The British Caving Association
Minutes of the Equipment and Techniques Committee

Date: 11th September 2010

Location: The Dudley Caving Club Windmill

Attendees: Nick Williams; Chairman (NW) Glenn Jones (GJ - minutes), Les Sykes (LS), Bob Dearman (BD), Roger King (RK), Stephan Natynczuk (SN), Faye Litherland (FL)

The meeting commenced at 10.50

1.0 Apologies:

Bob Mehew, Andrew Lewington, Jules Barrett, Dewi Lloyd, Andy Pryke

2.0 Chairman's Opening Remarks:

NW apologised for the fiasco which the attempted meeting in July turned into, and said that it was beyond his control. He also said that he was aware that there were some difficult issues facing the Committee and that he did not expect them all to be resolved in today's meeting. However, he requested that people should keep the conversation civil and respect other people's points of view.

3.0 Agree minutes of previous meeting:

The minutes of the October 10th 2010 meeting were agreed.

3.01 Matters Arising/Actions Update:

Action 3.1.1: NW to authorise purchase of 1,000 anchors
Update: The anchors (1,000) have been ordered and are in transit. Delivery is anticipated by the end of October.
Action 6.1.1: GJ to arrange anchor training for DCUC
Update: Complete (training took place May 2nd)
Action 6.1.2: LS to contact Adam Collinge to arrange training
Update: Complete (Adam {and others} were trained on 6th February)
Action 6.1.3: GJ to check with NW if (1) PLI cover includes substrates other than limestone and (2) if there is a specific clause for anchor installers.
Update: NW: (1) Yes. There is nothing in the policy that prevents the installation of anchors in other substrates, provided that the substrate is competent to support that anchor. (2) No. The activity covered is "bolting"
Action 7.1.1: LS to confirm costs for drills and batteries
Update: Complete
Action 7.1.2: NW to proceed with anchor order
Update: Complete
Action 7.1.3: NW to confirm costs for initial order of 200 anchors
Update: Complete. The anchors were supplied at no cost.
Action 7.1.4: BM to confirm Rope Test spend
Update: (13/09/10) Zero spend
Action 7.1.5: BM to confirm any costs for repairs to rope test rig
Update: (13/09/10) Zero spend
Action: 11.1.1: AA to circulate his previous paper on rope testing

Update: Complete
Action 11.1.2: All: brainstorm ideas for rope testing
Update: Ongoing
Action 12.1.1: AP to review current Fixed Aids document
Update:

***4.0 Agenda Items 4 and 6 were taken together*:**
GJ's report is appended to these minutes**.** The meeting requested that future reports include known requirements for future projects

No	Action	Owner	Action Date	Status
4.1.1	Confirm current stock of "spare" anchors	BD & LS	By end of September	Ongoing

5.0 Rope Test Officers Report:
BM's report is appended to these minutes. The meeting wished to minute the good work undertaken by BM on calibration. NW commented that there is great value in what BM is doing as proof of concept for quantifying variables in a measurement system.

No	Action	Owner	Action Date	Status
5.1.1	BM to provide long term objectives for rope testing	BM	By next meeting	Ongoing

Post meeting update: BM: 13/09/10 The aim of the LTRT was specified back in 2000 as "...to understand the effect of ageing and environment on both used and unused caving rope." Because the work took some 8 years to complete, a potential challenge to the results could arise from whether the rope had deteriorated due to aging rather than use, (regrettably no "as new rope" was retained for testing at the end of the test program). Hence the proposal was to look at low usage within a short period of time. The potential outcome of the proposed work is to confirm a substantial drop off in strength in early life even with low usage.

An e-mail vote among the meeting attendees was then conducted on the above, on the basis that if BM had been able to attend, this would have been discussed and voted on at the meeting. The result was agreement for £230 to be included in the 2011 budget, as outlined in BM's report. (4 votes for, 1 against, 2 abstentions)

7.0 Anchor Scheme Statement of Applicability:

The following applicability statement was agreed and will be added to the IPTD:

"The installation procedure described in this document has been proven to provide an acceptable risk of failure in those rocks where tests were undertaken. These include tests in Carboniferous limestone performed by DCA and CNCC and tests in Devonian limestone by DCUC. The procedure may be applicable in other substrates, and the lack of test data should not be taken to imply that the BCA Anchor Placement Scheme only includes rock types

which have been tested. Nevertheless, in other substrates extreme care should be taken to ensure that the rock in which the anchor is being placed has characteristics which allow the anchor to be acceptably safe. "

The meeting further agreed that we do not need to include details of test procedures for other substrates in the scheme document (IPTD).

