NEWSLETTER ISSUE 20

Cave rescue since 1965, covering the Forest of Dean, Lower Wye Valley, Cotswolds and Thames Valley.

GLOUCESTERSHIRE CAVE RESCUE GROUP

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Registered Charity No. 900316

May 2024

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Editorial

28 April 2024

Hopefully this current issue of the newsletter will provide an interesting read for the members and if just one item is of interest then this will have achieved its amin.

As usual, many thanks to all those members who submitted items for this publication, whether as text or photos. In particular, big thanks to Wayne & Pawel for their articles on CRIMS, Vangelis & the SARCALL app … all very useful and interesting.

As ever, please contact the Editor with any comments/suggestions to help make this a better publication. All suggestions gratefully received.

Thankyou

GCRG COMMITTEE

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Colin Vickery	
Martin Holloway	
Greg Jones	
Paul Taylor	
Pete Turier	

SARCALL & HOW TO USE IT

SARCALL is the primary tool used by GCRG when initiating a call out. Not only is it the way we notify members of the details of the call out, it is also how you, the members, let the Wardens know if you are available. It is EXPECTED THAT ALL MEMBERS WILL RESPOND TO ALL SARCALL ALERTS - the team need to know both who is and is not available.

SARCALL alert messages are sent by SMS to mobile phones, automatic voice message to land lines and email.

Mobiles

The callout SMS text alert will give brief details of the incident and contact details for the originating Warden.

When replying to these texts YOU MUST use the phone on which the callout text was received. This phone number is recorded on the SARCALL system as belonging to a particular individual, sending texts from other phones will result in them being ignored.

SARCALL Information for Team Members

When you receive a SARCALL SMS alert sent by a GCRG warden reply to it to indicate your availability.

If you are unable to reply by SMS text message try using the GCRG specific SARCALL response web page.

Alternatively call the originating warden or the depot where a message may be left on the answerphone.

The SMS text message **MUST** take one of the 3 formats below:

SAR ▲ Axxx ▲ message if you are available
SAR ▲ Lxxx ▲ message if you have limited availability
SAR ▲ N ▲ message if you are unavailable

Where

▲ = a space
xxx = time in minutes until you will arrive at RV point
message = relevant additional information, free text.

Changes to your details? Email **info@gcrg.org.uk**

TRAINING/EXERCISE EVENTS since May 2023

Since the last newsletter, GCRG personnel have been involved in the following events.

Reports for some/all of these can be found further on within this newsletter.

11th June 2023 …. Wetsink/Slaughter Stream Cave

10th September 2023 …. Nailsworth [stone mines] area

10th December 2023…. GCRG Depot [round-robin training]

3rd March 2024 …. Miss Graces Lane

FORTHCOMING EVENTS

12th May 2024 …. GCRG AGM at the Depot [a Sunday, to be followed by a BBQ]

7th-9th June 2024 …. BCRC RESCON @ Nenthead, Cumbria

- see the RESCON website for more details

23rd June 2024 …. Clearwell Caves (Old Ham)

- Exercise/Training to be held in the entrance series of Old Ham

7th September 2024 …. Noxon Park area

- SWERA multi-team large scale exercise around Noxon Park. GCRG depot to be used at the base for the exercise & the idea is to have a curry afterwards.

15th December 2024 …. Round-Robin training at the GCRG depot

- Details to follow

REPORTS OF LANDSEARCH CALLOUTS (since May 2023)

5th July 2023
Nailsworth
01:50 — request to assist SARA to assist in a missing person search in the Nailsworth area and the most likely mine sites. Jon Maisey & Paul Taylor attended and checked the 'W' and 'Scar Hill' mines but nothing found & returned to RV. SARA land and water assets continued the search. Jo Clarke and Gareth Jones also involved in maintaining the log.

CAVE RESCUE CALLOUTS since May 2023

Thankfully zero for this last year

TRAINING/EXERCISE EVENTS since May 2023

EXERCISE: WETSINK/SLAUGHTER STREAM CAVE

11th June 2023

Another well attended training exercise, this time in one of our local caves and which could become a very serious rescue depending on the location and nature of the casualty. Thanks go to Paul Taylor, Di Standing and Craig Cameron who provided the text and photos for this article.

Over the years there have been both a number of cave rescue incidents and training sessions held at Wet Sink. The majority of which have in some form or another involved the Entrance Series pitches. It is as we know the only way currently both in and out of the cave system. In the time since it was first discovered back in the early 1990's work has been undertaken to install a series of artificial anchor points to enhance the rigging. One rescue was in fact as a result of a natural anchor point failing so the first stage was the installation of some "P" hangers for both the Balcony and Pen Pot Pitches. These were primarily put in to make rigging for general caving trips easier but have also been used for both subsequent rescues and training. Although it's fair to say that for the rescue side of things they are not ideally placed and the need for additional anchors points was established.

At the base of the Mouse Aven pitch a number of 12mm Thru Bolt anchors were placed and this certainly enhanced the hauling on this pitch. However, subsequent training exercises have identified locations where further additional anchors could be placed. But rather than just go ahead and use further Thru Bolts it was decided to test out the locations and if satisfactory then new permanent anchors could be placed.

The limitation of a Thru Bolt is that once placed it is almost impossible to remove from the rock so if it's in the wrong place the only options are to either cut it off flush with the rock which requires an angle grinder or if the hole has been drilled deeper than required, then the bolt can be driven down to below the surface. Although the bolts are not excessively expensive there is a cost and also there is the contamination of the rock.

An alternative to the Thru Bolts is to use something that can be installed and then removed once tested out. The old method would be to have used Rawl Bolts although they do require quite a large hole and if the holes are used a number of times then wear takes place from the fitting and removing process.

