

COUNCIL OF NORTHERN CAVING CLUBS

BRITISH CAVING ASSOCIATION

Committee meeting

To be held at Hellifield Village hall on Friday January 27th 2012
Starting at 20:00

AGENDA

1. Apologies for absence
2. Minutes of the last meeting
3. Matters arising from the minutes
4. Officers reports
 - Chairman's report
 - Secretary's report
 - Treasurer's report
 - Access Officer's report
 - Conservation :
 - i) Conservation Officer's Report
 - ii) Proposal on clearance of rubbish from sites of speleological Interest (Anthony Brown)
 - Training officer's report
 - Technical group report
5. Meets secretaries reports
 - Leck Fell
 - Casterton
 - Fell Birks Fell
 - Penyghent & Fountains Fell
 - Other areas
6. BCA report
7. Any other business
8. Date and place of next meeting

PROPOSAL ON CLEARANCE OF RUBBISH FROM SITES OF SPELEOLOGICAL INTEREST

For some years, Natural England and CNCC have funded and supervised the removal of rubbish from sites of speleological interest, notably Barbon Pot and Gunnerfleet Caves. The work depends on gaining the trust of farmers and landowners. Illegal disposal of rubbish is likely to incur penalties although the rubbish in the sites under question generally predates prohibitive legislation and in any case it would be difficult to attribute responsibility for illegal action to any individual. Natural England in consultation with the Environment Agency have worked effectively in clearing sites and maintaining goodwill with local farmers on the understanding that there will be no legal repercussions.

In April 2011 we started to clear Tip Wood in Bowland with the support and approval of the Land Agent but the work was called to a halt after someone contacted the agent and warned of the probable presence of harmful substances. We assumed that this referred to corrugated asbestos sheets that we had brought up. CNCC subsequently determined that we were adequately covered for the particular type of asbestos found provided that we observed correct practices and procedures. However, the Estate Office was still unwilling to authorise more than the removal of what had already been brought to the surface.

For CNCC and Natural England there are issues that will apply generally to similar activities using volunteer labour. We need to clarify and document procedures and protocols for the clearance of rubbish of speleological interest using volunteer labour. The main points should be covered under the following, which need to be expanded and clarified:

Supervision of projects by Natural England with support and guidance by statutory bodies, notably the Environment Agency

The nature of **hazardous substances** likely to be found and the circumstances under which it is necessary to consult expert advice

Legislation on disposal of rubbish and the implications for using volunteer labour in its removal

Drawing up of **risk assessments** and the circumstances under which they cease to apply and work needs to cease, and the drawing up of amendments to risk assessments

When it is necessary to call in **specialist contractors** for the safe removal of hazardous substances

Costing and payment of work using volunteer labour

Insurance and the need to ensure that everything above is adequately covered

I propose that a nominated person draws up a code of practice for the removal of waste from sites of speleological interest to cover the above and any other concerns that may arise during discussion and consultation.

Tony Brown

Northern Boggarts

January 14 2012

APPENDIX: Issues to be considered when drawing up the Code of Practice.

Below are the main issues raised in correspondence with Les Sykes and Andrew Hinde:

As well as asbestos there are also concerns about animal carcasses which are a biohazard, and other materials, for example in old refrigerators. Substances not hazardous in themselves may become so when combined, mixed or in contact with a reactive agent. Action on human tissue can be primary or secondary.

Under current legislation it is illegal to deposit waste except in a licensed waste reception centre. Removal of illegally deposited waste is tampering with the evidence. Conveying someone else's waste requires a waste carrier's licence.

Waste removal is a specialised task. Those employed to do it, do so after adequate training..

If you receive payment for dealing with waste you need to be either registered or hold a licence. Technically the volunteers do not get paid but CNCC has received money from Natural England quoted for at an hourly rate. This arrangement may need to change and we need to clarify the circumstances under which volunteers can work on behalf of the CNCC and under the BCA insurance scheme. Should there be an incident, then technically CNCC is responsible and we have a duty of care. How to cost and pay for future work is an issue given that what we originally conceived as conservation has now taken on the mantle of waste management with all the complexities of contracting and HSE regulations

Natural England have supervised the removal of rubbish in the past and we need to be clear how this lies with the Environment Agency who are the Government body responsible for ensuring the safe removal and disposal of waste material.

The Environment Agency have offered the services of an inspector to supervise and risk assess the activity. Are there dangers here? If something was uncovered that was a problem, could it end in a prosecution? To the landowner it might appear that we were complicit in the actions of the Environment Agency.