8.0 Installation of Anchors in Substrates other than Limestone:

The meeting discussed options for testing resin bonded anchors in substrates other than limestone. It was agreed that NW should draft a test process which should satisfy the static load test requirements of BSEN 795 class A1 (to include mention of suitable load bridge, test load and duration) for discussion at the next meeting.

No	Action	Owner	Action Date	Status
8.1.1	NW to draft test process for substrates other than limestone	NW	By next meeting	Ongoing
8.1.2	LS to send NW UIAA standard	LS	By next meeting	Ongoing
8.1.3	AP to provide test data for Devonian limestone tests (and list of anchors installed in DCUC region	AP	By next meeting	Ongoing

9.0 Installation of Anchors in non UK Locations:

The meeting agreed that in principle, and subject to stock, anchors can be supplied at cost for projects outside of UK subject to:
1: Anchors installed outside of the UK will not be considered part of the BCA Scheme and do not therefore benefit from PLI cover or subsidy.
2: There are sufficient controls to ensure that unused anchors do not come back into the UK as rogue anchors.
3: Unused anchors can be returned to BCA and a refund given.

10.00 PLI Cover for E&T Activities Including Anchor Scheme:

NW questioned the need to be overly worried about rogue bolting, on the basis that the point of the BCA scheme is that we can identify those bolts which have been placed within the scheme and therefore for which we are liable. The objective of the BCA scheme is to ensure that there are well placed bolts where required and that we do not get a proliferation of hardware at the heads of pitches. If bolts are placed by others then so long as they are well placed they serve the objectives of the Scheme just as well as those we place within the Scheme and if they are not well placed then they are not our problem. We do not want cavers to believe that a bolt is a good bolt just because it is placed by BCA - cavers must always take responsibility for checking any bolt they use at the time they use it, and the fact that we have agreed that regular inspection of the bolts is not required is predicated on the fact that they will do this. We need to do more to ensure cavers understand this, and NW

would be making a proposal later in that regard, but so far as he could see the proliferation of rogue bolts was not a valid reason for keeping the IPTD confidential.

NW then explained the circumstances under which PL cover would come into effect and pointed out the determination of whether or not any bolting activity undertaken by a BCA related organisation was insured would be on the basis of whether due care was taken to properly place that particular anchor, not on whether the person who placed it was part of the Anchor Scheme. It is in the interests of neither the user nor the placer of the anchor for the placer to be uninsured. Even though the P-anchor system was developed by CNCC in association with the suppliers of bolts and resin, this does not mean they have any exclusive rights to the system and others can and do place bolts using the same technology elsewhere. While the E+T Committee can set the standard for the placement of resin bonded anchors, they cannot control whether or not any person or organisation who is not part of the anchor replacement scheme applies that standard. The judgment as to whether such activity is insured through the BCA PL scheme is not in the gift of E+T Committee.

11.0 Anchor Scheme Training Fees/Expenses

Further to a brief explanation of the history of these payments by GJ, the meeting agreed that installer training fees previously agreed by E&T were not within the BCA Constitution and would not apply in the future. The meeting further agreed that there was no requirement to take this matter to Council.

12.0 Application of IPTD Across BCA regions

FL highlighted the fact that the withdrawal of CSCC from the BCA Anchor Scheme should be considered as temporary until a resolution can be found. Following a brief discussion on what the resolution would be, GJ proposed the following motion:

That as CSCC have withdrawn from the BCA Anchor Scheme and do not currently have an accredited anchor installer, all stock of unused ECO Anchors should be returned to E&T as soon as possible.