Some years ago the Concrete Screw was developed. These are available in a variety of sizes in both dia and length and are equipped with a very course external thread along their length. Small dia ones have been in use by those climbing avens for some long time but for rescue use it was necessary to go up to a larger dia (10mm) as these still fit the 12mm Petzl stainless hangers that GCRG uses. The OD of the bolts is actually more than 10mm so a 12mm dia bolt will not fit the 12mm hangers. By using the concrete screws new locations can be tested out and if found to be satisfactory then the existing holes can be opened out to a size to suit the long term anchor point that is to be installed.

Within GCRG we have taken the option of not installing any further Thru Bolts for rescue use as they do rust (stainless versions are available but are rather expensive) so our solution is to use M12 stainless studding cut and machined to length on a lathe and then positioned using Resin. During a training exercise at the top of Zurre Aven 10mm concrete screws were used for the pulley anchor points above the pitch where in the event of a rescue of an injured caver it would be necessary to lower a stretcher down the pitch.

EXERCISE: WETSINK/SLAUGHTER STREAM CAVE [cont'd]

These worked extremely well and as part of the ongoing development of the Rescue Rigging plan they have been replaced with the M12 stainless rod. As the position of the anchor points is quite exposed, additional anchor points were installed to allow for the provision of a traverse line for protection while rigging the anchors. The previous training exercise made use of steel stemples as anchor points for the ropes. Although they worked well, they were heavy to carry around the cave, not easy to deploy and in this particular area, suitable locations are few and far between and even then, not ideal. So four further M12 stainless anchor points were established in the rock walls at the base of the Gravity Dig chamber. The purpose of the exercise on the last training day was for a small team of 7 to go up to the area around the top of Zurre Aven and set up the rigging using all of the new anchor points and test it out.

Prior to placing the M12 threaded rod in the holes with the resin it is essential to wrap insulation tape around the last approximately 15mm of the thread to stop the resin getting into the thread and rendering them none useable. (The holes are drilled out to 14mm Dia for the resin. Load testing has shown exceptionally good results. I am not going to go into the method of inserting the resin and the threaded rod as this features in a separate article). All of the 12 pieces of studding required this to be removed prior to and anchor plates or Eye Nuts being installed. This did take a little bit of time. However, once completed four eye nuts were placed on the anchors at the base of the Gravity Dig. These allowed for two large "Y Hangs" using the long red slings to be set up to provide two points for the Petzl Rigs to be positioned ready for the lowering when required. On the traverse anchors, 12 mm Petzl plates were used with 12mm nuts and washers to secure them. A further four eye nuts were placed on the anchors out over the pitch with slings and pulleys attached.

Due to the small size of the party a stretcher was not taken so a member of the team clipped onto the ropes to provide some weight. Lowering went very well with the ropes being long enough to allow our mock stretcher to reach the bottom of the Zurre Aven climb. Some additional anchors are to be installed over the top of the lower climb so that in the event of high water conditions the stretcher ropes could be placed in additional pulleys at the head of this pitch and with Tail lines the stretcher could be pulled out clear of the water. The party were all very pleased with how the exercise went and with the additional notes made, a suitable Rigging Topo can now be produced that would provide all of the necessary information for a group to go and rig this pitch and execute a lower without any difficulties. The party also took Cave Link with them and established this just beyond the top of the Zurre Aven near to the Graveyard and established a very good comms link back to the surface where the surface set was located at the top of the field adjacent to the field gate. Another good result and more information to add to the Cave Link records for the cave.

Throughout the rest of the Entrance Series pitches and on the surface, adjacent to the gate a series of new anchor points have been established using the methods described and all were put to good use on the training day.

Paul Taylor (GCRG Chairman)

EXERCISE: WETSINK/SLAUGHTER STREAM CAVE [cont'd]

Fancy writing an article for the newsletter?

You've probably realized that most of the newsletter articles seem to be penned by the same people. This is not a problem as quite often those people are the ones involved in whatever the article is about but its always very much appreciated to get the views of other group members and in this case its Di Standing and her view of the training exercise held in wetsink. Thankyou Di!

As one of the older cave rescue members I am interested in the idea of keeping up to date with surface control to release the fitter members for underground jobs. Having only a short time to spare I went along on Sunday where Adam reminded me how the T Card system works. I could see at a glance that there were 3 teams deployed. Then I went to the entrance area and Craig explained how the surface phone system worked as a message relay between cave link and control. He had needed to erect a long ariel to achieve a signal so the phone operator could stay in the depression and relay to control. Whilst there I watched Ian fly his drone up into the tree canopy to film the entrance. He then went up into the field to fly it above the canopy & explained how he would stitch them together to make it look like the video was coming from way out down to the surface. There was a short discussion on the risk of this giving away the cave location. I also pointed out that as a thunderstorm was possible someone should be on flood watch as the dry waterfall opposite the entrance floods heavily in exceptional downpours. This was a regular occurrence when I was digging there.

Di Standing

(photos below from Di & Craig Cameron)

EXERCISE: WETSINK/SLAUGHTER STREAM CAVE [cont'd]

After the Exercise there was the usual debrief and Ian here has pulled together the following notes that were received as feedback from the respective teams.