We need to be particularly careful in drawing up risk assessments. When a hazard not covered by the risk assessment is found it is an automatic stop work and re-assessment with additional control measures. These additional control measures will probably require the use of Personal Protective Equipment (PPE). Under the PPE regulations state you must receive appropriate and adequate training and the use of PPE must be supervised.

If CNCC use a subcontracted specialist we need to know if that would make us an employer. It would be easier for Natural England to subcontract but the cost could be prohibitive



Council of Northern Caving Clubs

Committee meeting 27 January 2012

Secretary's report

The period from September has been very quiet. Items will be covered later in this report.

The old CNCC Xerox photocopier is looking for a new home. It is free and if anyone wants it let me know and I will bring it to the meeting. The photocopier does need a new cartridge before it can be used.

Access Officer's report

I have reminded the Leck Estate manager that the new license agreement is due, as far as I am aware this is in hand and it will be granted for the next twelve months.

I have met with the new owner of South House Farm; everything is as it was with the previous owner. Parking is permitted when visiting the Allotment, B&B is available and there are plans for a Certificated Location for five units at the farm. New details are on the CNCC web site.

The issues surrounding Ireby Fell Cavern are still active and to date the owner has failed to arrange a meeting with the CNCC.

CNCC Technical Group

The problem surrounding the replacement anchor has now been resolved. I have attached the test data at the end of the report so that everyone has a copy of what has been achieved during the summer months by those involved in the exhaustive testing.

BCA Equipment & Techniques Committee

At the last meeting the E&T committee recommended that the batch 1 PECO anchors are decommissioned as they (BCA) have a reduced level of confidence in the metal. There may be some instances where these cannot be removed safely and a marking system may need to be used to identify them.

Training Officers report

Nigel Ball has taken over as the BCA training committee convenor.

Les Sykes

CNCC secretary

CNCC Training Officer

CNCC Access Officer

CNCC co-representative BCA Equipment & Techniques Committee



Anchor Tests 2011

Scope

This report details the complete series of anchor tests designed to find a replacement for the DMM Eco anchor carried out by the BCA Equipment & Techniques Committee during 2011.

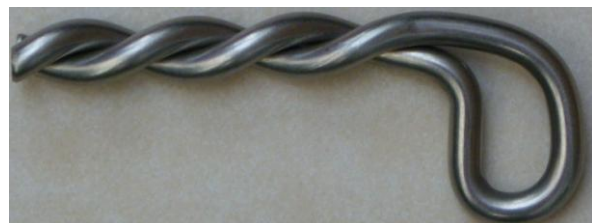
Introduction

Following the cessation of production of the DMM Eco anchor it became necessary to source a replacement which would fulfil all the criteria decided by the Committee during their consultative process. The main requirement was that the anchors should attain an axial load of at least 25kN before failure. The logic for this standard was that most, if not all, of the other components in the equipment safety chain would have failed at this loading. As the vast majority of natural caves are in carboniferous limestone it was decided that the initial tests would be carried out in this substrate.

An identical looking product to the DMM anchor was offered by Jonathon Sims who had manufacturing contacts in China. An initial test batch of 200 anchors was acquired and designated "Peco Batch 1". Subsequently, a further production batch of 2000 anchors was ordered designated "Peco anchor Batch 2". As will be observed later in the report, four out of a sample of sixty four Batch 2 Peco anchors suffered catastrophic metallurgical failure below the 25kN threshold.



Further research identified another possible alternative supplied by Bolt Products manufactured in Germany to BS EN 959. The major difference with this anchor is that whilst it was still made with 8mm 316 stainless steel bar the two tangs of the anchor were twisted unlike the parallel bars of the Eco and Peco anchors. Another difference was that the eye of the anchor was slightly smaller than the Eco and Peco anchors although it was still of adequate size.



Method

All anchors were tested in batches of 32. The two types of chemical anchor mortars (i.e. resins) that were used for installing the anchors were RAWL R-KER Epoxy Acrylate Styrene free resin manufactured by RAWL fixings and Allgrip KMR-RES resin which is manufactured by Exchem UK. This is the unsaturated polyester resin in styrene that has been previously used for the setting of Eco anchors.



