fingrid worksites. The background for the proposed change is the employer's obligation to ensure that a person under the age of 18 does not perform work that can damage a young person's health/development. The suppliers agreed that people under the age of 18 should not be categorically forbidden from working at Fingrid worksites. The suppliers justified their opinion by stating that worksites also include work that does not involve any special risks. For example, the suppliers have used young people for the following jobs: warehouse work, preliminary assembly, carrying poles in measurement work, and installing number signs. The suppliers believed that it should be easier to bring young employees to the industry. A practical training period is part of the curriculum at vocational schools, and some of the suppliers also have apprentices. There should be ways to

encourage young people to enter the industry. The suppliers proposed that Fingrid could arrange an occupational safety course for young people.

4 Fall protection plan

4.1 On transmission lines / Toma Karkkulainen

Toma Karkkulainen delivered a presentation about Vattenfall Services Nordic Oy's fall protection plan.

The group proposed the following changes to the plan:

- A device for carrying tools should be added to the tools.
- Clarification of how many people can be connected to the attachment points.
- The safety ladder must be inspected or the climber must have a ladder inspection licence and perform the inspection while climbing.
- The lowering equipment must be at the work location.
- The fall protection plan must be reviewed at the start-up meeting.

It was generally stated that it is important to know the level at which the safety plan must be compiled. It is important to keep work instructions at a level that allows employees to understand the content. It was also mentioned that there is no need to explain everything in depth. Karri Koskinen stated that the fall protection plan must be project-specific, and it must describe in detail how and using which equipment the fall protection gear is connected to the attachment points/structures.

4.2 Development work / Everyone

Based on Toma Karkkulainen's presentation, we discussed the content of the fall protection plan and prepared a preliminary draft of a template for the content of a fall protection plan for transmission lines. Fingrid's contract terms concerning safety were used as supplementary material during this work.

Each supplier must compile a written fall protection plan for working at height. The plan must describe

1. The personal protection gear used to prevent falling.
   - Only equipment that has been inspected and complies with the laws and standards and which allows climbing/movement according to the "Always attached" method may be used.
   - The equipment may not be modified.
   - Work group equipment (example below).
     - Full body harness EN 361
     - Energy absorbers with hooks suitable for tower structures EN 355
     - Retractable fall arresters EN 360
     - Anchor ropes and connectors EN 362

    - Safety ladder-sliding fall arrester device EN 353-1
    - Self-retractable fall arrester
    - Equipment for lowering an injured person

2. Structures to prevent falling and attachment points for fall protection gear.
    - The attachment points are described by main category:
        - Wooden towers
        - Lattice tower (with safety ladder, step bolts or without either)
        - Tube tower (Safety ladder or step bolts)
3. Safe movement in the structures and climbing/descending.
    - Inspecting the condition of the structures
    - Climbing
    - Climbing onto the cross-arm
    - Moving on the cross-arm
    - Climbing onto the earth wire peak
    - Descending to the conductors
    - Descending
    - Working in a spacer cart
4. Rescuing an injured person.
    - The work group must always have equipment for lowering an injured person with it at the work location.
    - The rescue of an injured person is practiced in a competence test that is repeated each year. Rescuing is practiced from a cross-arm, tower leg, conductor and spacer cart. Each of these cases requires special expertise, which is why yearly practice is essential. The so-called A point of the harness must be used when rescuing a person from a tower.
        - This is reviewed before starting the work
        - Rescuing in special locations is taken into account
5. Qualifications for working at height.
    - Training that also includes the use and selection of personal protection gear, attachment points and tools
    - Competence tests
    - EA1
    - Health check – Occupational healthcare verifies the person's suitability for tower work

The supplier must review the fall protection plan with all people who participate in the work at the start-up meeting, and cover every work phase that requires climbing.

The first tower erection must be performed as part of the tower erection start-up meeting. The fall protection plan must be reviewed and the safety ladder inspection performed at the same time.

The fall protection plan must be reviewed as part of the conductor work start-up meeting, and the plan must also describe the process of descending to the conductors.

5 Use of a personal boom lift

5.1 At substations/Juha-Matti Huhtanen

Juha-Matti Huhtanen delivered the following presentation: Use of a personal boom lift at substations.

It was stated that the level of induction depends a lot on the company/person delivering the personal boom lift. Proper induction should be required.

The suppliers feel that **the space needed for working with a personal boom lift should be taken into account when planning Fingrid's substations; this primarily concerns 110 kV installations.**

We also discussed the fact that personal boom lifts used at a worksite must have a stabiliser, and that the device must be selected so that it cannot be driven with the boom up.

It was stated that an erection inspection must be performed on personal boom lifts (with supports).

It was stated that, as a general rule, safety distances that are too small to be visually monitored may not be used.

Work machine earthing is not required at Fingrid worksites if the work machine does not go closer than the minimum safety distance for an ordinary person.

6 The next meeting

The next meeting will be held on 27 March 2019.

Matters to be dealt with at the next meeting:

- Fall protection plan at substations / Janne Ketola
- Attachment point for work machine earthing in personal boom lifts / Everyone
- The situation with installation lifts / Karri Koskinen
- Traffic arrangements and road, railway and intersection crossings / Teemu Palosaari
    - Fingrid's specifications / Karri
- Protecting cable channels (Fingrid's view) / Karri
- Occupational safety and responsibilities for element installations / Aleksi Peltola
- Contract for the transfer of main contractor responsibilities/tasks / Karri

- Construction/dismantling under or near live transmission lines: checklist of matters to consider / Everyone