Team 1 – Zuree Aven

Would value taking a stretcher next time

Recently placed bolts worked well (tape was an issue to remove)

12 people would be considered the max for this group

Cave Link worked well, even better after the the antenna adjustment near entrance

50m ropes were perfect length for the rigging requirements

The last climb anchor point requires adjusting

There were some rub points identified but managed

Team 2 – Pen Pot / Balcony Pitch

Focused on testing and hauling

Good to have a smaller rigging team

Some adjustment to the rigging points is required to make the hauling more efficient

Team 3 – Mouse Aven

Felt that it was a very efficient working team

Questioned if there would be any issues with higher water levels in the wall of the Aven area

Entrance Team – Cave Entrance

Adapted with the changing personnel

Stretcher movement worked well after rethinking the system and the addition of many more pullies

Surface Control Team

Reminder for individuals to record kit taken underground with QM and on tracking board

Reminder for individuals to place name tickets before going underground and to remove name ticket from tracking board on exit from cave

Record time of departure for each team leaving to go underground with comm's control

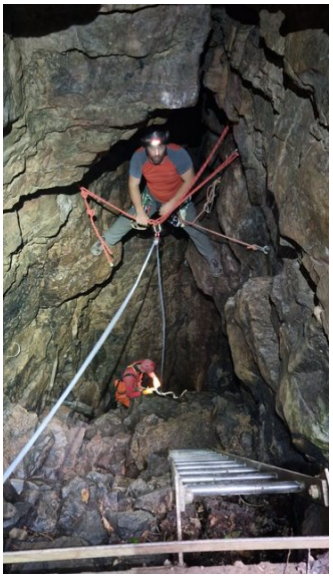
Other Notes

Review of topos based on today's findings

Consider downloading SARCALL app to your smartphone for ease of communication

EXERCISE: WETSINK/SLAUGHTER STREAM CAVE [cont'd]

Various photos from the Exercise provided by Piers Hallihan and Tim Nichols



EXERCISE: NAILSWORTH MINES SEARCH

10th September 2023

Following the callout earlier in the year (5 July) it was realised that there were still mines in the Nailsworth area that were unknown to most of GCRG. This could prove to be quite a problem for any future mine searches of the area if most of the members didn't know what was there.

To help rectify this problem it was decided to hold the September training exercise in Nailsworth and which would be a search of a number of mine sites followed by a casualty carry out from one of them.

The Exercise started off with everyone meeting up outside the Upper Balls Green mine and informed that the day was to consist of two phases. Phase 1 was to search in the nearby 'W', 'Scar Hill' and 'Lower Balls Green' mines for a number of 'casualties' [individual laminated cards] which then needed to be located and when found, communicated back to Surface Control. From those going underground 3 teams were established and sent off to start their searches (maps being provided with markers showing the locations of the mines). Once a team had successfully found the 'casualties' in a mine they were then directed to search the other available sites.

Once the 3 teams had searched the 3 sites, then Phase 2 of the exercise could begin. This consisted of a live casualty carry from within the Scar Hill mine to the outside.

A successful event with a good attendance.

TRAINING: GCRG DEPOT

10th December 2023

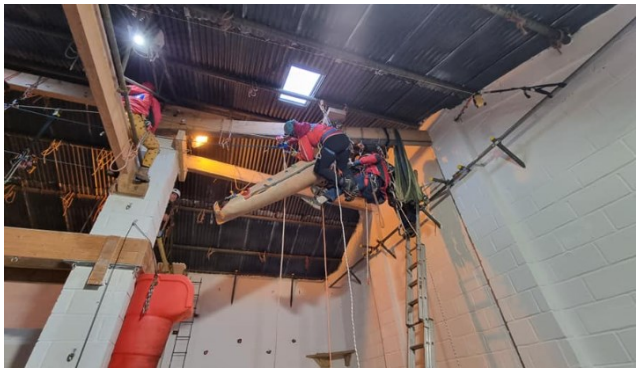
A good turnout (53 members in total) of GCRG members for the last training event of 2023 and despite some less than ideal weather (it was cold and wet).

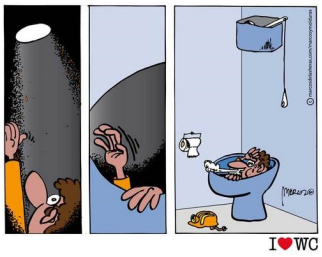
The day consisted of a number of round-robin events covering the Larkin Frame, the use of the new Digital Control, the Little Dragon, CPR and simple and advanced rope work techniques. Also in attendance were representatives from Fenixlight to deliver the Fenix lights that members had ordered (Thanks to Jo Clarke for organising this).

In addition, as a way of saying thanks to the members for attending and as a good morale-booster, GCRG also provided hot rolls (egg or bacon) to all who had ordered them (Thanks to Liz Maisey for slaving away in the kitchen).

Photos below give an idea of what went on during the day and thanks to all who posted the photos onto the team FB page.

TRAINING: GCRG DEPOT [cont'd]





Thank you to all the cave rescue team members who took part in the December GCRG Training Day.
Especially to those who planned and prepared and led the day.
It was an action packed and worthwhile day attended by 53 people

EXERCISE: MISS GRACES LANE [A review & Feedback]

3rd March 2024

46 Cave rescuers were involved in the training day at Miss Grace's Lane Cave with 22 going underground and others working in various roles on the surface. As the underground cavers exited from the cave I was able to ask for individual feedback. It took 1 ½ hours for all to exit up the entrance pitch and this was the main reason for deciding beforehand not to do a mass debrief all together. It also allowed these members to offer individual unbiased feedback whilst they got their breath back and then be able to depart to change and leave rather than wait around.