Test 1 - Peco Anchor Batch 2 – Allgrip KMR-RES - Horseshoe Quarry - Stoney Middleton

Test 2 - Peco Anchor Batch 2 – Allgrip KMR-RES - Ingleton Quarry

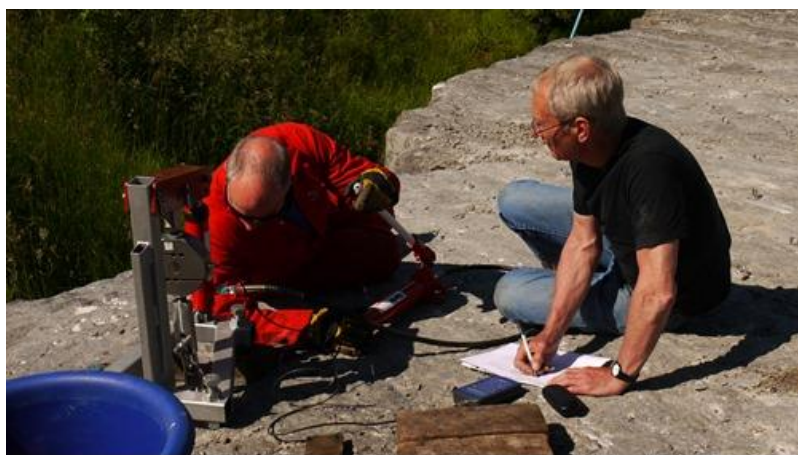
Test 3 – Peco Anchor Batch 1 – Allgrip KMR-RES - Ingleton Quarry

Test 4 - BP Anchor - RAWL R-KER - Ingleton Quarry

Test 5 - BP Anchor – Allgrip KMR-RES - Ingleton Quarry

See Appendix 1 - Test 1 (Purple) - Test 2 (Red) – Test 3 – (Green) – Test 4 – (Blue) – Test 5 - (Black)

All the anchors were installed in carboniferous limestone in compliance with the BCA E&T Committee document "Permanent Resin Bonded Anchors – Installation Procedure, Training and Documentation" (IPTD); which is the same as the recommend procedure by both resin manufacturers. The Peco anchors were installed into holes 18mm diameter x 10mm deep. The Bolt Products anchors were installed into holes 16mm diameter x 100mm deep. The holes in Ingleton Quarry were cleaned using water (pressure wash), brushed and washed until all the limestone dust had been removed. They were then dried using absorbent cloth. The holes in Horseshoe Quarry were dry cleaned using a brush and a blower until all the limestone dust had been removed.



Results

Test date: 24th June 2011

Anchor type: Peco Batch 2 (production batch)

Resin: KMR-RES

Location: Horseshoe Quarry - Stoney Middleton

Substrate – Black Layer – Stoney Middleton Sequence

During the test period it became apparent that the substrate was not as uniform or as structurally strong as was initially thought. There were areas where the thin substrate microstructure caused some placements to fail prematurely with resultant delamination. However, even with substrate failure the tests did indicate that the anchor placement system would give reasonable test results in thinly bedded and relatively weak bituminous limestone strata. More concerning was that two Peco anchors failed by fracture of the metal at the lower curvature of the eye. The load at deformation was consistent within a range of 10-16kN giving a mean of 13.6kN. The ultimate failure load i.e. the peak load at which the anchor started to egress from the resin or the load required to extract the anchor from the resin, whichever was higher, was within the range 16-35kN with a mean of 27.44kN. Although the fracturing of the substrate did result in some low readings the mode of failure was consistently the anchor to resin bond except for the two anchors which fractured at the lower curvature of the eye. Peco anchors No. BCA 0182 and BCA 0004 suffered catastrophic metallurgical failure at 26kN and 16kN respectively.

Test date: 28th June 2011

Anchor type: PECO Batch 2 (production batch)

Resin: KMR-RES

Location: Ingleton Quarry

Substrate – Yorkshire Limestone

32 Peco anchors were randomly selected from the remainder of the batch and set in structurally solid limestone. As there was only one small area of the test bed where substrate failure occurred the results were generally in line with expectations. However, as in the test at Horseshoe Quarry, two Peco anchors fractured at the lower curvature of the eye. The load at deformation was consistent within a range of 11-15kN giving a mean of 13.28kN. The ultimate failure load, as described above in the tests at Horseshoe Quarry, was within the range 14 - 47kN. Giving a mean peak load force of 33.22kN. Although the fracturing of the substrate did result in some low readings the mode of failure was again consistently the anchor to resin bond except for the two anchors which fractured at the lower curvature of the eye.

Peco anchors No. BCA 0069 and BCA 0153 both fractured at 18kN and 14kN respectively. The main concern is that the lowest fracture load (14kN) would technically make the anchor placement the weak link in the rigging system. The anchor in the photograph was cut to remove it from the placement.



