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SAFETY AND HEALTH TOPIC SHEET NO. 4: GEOTCHNICAL WORK

A safety and health 'topic sheet' aimed at raising awareness of hazards in the rope access industry. The series may be of use as a toolbox talk.

1 INTRODUCTION

1.1 Working on rock slopes using industrial rope access techniques presents a set of hazards not found in most industrial settings. These range from the integrity and use of various natural anchors, through to the stability of the ground underfoot and overhead.

2 WHAT CAN GO WRONG …

2.1 The work can be very physical and the conditions difficult as this type of work very often relies on the operatives maintaining stability without being in suspension, e.g. standing on muddy wet slippery slopes.

Case study
An operative working on a muddy slope slipped near to the top, landing heavily on his knee. As he was close to the top his ropes were running very low to the ground; and actually on the ground at the area closest to the anchor. Due to the injury, the operative was unable to stand and, as a result of the ropes being close to the ground, it was difficult to haul him back up. The operative was rescued and was aided back to the top. The position of the ropes on the slope made access for the rescue difficult and progress was slow.

3 WHY THINGS CAN GO WRONG …

3.1 Things can go wrong when the hazards have not been identified. Hazards include:

- **Slips trips and falls**

  Slopes can be very awkward to work on as rigging points are often low to the ground, making it difficult to stand comfortably early in the descent. Conditions are often wet, muddy and slippery.
- **Edge protection**

  There may be numerous points on the path of ropes where they are in contact with an edge. These must all be assessed and protected suitably.
- **Loose or falling objects**

  When ropes and technicians are in contact with the ground the potential for loose objects to be knocked is much higher. Technicians moving during tasks may dislodge objects above.
- **Rigging using natural anchors**

  Trees and rocks are often used as rigging points but should not be used unless assessed as unquestionably reliable by a competent person. Do not rely entirely on information provided by others, e.g. on anchor selection. If necessary, consult a geologist (for example).

- **Rescue difficulty**

  Although access and egress may be much simpler for a technician walking up and down a slope, manoeuvring and supporting the weight of a casualty in these situations is much more difficult, and must be considered.

- **Ropes become tangled or snagged**

  Ropes in contact with the ground, above or below the technician, require careful management.

- **Poor or incorrect equipment selection**

  Some equipment, e.g. descenders and back-up devices, are less effective when used on sloping ropes.

- **Working areas**

  Care must be given when setting out the working area, as the potential 'fall out' area for objects dropped on a slope is much larger than that normally excluded for works in suspension.

3.2 This list is not intended to be exhaustive.

4 WHAT YOU CAN DO …

4.1 Suitable control measure should be implemented. You should consider:

(i) alternative rigging options;

(ii) the selection of appropriate footwear;

(iii) the need for rope protection (and consideration of what is most appropriate);

(iv) attaching any rope protection to the hazard itself;

(v) surveying and clearing loose objects, in advance;

(vi) keeping all loads and ropes clear of the ground to prevent dislodging objects.

4.2 Again, this list is not intended to be exhaustive.

Case study

A technician on a geotechnical job was working below the level of some rock mesh. The ropes passed over a cable edge on the top of the rock mesh and the technician had attached two separate canvas rope protectors to the ropes at this point. Because the slope was not particularly steep the technician was able to work with little or no weight on the rope at times. When the task was complete the technician ascended back to the top. When they reached the protected edge both rope protectors had slid up the ropes and were no longer protecting the ropes. The working line, that had been weighted at times, had been severely abraded.

The loading and unloading of the ropes, along with the technician's movement during the task, had resulted in the rope protection ending up above the hazard, rendering it useless.

5 HOW YOU CAN DO IT …

5.1 Ensure that your risk assessment is site and task specific.

5.2 Think: "What might go wrong?" and "What's different today?"

Case study

A two-technician team were installing anchors into a rock slope on two separate sets of ropes. One technician was drilling lower down the slope. The technician above was attaching tools and equipment to be lowered down to them. As the 'top man' lowered a bag of fixings to the technician below, the bag dragged through loose stone and earth. Some stones and mud were dislodged, falling onto the technician below. There was no injury.

The system for passing down and retrieving tools and equipment from below was effective and simple, but did not take into account loose objects which could be dislodged.

6 ACTION

6.1 Review your management system's procedures for geotechnical work, e.g. working on rock slopes.

7 REFERENCES

7.1 Further information can be found in:

(a) IRATA International code of practice for industrial rope access (Third edition, September)[1]:

- Part 2, 2.2.4, Risk assessment
- Part 2, 2.11.3.1.7, Preventing anchor lines from becoming entangles or damaged
- Part 2, 2.11.3.1.17 and .18, Ropes snagging
- Part 2, 2.11.8, Exclusion zones
- Part 3, Annex A, Risk assessment

7.2 For a list of current (and archived) 'safety communications' by IRATA, see www.irata.org

8 RECORD FORM

8.1 An example *Safety and Health Topic Sheet: Record Form* is given below. Members may have their own procedure(s) for recording briefings to technicians and others.

9 FURTHER READING

IRATA Topic Sheet No. 11, Dropped objects

IRATA Topic Sheet No. 12, Hazard identification and risk assessment

Steep ground working (HSE) (www.hse.gov.uk/treework/safety-topics/steep-ground.htm)

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1 www.irata.org/default.php?cmd=215&doc_id=4336

IRATA SAFETY AND HEALTH TOPIC SHEET – RECORD FORM			
Site:			
Date:			
Topic(s) for discussion:		Topic Sheet No. 4: Geotechnical work	
Reason for talk:			
Start time:		**Finish time:**	
Attended by *Please sign to verify understanding of briefing*			
Print name:		**Signature:**	
Continue overleaf (where necessary)			
Matters raised by employees:		**Action taken as a result:**	
Continue overleaf (where necessary)			
Briefing leader *I confirm I have delivered this briefing and have questioned those attending on the topic discussed.*			
Print name:		**Signature:**	**Date:**
Comments:			