I was pleased that people all felt the training had been successful and worthwhile. Here are some of the more actionable comments and thoughts that could be useful to consider for future events and rescues:

- Parking went well. NB The limited number of vehicles near the cave entrance were all by permission due to the earlier start for certain personnel from 08:00. We were able to manoeuvre and park the LR & trailer in an appropriate place because it was the first vehicle on site before 08:00. It would be important to keep access clear for this. The quarry lane gate was opened for additional parking of first aiders and lead surface controller cars.
- Use of car key box was used and should be encouraged more
- Walk across to entrance generally ok but couple of cavers temporarily misplaced. Definitely need markers if in dark.
- Physical T-card board was better positioned when on land rover in terms of visibility to cavers and proximity to control.
- Physical T-card board always an important back up if digital T-cards (CRIMS) goes down.
- Might be best to just have a single sign in sheet at Control but to just record names at carpark for walk across, in case any one goes missing, and to give control heads up of who has arrived to help with deployment selection. Get people to write clearly/in capitals
- Important that equipment is signed out correctly and recorded via quartermaster and not just taken out of trailer/equip cache.
- Tarpaulins in LR to lay kit out on and to cover up if necessary
- First aiders went in early and split into two scenario groups which worked well. Good to make use of first aid equip such as needles in a real cave environment. Where do you put things to not get dirty etc. Need to get 'sterile sheet' – plastic sheet to fold out.
- Good having a live casualty who was willing/able to present real behaviours for realism e.g. needing to vomit.
- Comms – water in bottle needed in kit to make good ground rod connection in a very dry area of cave
- Important, where possible, that comms only move/sign off once consent given from surface control

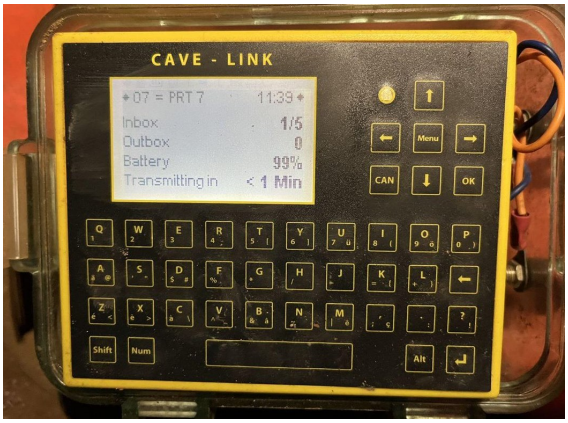
EXERCISE: MISS GRACES LANE [cont'd]

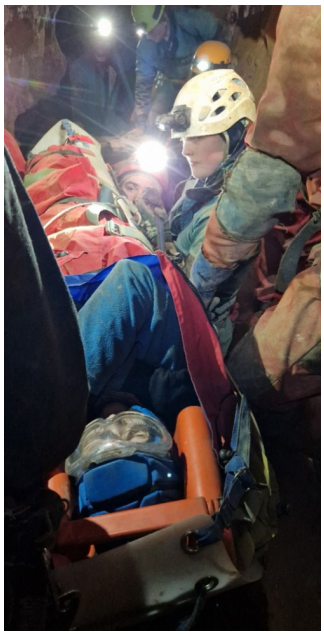
- Group briefings and general group chat need to be further away from trailer so as not to disturb comms team in trailer from hearing messages. Could have a cordon off area near control. Having shelters up could also help.
- Descent of entrance pitch always a bit of a bottle neck – easier if people descend same way in succession – e.g. abseil one after other if set up for this or those with just harness lowered directly in succession.
- PPE was followed appropriately – no one went down on just a 'cavers belt'
- Risk assessment looked to be followed appropriately
- 18 stretcher team members was bare minimum for moving stretcher over the difficult terrain encountered between Nurden Hall and Breakthrough Chamber (stretcher route). This was all that were available/deployed to go underground on the day (+ Dr, casualty and Underground Controller)
- The stretcher Bag needs an end loop to allow attaching to a rope for dangling vertically down a narrow pitch by rope or from caver. Clipping to 'shoulder straps' caused it to hang at an angle and catch. Needs new/modified bag constructed.
- The corkscrew climb/4-5m drop over the top into Breakthrough Chamber, coming from Nurden Hall, was descended with stretcher by corkscrew climb. Likely only worked due to light/short casualty. Larger casualty would need to go over the top and perhaps semi-Tyrolean to avoid next obstacles. Would need anchors drilling.
- Scaffold ladder pitch was not used for stretcher haul but would benefit from good drilled and resined-in anchor bots to supplement scaffolding.
- Larkin Frame session worked well on surface with a stretcher (and weighted dummy) lowered down entrance pitch and the hauled bag up.
- Check insurance arrangements for prospective new members (not presently in team) going underground/ fully involved in training.
- Reminder for people to use SAR H on SARCAL when they get home.
- There are now 30 team members trained on CRIMS – Cave Rescue Incident Management System – the digital T-card, resource and incident log system based on Excel that was trialled for first time in its new format on the day. A computer glitch caused a problem part way through on the day , but lots more was learnt with this and it continues to evolve and be a very useful tool for the team from now on. Important that the live system is not changed during an exercise.
- Important to have enough people around for Surface Control to deal with situations as they arise, even if they are not busy all the time

Ian Healey (GCRG Training Officer)

EXERCISE: MISS GRACES LANE [cont'd]

The following photos of the training exercise were kindly provided by Craig Cameron, Piers Hallihan and Pawel Krawczyk.





SURFACE CONTROL & 'CRIMS'

Surface Control at a Rescue Incident

Following the GCRG training exercise on the Cotswolds at Nailsworth it was established via some constructive criticism that our surface control lacked a level of quality and needed to be upgraded. In some respects, I suppose our lack of use of this due to not having to deal with many incidents contributes to this but it's not the reason for complacency.

We had already received a demonstration a couple of months earlier of the digital surface control systems and procedures that had been put in place by SMWCRT at the GCRG depot. This is very good and gave us some very good pointers. However, a number of factors such as cost and almost total reliance on the internet drove forward the idea of seeing what else could be put in place that would suit us both cost wise and workability wise within our area. From experience we know that mobile phone reception in some areas of the Forest of Dean is non-existent and even with our own mast could still prove problematic to say the least. In addition to this, Wayne Gladwyn came into the group with a lot of new ideas for information databases to take the existing paper information forward into the digital format. Little did we realise at the time how things were going to move forward.