Test date: 24th September 2011

Anchor type: Peco Batch 1

Resin: KMR-RES

Location: Ingleton Quarry

Substrate – Yorkshire Limestone

During the test period it became apparent that the chemical anchor mortar had not thoroughly mixed during application into the hole. This resulted in two relatively low readings. Anchor test number 10 was extracted at 26Kn. and anchor test number 13 was extracted at 18Kn. On closer inspection of the chemical mortar it was found to be granular which could indicate that thorough mixing had not occurred or that the resin required a longer curing time. The load at deformation was consistent within a range of 14-18kN giving a mean of 16.3kN. The ultimate failure load i.e. the peak load at which the anchor started to egress from the resin or the load required to extract the anchor from the resin, whichever was higher, was within the range 18-45Kn. with a mean of 34Kn.

Date: 22nd October 2011

Anchor type: Bolt Products 8mm x 100mm twisted stainless steel anchors

Resin: RAWL

Location: Ingleton Quarry

Substrate – Yorkshire Limestone

Thirty three Bolt Products anchors were installed in limestone (somebody couldn't count). During the test period it became apparent that the chemical anchor mortar had not thoroughly mixed during application into one of the holes. The peak load to remove this anchor was 36kN. RAWL have been contacted and from the information supplied by us have initiated an investigation. The failure mode is initially similar to a DMM Eco anchor with elongation of the eye towards the direction of the applied load. However, unlike an Eco anchor as it is extracted from the substrate the anchor twists, and along with it the load cell, until the load is released as the anchor suddenly and violently egresses from the resin. The load then gradually increases until the anchor starts to twist and the process is repeated. This behaviour continues until the anchor is extracted from the substrate. Generally the anchor's failure range was consistent; however anchor test numbers 20 and 26 were below 30kN. As the failure mode is anchor to resin bond this is probably due to poor mixing and adhesion of the resin. The deformation range was 18-23kN. The ultimate failure load i.e. the peak load at which the anchor started to egress from the resin or the load required to extract the anchor from the resin, whichever was higher, was within the range 24 - 47kN with a mean of 35.5kN. From the data gathered from these tests it is evident that the anchor and peak load forces are consistent and similar to the DMM Eco and Peco anchors.



Test date: 2nd November 2011

Anchor type: Bolt Products 8mm x 100mm twisted stainless steel anchors

Resin: KMR-RES

Location: Ingleton Quarry

Substrate – Yorkshire Limestone

As a consequence of the high pull out loads experienced during these tests the mode of failure changed. Normally, in Eco & Peco anchors, the mode of failure is the anchor to resin bond. The Bolt Products anchors, in the majority of cases, experienced substrate failure and the resin/rock bond with it. On a number of the tests cone fracture and delamination of the substrate occurred followed by the failure of the resin to rock bond. However, as demonstrated in the photo opposite even with delamination the anchor placement still held 51.73kN. With the reduced hole size (16mm) the amount of resin in the placement is also reduced. This causes the resin to fragment and become almost pulverised by the load during extraction of the anchor. This pulverisation is more evident lower down in the placement.



An interesting observation was that the anchors were still holding only a little less than their peak loads when half to two thirds of their length had been extracted. In comparisons between the RAWL R-KER and the Allgrip KMR-RES the inclusion of styrene in the formulation means failure loads are 10kN higher with the Allgrip KMR-RES resin.



Another interesting observation was that the shank of the Bolt Products anchor unwound and elongated under loads approaching 50kN. (5th anchor from right picture below). The deformation loads were similar to the previous test. The ultimate failure load i.e. the peak load at which the anchor started to egress from the resin or the load required to extract the anchor from the resin, or substrate failure, whichever was higher, was within the range 32 - 63kN with a mean of 44.91kN.



Conclusions

From the data gathered from these tests it is evident that the combination of the Bolt Products 8mm twisted stainless steel bar anchor and the Allgrip KMR-RES produces strength well in excess of both the Eco and Peco anchors. Also Allgrip KMR-RES is far superior to the anchor manufacturers recommended resin. The reason the anchor manufacturer specifies the RAWL R-KER resin is that in Germany the use of styrene based resins is illegal for Health and Safety concerns. There is no such restriction in the UK.

The graph of ascending extraction loads in Appendix 2 demonstrates the difference in peak load force between the Bolt Products anchors installed with RAWL fixings resin and Allgrip KMR-RES. The graph of ascending extraction loads in Appendix 3 shows the comparative extraction loads of the two batches of Peco anchors and in Appendix 1 a comparison of all five test series.