The motion was agreed (4 for, 1 against, 1 abstention)

BD then proposed a further motion:

That as CSCC have withdrawn from the BCA Anchor Scheme and do not currently have an accredited anchor installer, all E&T equipment (drills, drill bits, resin applicator, pull tester etc,) should be returned to E&T as soon as possible.

The motion was agreed (4 for, 1 against, 1 abstention)

13.0 Updates to Anchor Scheme Document (IPTD)

It was agreed that the second sentence of the first paragraph of 10.1 (regarding insurance) should be deleted.

NW discussed updating Section 6 (Standard Inspection) and asked that we all consider a memorable mnemonic for checking anchors before use.

There is an outstanding action on LS & BD to document the anchor audit process for 9.5. NW and BD volunteered to consider this while travelling home together.

It was agreed that section 10.5 (re-validation) needs re-writing because in its current form it is difficult to implement.

No	Action	Owner	Action Date	Status
13.1.1	GJ to delete 10.1, first para, 2nd sentence from Master Document: "They must also be insured through the BCA or another bona fide insurer."	GJ	By next meeting	Ongoing
13.1.2	All: consider a memorable mnemonic for checking anchors before use	All	By next meeting	Ongoing
13.1.3	BD & LS to produce audit process for section 9.5	BD & LS	By next meeting	Ongoing
13.1.4	BD & LS to re-write 10.5 (re-validation)	BD & LS	By next meeting	Ongoing

FL asked if E&T had considered the effect of chloride irons and sulphide ions on (316 s/s) anchors over a period of time and the other possible failure modes including galvanic corrosion and stress corrosion cracking. BD replied that as far as he is aware, this has not been a problem.
Post meeting update: LS to contact FL with information on samples taken in the Yorkshire Dales.

14 & 15 AOB – Next Meeting

AOB 1. BD & LS were asked if they had assigned copyright of the IPTD to BCA in writing. They said they had not. They were asked to consider if they wanted to assign the copyright to BCA and they requested time to think about it.

No	Action	Owner	Action Date	Status
AOB 1	BD & LS to confirm status of copy write	BD & LS	By next meeting	Ongoing

AOB 2: LS queried why he was not allowed to comment on the recent BCA IPTD forum (he was told it was because he is not co-opted to BCA) (the RTO could comment as he was co-opted).

No	Action	Owner	Action Date	Status
AOB 2	NW to confirm voting rights	NW	By next meeting	Ongoing

AOB 3: GJ's recent assessment as installer trainer was confirmed by the meeting (1 abstention).

AOB 4: FL queried the E&T voting structure, specifically why DCA and CNCC have two positions on E&T
Post Meeting Update: BCA Constitution 7.4 A Standing Committee shall regulate its own business within its terms of reference and the constraints
of the Association's "Manual of Operations".

No	Action	Owner	Action Date	Status
AOB 4	NW to confirm E&T structure	NW	By next meeting	Ongoing

Next Meeting: NW will set up another Doodle Poll to agree date for next meeting.

List of Potential Attendees

Bob Mehew	Rope Testing Officer
Bob Dearman	DCA/Coop
Les Sykes	CNCC
Glenn Jones	CNCC/Anchor Scheme Co-ordinator
Dewi Lloyd	N Wales
Andy Pryke	Club rep (Speleo Vercors)
Roger King	DCUC
Jules Barrett	DCA
Andy Lewington	CCC
Fay Litherland	CSCC
Nick Williams	Coop
Stephan Natynczuk	ACI
Charlie Milton	Coop
Graham Mollard	Training
Brian Jopling	BCRC
CDG	
BCRA	
CHECC	
FoD	
Pengelly	
NAMHO	

Anchor Scheme Administration Report to E&T Meeting 11th Sept 2010

The day to day administration of the anchor scheme is now being managed by the BCA Membership Administrator
- managing the stocks of anchors
- primary point of contact for ordering resin and other consumables
- deal with simple administrative and technical queries arising from outside the E+T Committee
- organising training and re-validation for installers
- manage spreadsheet of accredited installers
- issue cards to accredited installers
- collate and distribute course documentation

Anchor Scheme Highlights:
A number of training courses have been arranged so far this year. The number of accredited installers by Regional Council are:
- CCC: 1
- CNCC: 16
- DCA: 5
- DCUC: 8