Some years back CRIMS (**CAVE RESCUE INCIDENT MANAGEMENT SYSTEM**) - a digital T Card board—had been developed by Keith Edwards from the MCRO over a number of years and was trialed by GCRG around 2013. We found it very interesting but at the time we encountered some problems with it. I can't recall whether these were software or hardware related but with many other things going on within the group at the time we did not move it forward. However, with the need to look at some form of upgrade of our system for surface control thoughts returned to CRIMS and contact was made with Keith and he dug out the latest version sent it over and it was tested out.

What was seen was a vastly improved system, no running problems and with increased capacity for handling larger numbers of teams and people. Although not new, the real big factor that the system had was that it automatically created a log of what actions were taken along with the provision to add in additional events. There are very few of us who have really neat and tidy writing—mine is appalling to say the least— and although the use of a computer etc could make a massive difference to the recording of a log, it still would rely on a lot of input. So having this auto generation really was a game changer.

With a lot of behind the scenes work, what it was possible to do was to bring to the depot training day in December 2023 both a working version of CRIMS and the database work that had been undertaken by Wayne. Demonstrations throughout the day proved to be extremely successful and very encouraging. In the short time that has followed since that event a further round of work has taken place to develop the project and the supporting IT to go with it.

SURFACE CONTROL & 'CRIMS' [cont'd]

What does CRIMS provide?

CRIMS is made up of three component parts all running in Excel and does not rely on access being available to the internet. If it is available then it can be used to enhance what is being done.

[1] T Card Board

- just a digital version of our manual system but it has the advantage of having everything pre laid out ready for when people and equipment need to be allocated

[2] Resources

- where both people and equipment are added to the system. In the working model, all the GCRG members and our equipment is already listed but, on the day, it's only the people and equipment that is actually on site that is booked in.

[3] Incident Log

- the record of what goes on during the incident. So, for example when a Team has been formed and is Deployed a record of this action automatically goes into the log. When a team comes back and is booked out again an entry is made. Of course, all of these entries are all neat and tidy.

All three parts run in tandem with one another. Seeing it all working is the real way to get to understand it.

It's not the intention to try and explain the full workings of the system here but just give an overview of the three sections. As its rolled out further during training sessions you will get the opportunity to see and learn more.

REMEMBER TO MAKE SURE YOU SIGN IN ON ARRIVAL otherwise, you will not be in the system on the day.

IT setup of the current position

Within the GCRG trailer there is now a permanently installed and wired-in tower computer— one that we had downgraded from the depot control room, so at no cost— and added to this has been an additional low level position monitor. The existing higher-level monitor is still in place and is great for anyone who is standing up but when seated looking up to it was literally a pain in the neck. A keyboard and mouse have also been added. A VGA splitter unit has been installed that allows the feed to both the new monitor and the old existing monitor to be run at the same time. The computer, second monitor and the VGA splitter are all run through a wired-in UPS (Uninterrupted Power Supply) in the trailer.

In the event of a power outage, the computer its monitor and the VGA splitter are maintained. It was deemed that it was not necessary to protect everything due to complexity of the wiring and the requirement of a very large UPS unit. Maintaining the main computer was the priority. Lighting within the trailer is already protected due to the 12v power supply.

"That's what I hate about being a caveman.
Everything has to be carved in stone!"

SURFACE CONTROL & 'CRIMS' [cont'd]

A third touch screen monitor has also been provided and has the provision of being able to be run up to 20m away from the trailer via linking cables. VGA, USB and power all via external sockets on the trailer. This not only allows the CRIMS system to be operated remotely but also allows for such things as a cave or mine surveys to be displayed for a team briefing along with many other aspects that will come along as we progress forward.

Moving Forward

At the December training day CRIMS was successfully demonstrated and run by both Rachel Brown and Andrew Clark with a limited amount of input from Paul Taylor just to guide them in the correct direction. The feedback from them and all who attended the training session was extremely positive and much was learnt.

With the need to expand the knowledge of the use of CRIMS across the GCRG Wardens and others who have expressed an interest in working in Surface Control, plans were put in place for a CRIMS training session to be held at the end of January/early February 2024. To make this as productive as possible it was decided that a lesson plan would be drawn up to provide an actual working set of scenarios based around a made-up incident. Both Rachel and Andy have worked through this and this has led to further fine tuning of the lesson plan but also to add additional items to the T Card Board.

Work has also been undertaken to start the process of incorporating the work by Wayne Gladwyn into the CRIMS System to make one working package. This is still in its early stages but already the benefits can be seen and has really enhanced the end product.

The upgraded version of CRIMS has now been placed on all of the GCRG computers, trailer, control room and laptops. Even though the numbers of people within GCRG who fully understand and have working knowledge is limited, the system is so easy to use that with a small amount of on-the-job training anyone who is used to computers would soon be able to run it.

So, when you come to the next GCRG training exercise or an incident, make sure you get your name down on the new SIGN IN sheets as these will be used by the surface control team to book you into the system.

This project has without any shadow of a doubt been a game changer for GCRG and has moved the group forward in our ability to record events in a vastly improved way.

THINK THE NEWSLETTER NEEDS MORE/BETTER/DIFFERENT ARTICLES?

This space (and many others) are available for any GCRG member to submit an article of anything whatsoever if it can be linked to cave rescue in some way and that at least one person would find interesting.

All articles (whether written on paper, scanned newspaper cuttings, photos from GCRG-related events etc) can be submitted via email to the address at editor@gcrg.org.uk.

All articles will be credited to the submitter so what are you waiting for????

Go on, you know you want to really!