Future Objectives

1. To test a number of the Bolt Products anchors with KMR-RES in shear (radial).
2. To conduct tests of anchor strengths in other weaker substrates as defined by the Equipment and Techniques Committee.

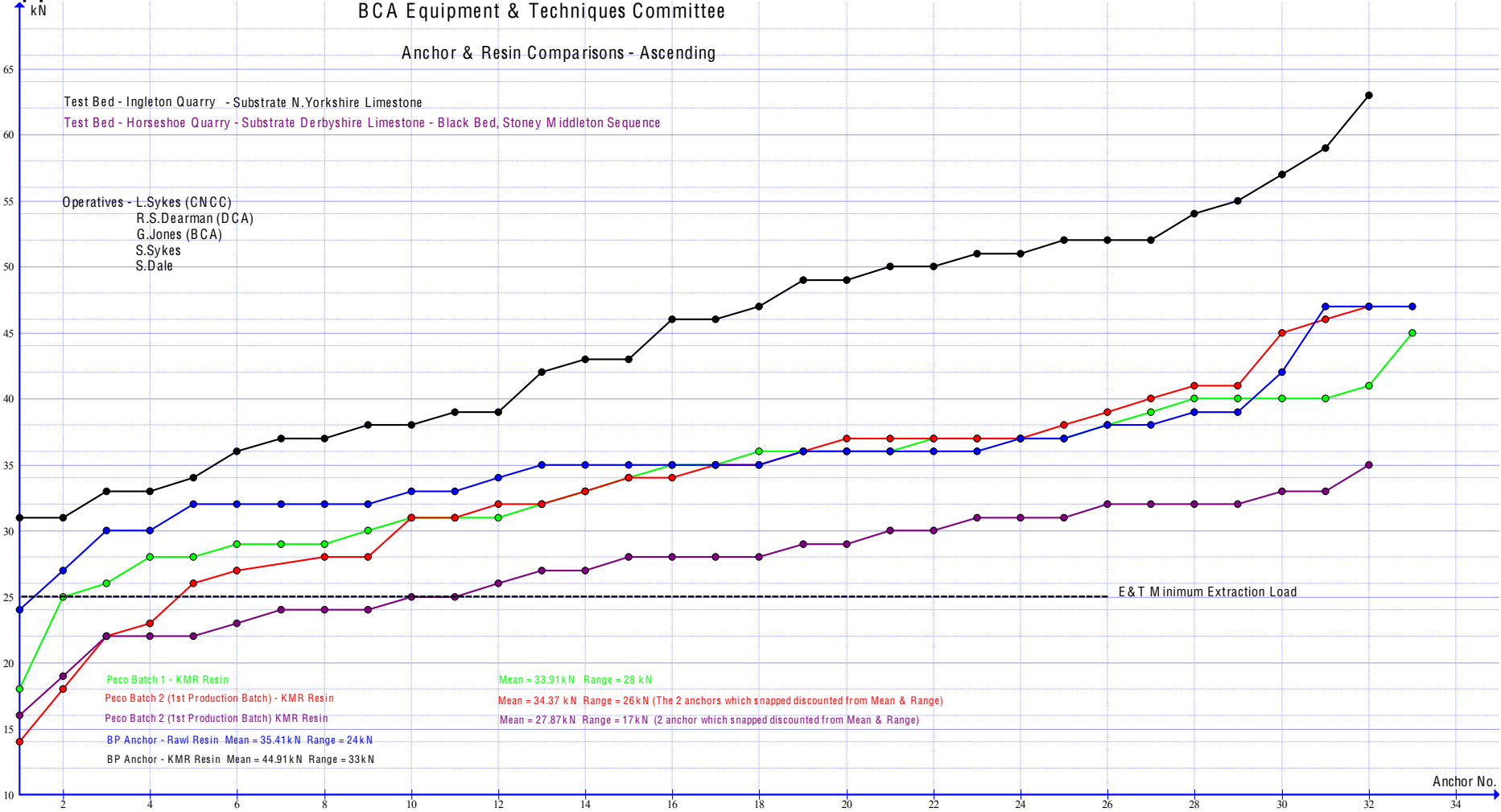
Anchor installation team: R.S. Dearman, L. Sykes, G. Jones, S. Sykes

