

IRATA

Safety Bulletin No. 48



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SAFETY BULLETIN NO. 48: USE OF A TELEHANDLER AS AN ANCHOR 使用推高機當作固定點

A safety bulletin aimed at raising awareness of hazards in the rope access industry. The text may be of use as part of a toolbox talk.

安全公告主旨在提高繩索進入技術業對危害因素的意識。內文可當成工具箱會議的參考內容。

DISCLAIMER:

This safety bulletin - including, where given, any conclusions - is not as a result of any investigation undertaken by IRATA. It is based on information provided by a member company. IRATA does not attribute any blame; nor provide opinion on any root causes. Neither is any opinion expressed or implied on liability or culpability. The following summary is provided to assist others in applying any 'lessons learnt'. Rope access is defined in the IRATA ICOP, Part 1, 1.3, Definitions. In essence, it is a two-rope system (working line and safety line). For the purposes of this summary, any reference to 'on-rope' or 'off-rope' should be construed accordingly.

免責聲明:

此安全公告: 包含任何結論, 並非IRATA調查的結果。以下的案例研究是根據非會員公司提供的訊息, IRATA不承擔所有陳述的意見、相關法律等任何責任。以下的摘要是用來應用在其他經驗。在IRATA ICOP第一部分1.3對繩索技術的定義時提到, 雙繩系統(主繩與安全繩)。要達到此摘要的目的, 任何有關“on-rope(上繩)”或“off-rope(非上繩作業)”也應比照辦理。

1 INTRODUCTION 引言

- 1.1 A dangerous occurrence took place when ropes were rigged to the forks of a telehandler that had not been immobilized. The telehandler was driven a short distance, to move a compressor, but fortunately no rope access technician was injured.

在沒上鎖的推高機的叉子上安裝繩索時發生危險的事件。當時使用了推高機來移動一台壓縮機, 幸好沒有繩索技術員受傷。

2 BACKGROUND INFORMATION 事件背景

- 2.1 Date of incident: September 2017. 意外發生的日期: 2017年9月。
- 2.2 Injured persons: None. 受傷人員: 無。
- 2.3 Two Level 1 rope access technicians had rigged two sets of ropes to a telehandler. This was checked by the Level 3 supervisor. The technicians were attached to the rigged ropes and had descended the cutting to mark up the rock surface for drilling, as part of some geotechnical works. At the time of rigging the telehandler was locked, no key was present and the driver was away in the site compound.

兩位L1繩索技術員將兩組繩子安裝在一台推高機上, 當時由一位L3現場負責人驗收檢查。像是地質工作, 技術員們都以上繩且下降到在山嶺上已標示好要鑽孔的岩石表面。安裝繩子的時候, 推高機已經上鎖, 駕駛也離開了工作現場, 並且沒有留下鑰匙。

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3 WHAT WENT WRONG 原由

- 3.1 At approximately 03:20hrs the telehandler driver was contacted to go and reverse the telehandler to attach a compressor. The Level 3 heard the telehandler's reversing beacon and immediately alerted the banksman and driver to stop.
大約在03:20時，推高機的駕駛被叫去把壓縮機放到車上。L3現場負責人聽到倒車警示音時立馬警告工作區指導員跟駕駛要停止。
- 3.2 The telehandler had moved approximately 1m before being told to stop and, as a result, the two rope access technicians attached to the telehandler were pulled upwards.
要停止推高機之前，已經移動了差不多1公尺左右，結果那兩位在掛在繩上的技術員已經被往上吊。
- 3.3 One of the rope access technicians was stood near the top of the cutting and was moved a couple of steps upwards. The other technician was situated down the cutting face closer to its base, a short distance above the rail line. He was pulled approximately 0.5m upwards. Once the telehandler was stopped, the rope access technician at the bottom of the cutting descended to the ground and detached from the ropes. The other rope access technician was at the top of the cutting. He walked upwards to the top and detached from the ropes.
其中一名技術員被往上吊到山嶙頂端附近，另一位被拉到離地面大約0.5公尺，在山嶙表面接近欄杆的上方。把吊車停下後，在下方的技術員下降到地面便離繩，另一位直接往上走到山嶙頂也下了繩子。
- 3.4 The works were stopped, made safe and a team meeting convened for a site debrief. No treatment was needed as no injury occurred.
基於安全考量，隨即停止工作並召開工作現場詳細盤查。因為沒有傷亡，所以也沒有救治需要。

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4 WHY IT WENT WRONG 原因

- 4.1 The work had been planned so that the rope access technicians were rigged from their own vehicle (from the road and under traffic management). In this location, due to the position of the parked telehandler, this was not possible.

此項工作是有經過計畫的。由於推高機停放的位置，導致所繩索技術員無法將繩子安裝在他們自己的交通工具上。

- 4.2 The risk assessment and method statements (RAMS) did not state rigging to a third party's vehicle as a method of anchorage. Head office was not informed that the Level 3 on site had changed the documented and agreed method of rigging.

風險評估和方法陳述(RAMS)未聲明將固定點裝在第三方交通工具上。總公司也未通知此位在工作現場的L3人員已改變紀錄並同意此安裝方法。

- 4.3 The Level 3 when deciding to change the method of anchorage did not perform and document changes to the planned method of work.