All articles will be gratefully received

PRAISE FOR THE DEPOT & EARNING ITS KEEP

Over the last few years, the GCRG depot has been used a number of times by Joel Corrigan and his team of assistants to run their Dachstein expedition training weekends. These have proved to be very popular and the location referred to as being "the best training facility we have ever been able to use".

This is quite an accolade to say the least and it really does show that the investment of funds that have been made in developing the training area really is well worth while. Each time the training takes place some of the income that the group has received from the previous event has been used to enhance the facilities further so there is something new each time. 2023 was to be no exception to this and it was decided that that the time was right to complete the walling work around Bay 3 that was started back in 2016. Although not everything was completed by the time the training weekend came around in June but enough to ensure that another very successful weekend could be held.

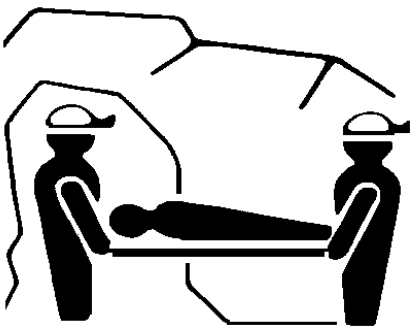
"It's the best training facility we have ever been able to use"

Seeing the facilities developed and made use of by others outside of GCRG not only helps with generating funds but also allows people to share and make use of what is a pretty fantastic facility.

Now that the major interior work is completed (there will always be the need for additional anchors as routes and systems develop) the next major work is to construct the exterior tunnel system. A variety of both steel and plastic tubes are being gathered together and once we move into the better weather, work will get underway and it's hoped that this will be completed ready for the 2024 Expedition training weekend and the visiting people will have something else to enhance their training.

Joel let us have your date.

Paul Taylor (GCRG Chairman)



'VANGELIS' A NEW UNDERGOUND COMMS SYSTEM?

10th February 2024

On 10th February 2024, Pawel Krawczyk—the author of this article which was originally published on the GCRG FB page—went into Wetsink with Paul Taylor to test out a new underground comms system (VANGELIS). For a more detailed explanation of the system and how it works, go to the project website at https://github.com/semper-ad-fundum/vangelis .

Quoting Pawel, he reported that …. the results exceeded the most optimistic expectations - we had a link from the top of entrance pitch to the bottom of the Mouse pitch so around 20 m with a bend and squeeze on the way. In the more spacious Cross Stream Junction series the link between two devices goes for around 30-40 with several sharp bends in between. Line of sight range is ~200 m or more.

The radios work in a mesh architecture, relaying text messages from one to another which allows building links of practically unlimited length. Each relay weights ~100 g and uses very low power. DIY cost in small batch ~$50. More details to be published soon.

The cave environment is quite a challenge when it comes to communications due to irregular cavity shapes, presence of water and general difficulty of installing any kind of equipment in an environment where everything has to be carried over hundreds of metres vertically and often in wet/muddy conditions.

There are numerous existing solutions, each with its own challenges:

- *Wired telephone is a reliable solution, however poses a significant investment due to the above challenges, plus it is easily damaged in confined or gravel passages.*

- *Through-the-earth radio communications using very low radio frequencies (HeyPhone, Nikola, CaveLink) are the most popular ad-hoc communications solution during cave rescue or expeditions . Obtaining a reliable link at depths below hundreds of metres however is a lottery as many factors from geology to weather impact attenuation even at low frequencies.*

Underground communication links based on radio repeaters was discussed at least since 2014[1]. Sybet came up with industrial solution SPELLCOM using radio repeaters to relay voice communications over underground cavities.

'VANGELIS' [cont'd]

*The **Vangelis** project expands on all of the above—see previous page—by using autonomous low-power repeaters for relaying text messages rather than voice over low-power radio transmission:*

Radio transmission using LoRA modulation using Meshtastic protocol for routing

- *Low-power radio transmission with maximum 200 m line-of-sight range for underground nodes*
- *Long-term autonomous operations of each relay node*
- *Low weight and portability of the nodes*
- *Range of surface relays limited only by LoRa radio reach, practically up to a few kilometres in mountainous areas.*
- *Consumer smartphones connecting over Bluetooth to relay nodes using Meshtastic app to send and receive messages.*

Hardware

The system is composed of two node types: surface and underground. Each node operates in router-client mode, which allows both client device (smartphone) connection over Bluetooth and message relaying to other nodes over LoRa.

Future improvements

Barometric Altitude

As cave nodes are located through the cave, they have no means of determining their own location as GPS signal is unavailable. Barometric pressure sensor allows to correlate the pressure seen by a node with altitude above mean sea level as long as at least one surface node is equipped with GPS receiver and barometric pressure sensor. The surface node would then operate as the barometric/ altitude reference for the whole network. With this improvement, the Meshtastic application would see the nodes identified by their depth rather than merely names, e.g.: 0 m relative (surface node), -50 m, -100 m, -200 m etc.

Messages sent to the channels could be also identified by the depth of the respective relay node, thus indicating that team X has reached -100 m, then -200 m etc.

Cable Communications

Long, tight crawls are especially challenging for connecting using relay nodes due to relatively short (~10 m max in our tests) radio range and high risk of the nodes being displaced or damaged by cavers moving with bags in confined space. In theory, the nodes could be also connected using a serial cable connected to the USB-C port, which could replace the radio link through the problematic tunnel. The Meshtastic firmware currently supports serial communications but not exactly for node-to-node links. The length of such a hypothetical link and how it would need to be powered is also unknown.

'VANGELIS' [cont'd]

Testing in Wetsink

Initial testing in real-life conditions was performed in Wet Sink cave which offered all typical karst cave features - pitches, chokes, tight squeezes, water.