Anchor test team: R.S. Dearman, L. Sykes, G. Jones, S. Sykes, S. Dale

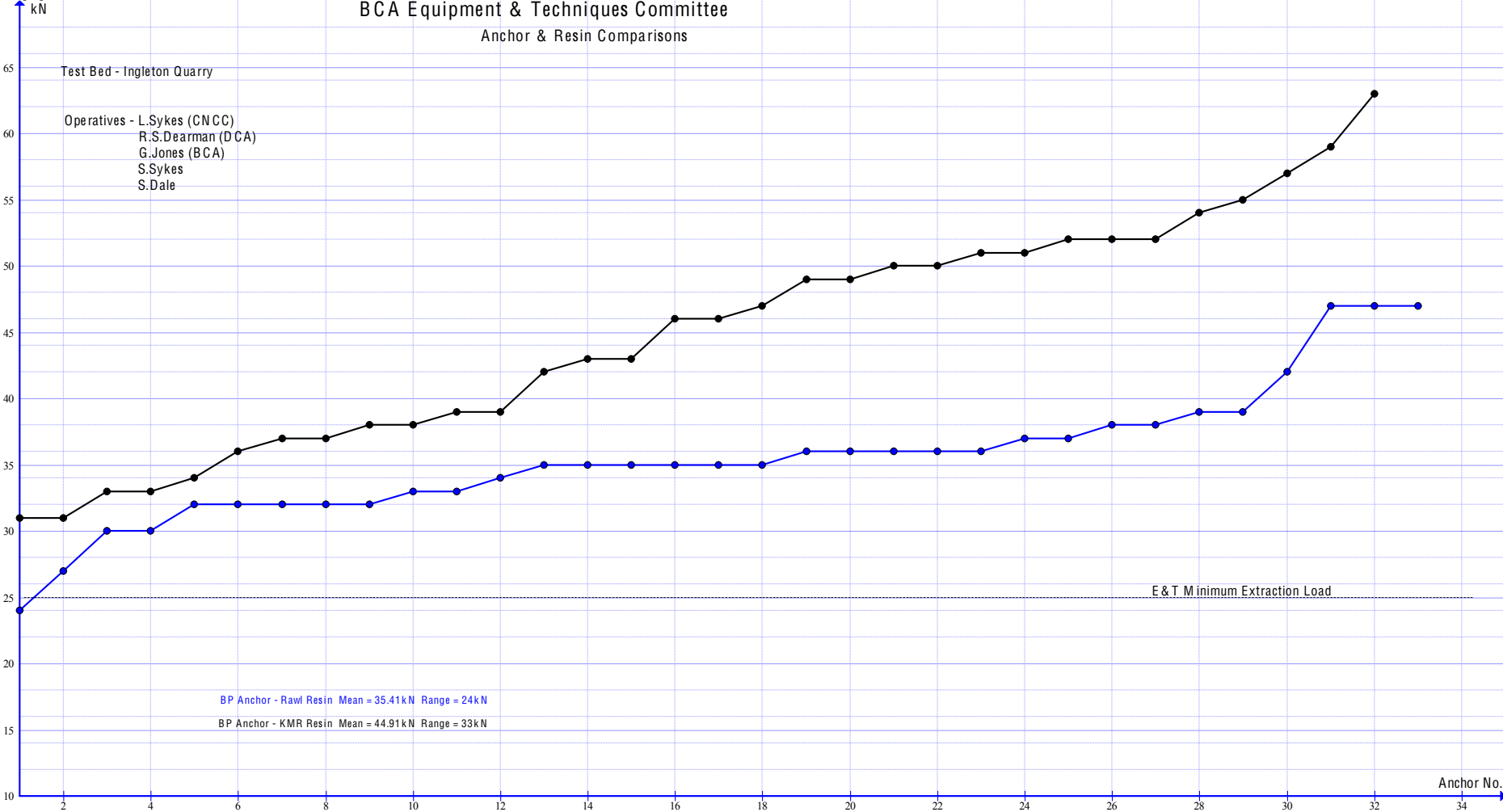
Report compiled by L. Sykes, R.S. Dearman