Anchor/Resin Stock and Project status (06/09/10):
Currently there are:
- all PECO anchors in stock have been allocated. We are waiting delivery of a further 1,000
- 3 tubes of resin and 7 nozzles (order of 12 more resin in the system)

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Many projects that were put on hold when the supply of ECO anchors ran out are now up and running again. Next order is:

DCUC 44 anchors/resin
- Read's Cavern: 3 anchors
- Killas Test Bed: 10 anchors
- Granite Test Bed: 10 anchors
- Practice sessions: 5 anchors

Plus, as stock allows (and at cost):
- Matienzo (Cow Pot 11 ancors and Cueva Llueva 5 anchors)

Glenn Jones
BCA Membership Administrator
7th September 2010

Rope Test Officer Report

I have built a second Strain Gauge Amplifier and got it to work with a second load cell for use with Bradford Pothole Club's rope test rig. I am awaiting testing it with a larger capacity battery to determine if one can use the load cell without mains electrical power (small capacity batteries seem to cause unacceptable drift in the
output of the cell). The load cell is some 30cm long and although I am unsure as to its maximum load capacity I think it is well above the currently calibrated 18kN.

The program of work on the Bradford's rig is being undertaken in conjunctions with Roy Rodgers. We are still checking out a host of concerns, the latest of which is whether the load cell at one end of the rope is seeing the same forces as at the other end. (The provisional answer is no, the forces are subtly different at the milli second level.) We have a handle on the dynamic response of the amplifiers and are
confident we can determine events at the milli second level and possibly by suitable mathematical application at sub milli second values. An initial attempt at a theoretical description of the behaviour of a rope based on a damped spring analogy has provided some insights but is far from a reasonable description.

One test on a length of used rope found that a 1.5m sample length only survived 1 FF 1.0 drop, whilst a 1.0m sample survived 2 drops but a 0.4m sample survived 10 FF 1.0 drops. This is one piece of evidence that the BCA Rope Test Rig which uses 0.8m length samples, under estimates the strength of rope when determined by drops
survived. The hypothesis is that the influence on the drops survived value of the knots increases as sample length decreases (that is the knots absorb proportionally more energy as the sample length decreases) whilst the energy being absorbed by the rope is reducing. The Bradford's rig can only take up to 1.5m length samples where
as the standard specifies the use of 2.0m length samples. This raises a question as to whether BCA should sponsor a full size rig capable of handling samples in excess of 2m. Further work is required to extend the evidence base before such a proposal might be put.

The concept was raised a while ago to extend the NCA Long Term Rope Test program to cover a smaller range of usages (see below) to confirm the substantial drop off in performance of a rope in its early life. Agreement is sought for this
proposal and for the inclusion in 2011 budget of a sum of £230 to cover the cost of the rope. (These tests would be done with the BCA rope test rig to extend the data set from the NCA LTRT results.)

Several ropes have been received and tested with only one remaining to be done. One rope of particular interest was left in situ on the first pitch in Avalanche Pot Inlet, Gapping Gill. Although originally thought to date from the original exploration in 1973, it is now thought that the rope was placed in the 1980's making it some 20 to 30 years old. It is hoped to obtain a sample of similar aged rope stored under better
conditions to undertake a comparison.

Bob Mehew
6/9/10

Proposed BCA LTRT extension

brand new dry on receipt 5 samples @ 2.5m = 12.5m

brand new wet on receipt 5 samples @ 2.5m = 12.5m
brand new washed wet on receipt 5 samples @ 2.5m = 12.5m

25m length loaned out and used for 50 usages gives 10 samples = 25m
25m length loaned out and used for 100 usages gives 10 samples = 25m
25m length loaned out and used for 150 usages gives 10 samples = 25m
25m length loaned out and used for 200 usages gives 10 samples = 25m

brand new wet at end of rest of work 5 samples @ 2.5m = 12.5m

all tests done using just FF1.0 drops on 0.8m
sample length which requires 2.5m overall length
of rope.

overall length required of Edelrid 10mm
Superstatic (as before) 130m at £1.70/m plus £7
p&p (quote from Up and Under web site)