- One "surface" node was placed at the head of entrance pitch. Another one was carried down until signal was lost, which came out to be nearly at the bottom of the next pitch (Mouse pitch). This covered ~20 m vertically with a horizontal displacement of ~5 m in a choke in the middle.

- Three "cave" nodes were used to create a link through a tight ~30 m long crawl joining the bottom of the Pen Pot pitch with Cross Stream Junction. The crawl is 30-40 cm high with numerous sharp turns on the way.

- Two nodes were carried from Cross Stream Junction in opposite directions as long as the signal lasted. The devices were able to communicate through a rather spacious (2x3 m) tunnel with no line of sight over at least four sharp turns. The total walking distance covered was ~40 m.

- Additional relay node was added right at the Cross Stream Junction. Mobile nodes were again carried in opposite directions. The total walking distance covered was ~70 m across the same sharp bends plus some smaller tunnel irregularities.

The testing was intentionally performed in confined parts of the cave to check the worst case scenario first and the above distances indicate performance of the system under such conditions. In spacious caves, both horizontal and vertical, there's no reason why the links couldn't reach the usual surface line-of-sight range, that is up to 200 m in case of the 2 dBi antennas.

THE GRAND AUCTION, PART II

15 July 2023

Back in July 2015 a Grand Auction was held at the depot to sell off a lot of caving/ outdoor equipment that had belonged to the late Steve Tomalin and as a way to raise much needed funds. This was something we knew Steve would very much have approved of.

The event turned out to be a fantastic event and we (thanks to Liz Maisey) were even able to get hold of a real auctioneer (Joe Trinder from Wotton Auction Rooms) for the day .... It really made all the difference!

Given the success of this event it was always thought that at some point in the future GCRG could run another auction and in July 2023— some 8 years after the 1st one— we were back with 'Grand Auction, Part 2'.

In the months preceding July 2023, calls had gone out to all GCRG members—and members of the associated caving clubs—for donations of anything that could be given for sale at the Grand Auction. It turned out to be quite an eclectic mix of items but mainly with an outdoor/caving focus. Many long hours were spent at the depot by a small group (Paul Taylor, Jo Clarke, Liz Maisey) cataloguing, photographing and labelling many hundreds of items so that on the day everything went as smooth as possible.

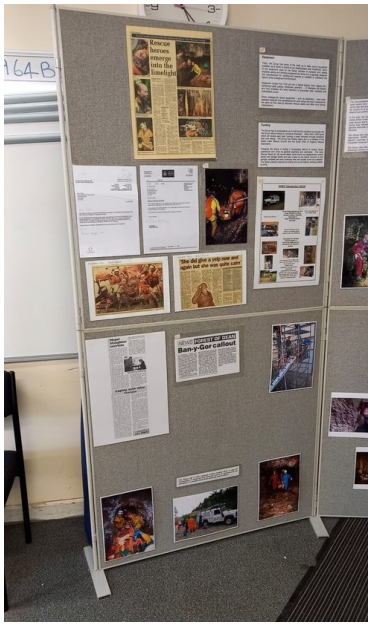
When the day came the weather was good and Liz had even persuaded the original auctioneer, Joe to return for a second go! Once again, he made all the difference with his auctioneer's banter and persuaded many to buy stuff they didn't know they wanted!

The auction had been planned to be a sociable event as well as a fundraiser and there was a BBQ selling food, a cake stall and even a bar for those that were staying overnight or didn't have to drive.

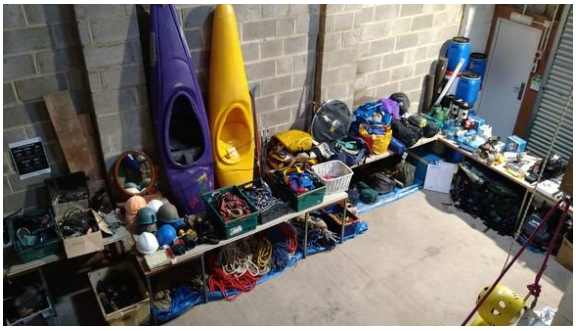
In the end over £4000 was raised with £200 going to BCRC from the sale of donated long blue tackle-bags and the £4000 being split between GCRG and MCRO.

THE GRAND AUCTION, PART 2 [cont'd]

A massive thanks to all who helped run the event, often putting in many hours behind the scenes and also to everyone who turned up on the day to buy items or who put bids in beforehand and to all who donated items for sale. All cave/outdoor gear that was left over from the sale was taken to the 2023 Hidden Earth and sold off with the funds going to the Ghar Parau Fund.



THE GRAND AUCTION, PART 2 [cont'd]