Photographs: G. Jones, L. Sykes

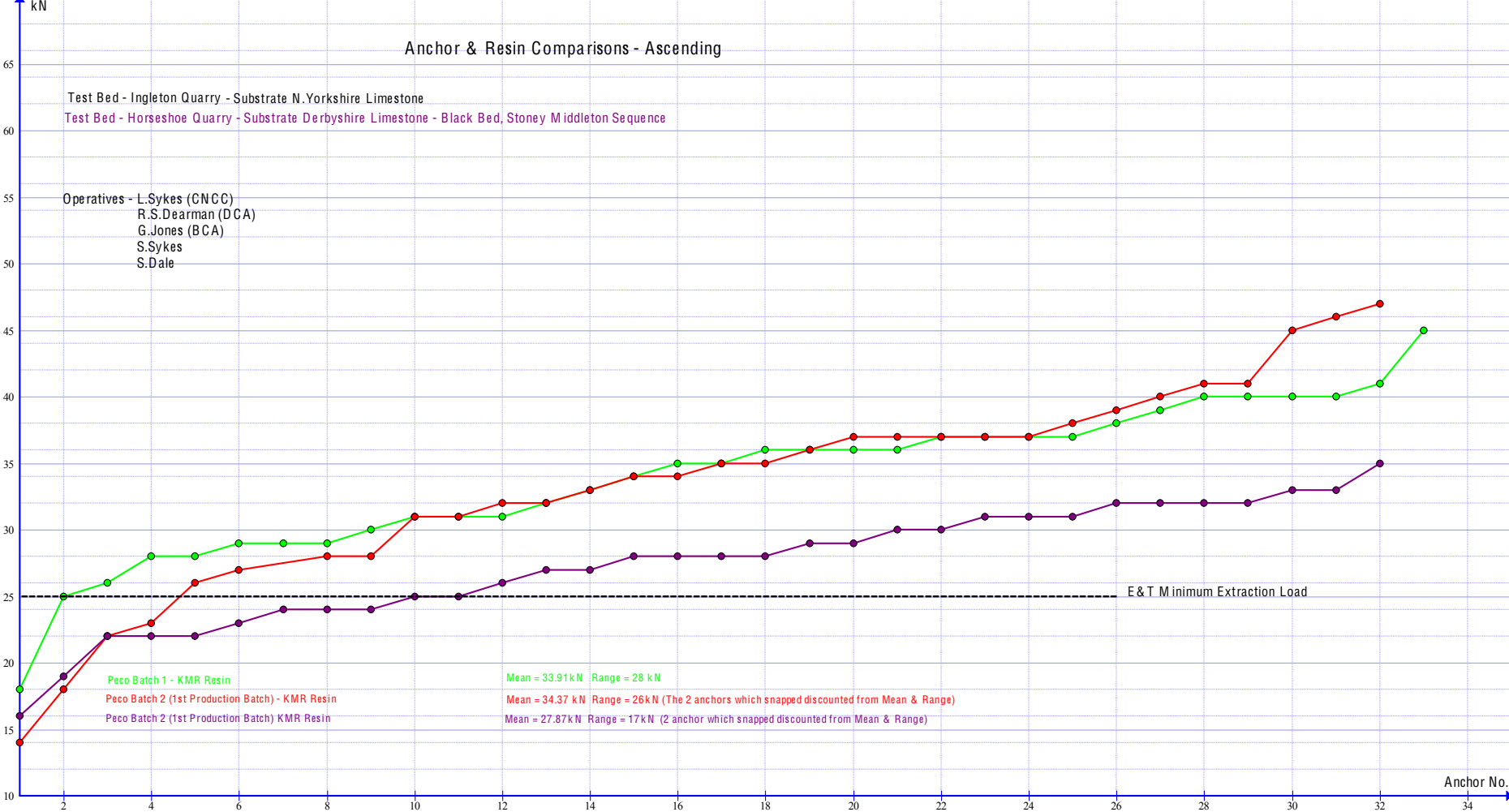
Appendix 1



Appendix 2



Appendix 3



CNCC Council Meeting: January 27th 2012

Treasurers Report

Financial Status as of 20th January 2012:

Current Account: £1,101.77

High Interest Account: £2,184.67

Savings Account: £20,001.00

I have opened a Barclays Savings Account (with instant access and no penalties) which provides a better rate of interest over the “High Interest” account. The savings account gives 0.80% gross interest whereas the high interest account was giving 0.050% gross. I have transferred £20,000.00 from the high interest account into the saving account (I had to transfer £1.00 from the current account to open the savings account hence the odd £1.00!)

Major expenditure for this period has been a number of NE funded projects, expenses for the recent “paperless surveying course” at Bull Pot Farm and the purchase of thermal binding covers.

Income consists of the sale of Rigging Guides, which remain a steady seller, and the Shuttleworth Pot book, demand for which seems to have slowed down.