此L3人員決定變更固定點的方式時，並未改變此文件的工作方式計畫。

- 4.4 The Level 3 did not inform the banksman or telehandler driver before rigging ropes to the telehandler. Neither did he inform any members of the principal contractor's staff.

在把繩索安裝在推高機之前，此L3人員未通知工作區管理員或推高機司機。也並未告知任何主要的結構工作員。

5 EQUIPMENT 裝備

- 5.1 The banksman and telehandler driver did not perform a 360 degree check of the vehicle before it being moved. If the driver and banksman had performed the correct pre-start vehicle checks before moving the telehandler they would have seen the ropes rigged and no incident would have occurred.

工作區管理員和推高機司機在車輛移動前沒有做一個360度的全面檢查。如果他們有做檢查的話，在移動車輛之前便會發現是有繩索固定點被安裝在推高機上，也不至於導致意外發生。

6 DISCUSSION 討論

- 6.1 This was a high potential near hit. Fortunately, no one was injured. There was certainly a breakdown in communication between the Level 3 and the banksman and driver, both when the ropes were rigged initially and when they arrived at the machine to move it. The correct vehicle pre-use checks were not carried out.

其實是很有可能發生嚴重的事故，幸運的是此案件沒有人員受傷。很顯然的，在把繩子固定在推高機上到移動吊車時，L3人員和工作區指導員與司機之間的溝通出了問題。他們並沒有確實執行車輛使用前檢查。

- 6.2 The procedures set out were not followed by the Level 3 when changing methodology. Change control is an important consideration within a company's processes.

在改變做法時，L3人員並沒有遵循程序執行。在公司的程序裡，變更的控制也是一項很重要的一環。

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6.3 Vehicles and mobile site machinery of various types can make effective anchors. The vehicle must have sufficient mass and frictional resistance to the ground to provide an unquestionably reliable anchorage for both the working line and the safety line. There should be appropriate attachment points for the anchor lines.
車輛和其他類型的移動式機械其實能被拿來當做固定點。車輛一定要有足夠的重量和與地面的摩擦力來支撐一個可用於工作主繩跟安全確保繩的可靠固定點。

6.4 There should be no possibility that the vehicle engine could be started or that the vehicle(s) could be moved, e.g. by being pushed or by being impacted by another vehicle. Correct isolation of the vehicle(s) should be ensured. Wheel chocking may be necessary. Barricading should be provided to make the vehicle(s) part of an exclusion zone. Signs warning of the dangers of unauthorized movement should be considered. A sentry may be required.
不能有工作車輛引擎被啟動或車輛被移動的可能性，例如被其他車輛推擠或撞擊。應要確認工作車輛附近的淨空。視需要使用輪胎車擋。應使用警示架來確保安全工作區域。也應考慮使用警示牌，或許也需要一位指示人員。

7 REMEDIAL ACTIONS 補救措施

7.1 The Level 3 supervisor was removed from supervisory duty on this job and issued with a written letter of warning.

該位L3現場負責人被拔除次工作的督導職務，且收到一封警告信。

7.2 The procedures and RAMS were amended to describe the safe method of work when rigging to vehicles. The member company had not given permission, nor included a safe method of work for rigging from a vehicle.

修改了關於在車輛上使用安全方法來安裝固定點的程序、風險評估和方法陳述。不再允許此會員公司用安全方法來安裝固定點在車輛上。

7.3 A 'learning bulletin' was prepared and disseminated.

宣導此公告。

7.4 A tool box talk was given to all rope access technicians to brief them on the correct procedures when using vehicles as anchors. All technicians were required to sign to confirm their understanding.

使用車輛來當作固定點時，所有繩索技術員都要開工具箱會議來了解正確的程序。所有技術員都要簽署同意書。

8 FURTHER INFORMATION 更多資訊

8.1 Further information can be found in: 可以在以下網址找到更多資訊：

(a) IRATA International code of practice for industrial rope access (Third edition)¹:
IRATA工業繩索技術的實踐，國際編碼（第三版）：

- Part 3, Annex F, Safety considerations when installing or placing anchor devices for use in rope access (Clause F.3.6)
Part 3, Annex F, 安裝繩索技術固定點的安全考量(Clause F.3.6)

8.2 For a list of current (and past) 'safety communications' by IRATA, see www.irata.org
參考www.irata.org來取得IRATA安全傳達清單

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9 RECORD FORM

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

以下為安全公告的紀錄表範例，會員可使用來作為技術員們的紀錄會議程序。

| IRATA SAFETY BULLETIN – RECORD FORM | | | |
|---|--|---------------------|--------------|
| Site: | | | |
| Date: | | | |
| Topic(s) for discussion: | Safety Bulletin No. 48: Use of a telehandler as an anchor | | |
| Reason for talk: | | | |
| Start time: | | Finish time: | |
| Attended by <i>Please sign to verify understanding of briefing</i> | | | |
| Print name: | Signature: | | |
| | | | |
| | | | |
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| <i>Continue overleaf (where necessary)</i> | | | |
| Matters raised by employees: | Action taken as a result: | | |
| | | | |
| | | | |
| | | | |
| <i>Continue overleaf (where necessary)</i> | | | |
| Briefing leader <i>I confirm I have delivered this briefing and have questioned those attending on the topic discussed.</i> | | | |
| Print name: | | Signature: | Date: |
| | | | |
| Comments: | | | |