Current Book Stock;

Shuttleworth Pot book: 37

CNCC Rigging Guide Vol 1: 17 (reprint planned for coming weeks)

Cave Rescue Manual: 9

Query: I have CNCC year end accounts (as presented to CNCC AGMs) going back to 1994 (which take up a fair amount of space). Should “everything” be archived (at BCA library?) or should just the reports and bank statements be archived. Or, do they need to be archived? I will keep electronic copies of all AGM Treasurer Reports, but the amount of paper I need to store is becoming a problem...

Glenn Jones – CNCC Treasurer

BCA Report: The last meeting was on 7th January and the draft minutes are on the BCA website. The October 15th meeting agreed to increase the PLI cover from £2m to £5m with an associated increase in DIM and CIM fees of £1.00 for 2012. The BCA Secretary is making steady progress at updating and managing the agreement process for the BCA Manual of Operations, which sets out the underlying day to day processes that support the Constitution and describes what is expected of BCA officers.

CNCC Conservation Officers Report

Jan 2012

The conservation works at Cupcake Pot have been completed by a dedicated team from Northern Boggarts. The work was well reported and published in Descent Magazine. This was an exemplary piece of cave conservation undertaken during and after the exploration phase.

CNCC volunteers have been out in gruesome conditions to erect stock proof fences around open shafts at Large Pot/ Little Pot and Thorney Pot- Kingsdale. This work was requested by the landowner Mr Handley of Thornton Hall. He has lost several lambs each year at this location. Caver relations are much improved now. He is now open to requests for digging on his land if you speak to me (Natural England) in advance.

Ian Walker has begun a major restoration of the entrance to Crescent Pot with his team from Durham University and other individuals. About 6 days work have been completed so far. This is costly in materials and very hard work. The resultant improvements to the safety of the pitches are well worth their efforts on your behalf. A feature in Descent will conclude the program of works.

RRPCPC have almost completed the clearout of rubbish from the bottom of Barbon Pot. Much stabilisation work has been done on the ledge below the chock stone. A fine clean washed shaft awaits future visitors.

I have edited a Cave Conservation Plan for Witches II . The final draft is just awaiting an updated survey of the Leck Beck Head sumps. It will be available as a large pdf file, with a few library paper copies.

I have purchased an ultra sound Bat detector for cave research projects. This will become the property of CNCC and distributed to any affiliated club undertaking research. Terms of use will have to be drawn up.

In an attempt to promote cave conservation to caving novices I have collaborated with John Gardner to produce a visitor guide to Great Douk Cave. A useful resource to Cave Leaders or anyone who thought there is nothing of interest in beginners caves. It is available as a pdf download from the Northern Caves Monitoring Scheme website, or as a waterproof A4 sheet from selected suppliers.

Northern Caves Monitoring Scheme: <http://www.northerncavemonitoring.org.uk/>

Casterton Fell Report for 2011

A total of 38 clubs were issued with permits for the whole of 2011- (10 more than in 2010) and this added up to a total of 179 permits issued in total, a big increase from the 128 permits issued for the whole of 2010

The major clubs all requested permits with the exception of the N.P.C. another club not applying for permits was Imperial College Caving Club

Permits can now be requested and issued by email make everyone's life much easier, They can also be turned around in less than a week (provided I am not on holiday) and not the 3 month that it says on the CNCC web site – I would suggest the site be altered to reflect this

Overall there are no problems to report and there are plenty of permits available.

Alan Speight (CNCC Meets Sec – Casterton Fell)

Since the last AGM (5th March 2011) 48 clubs (3 more than at similar point last year) have now been issued with permits, for the year 2011/2012. In addition, 12 clubs have permits for 2012/13. This represents an increase in activity on the previous year. Although up to the middle of November things had been rather quiet, subsequently however demand for permits was very high, with the week between Xmas and New Year being more or less fully booked, with a range of clubs, not just those being locally based.

Moving forward there have been quite a few requests for permits during February and March, up until the start of the closed season and beyond. The following weekend dates are now fully booked, as follows - 18th Feb, 3rd March, 4th March, 10th March, 17th March, 24th & 25th March, 14th July and 25th Nov 2012.

The following weekend dates up until the start of the closed season have availability either being not yet booked at all, or with just one permit booked, as follows – 4th & 5th Feb, 11 & 12th Feb, 19th Feb, 25th & 26th Feb, 11th March, 18th March and 31st March 2012.

There has been some concern about unauthorised access, although fortunately not to the point, as yet, whereby the Estate has had cause to comment or complain. The situation is being actively monitored and responded to when incidents come to light.

Jim Sloane (CNCC Meets Secretary Leck Fell)