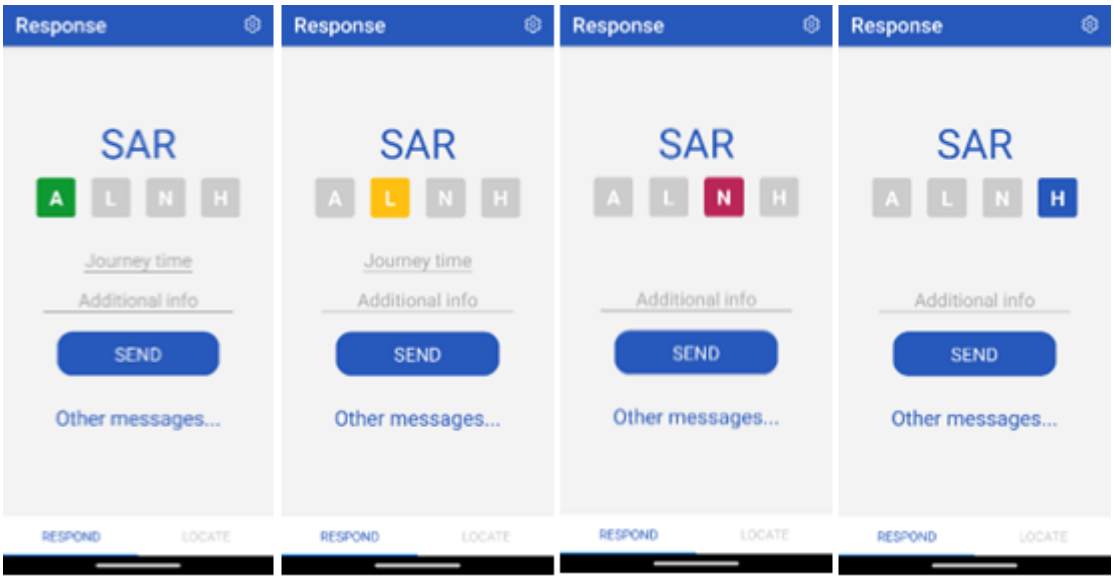


SARCALL: MOBILE APPLICATION REVIEW

At the end of the GCRG practise on the 11th June at Wetsink, Joel Corrigan casually mentioned that he uses a SARCALL App to respond to the message that SARCALL sends out to us, via varying forms of messaging platforms, SMS, email, landline voice text etc. I did not know that one existed and decided to take a look at a SARCALL App.

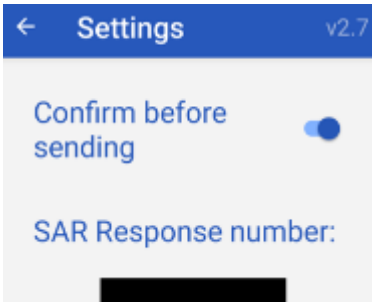
I typed SARCALL into Goggle Play Store, observed just the one SARCALL App option & downloaded it.

Opening the application, you are faced with a fairly simple and (thankfully) basic landing page with one of the usual four messaging options of (A) Available, (L) Limited Availability, (N) Unavailable & (H) Home in the 'Respond' Tab:



To set the App up to respond to the correct SARCALL number, you do have to open the settings icon and enter in the exact SARCALL mobile number. Unless you do this, nothing will be sent! Settings has just two functions. Place in the number and the confirm before sending option:

SARCALL: [cont'd[



To be fair, it was spot on in this platform but I did give up on the what3words compass app!

Seems useful if the location was somewhere you were not familiar with, just to get a heads up.

Data wise, the developer of the app states that they do not collect any data (temporary cloud based data?) and so therefore, do not share any data with third parties. Seems like an easy to use SAR-CALL message reply system, that I'll use for convenience on the next practise / call out! No more trying to remember the text formatting, just open the app, put in the data and send. Should be easier to remember that Home reply message when you have returned to your abodes too!

Wayne Gladwin

OTHER BENEFITS OF BEING A MEMBER OF GCRG

Other than the obvious, another benefit of being a member of GCRG is that members of Cave Rescue are eligible for membership of the ***Blue Light*** *scheme.*

The Blue Light card is the discount service for the emergency services, NHS, social care sector and Armed Forces, providing their members with thousands of amazing discounts online and on the high street.

For just £4.99, members of the Blue Light community can register for 2-years access to more than 15,000 discounts from large national retailers to local businesses across categories such as holidays, cars, days out, fashion, gifts, insurance, phones, and many more.

You will need your GCRG ID card to prove your entitlement, so if you haven't got one, or yours has expired, please email Pete Mason: secretary@gcrg.org.uk to request this.

Blue Light Card:https://www.bluelightcard.co.uk/

Jo Clarke (offers@gcrg.org.uk)

OTTER HOLE FILM CONTINUES TO RAISE FUNDS FOR GCRG

Following the showing of the Otter Hole film at the Palace Cinema in Cinderford back in October 2022 — which raised over £1000.00 for GCRG — the next stage was to make the film available for purchase for anyone who had not seen it.

Previously this had been achieved for other films produced by Paul under his Redhouse Productions Glos badge by putting them onto DVDs. However, with the latest Otter Hole film the file size was too large to go even onto a dual-layer DVD. Although the size could have been brought down, this would have been at the price of reducing the quality and this was something that was not wanted.

Discussions took place and then the idea of producing the film on a USB memory stick was put forward & sounded like the ideal solution as they were available in a variety of different sizes. It was also possible to purchase plastic outer cases that were the same size as a Blue Ray disc case but came with a small docking station point inside for the stick. It alsi solved the problem of the size of the file and also it provided a method for the film to be easily watched as many people these days don't have DVD players. It could be just popped into anything with a USB slot.

Orders were placed for both USB sticks (16GB to allow for both the long and short versions of the film along with a copy of the cave survey and a picture of the Hall of Thirty to be included), cases and a cover sleeve was designed. The purchase price was set at £15.00 with a donation of £2.50 from each sale going to GCRG. These have proved to be pretty popular and so far, 175 copies have been ordered which to date has raised £440.00 for GCRG.

Soon after the showing of the Otter Film in Cinderford I was contacted by Rachel Stott (wife of Chris Stott RFDCC) to ask me if it would be possible to show the film in St Arvans. This is the village that sits at the end of Chepstow racecourse and is almost on top of the cave. It is a place that cavers have long had links to. It was to be the 100-year anniversary of the opening of the Memorial Hall in the village — In the early days of exploration and visiting Otter Hole, cavers used to park in the carpark and walk across the racecourse — and they would like it to be part of the celebrations. I said that yes it could be done but as I was using the film as a fundraiser for GCRG would they be in agreement to pay a fee of £50.00. Rachel came back to me to say that this would be fine and she was sure that they should be able to raise a bit more. The date was set for Friday June 16th and the plan was that it would be left for people to make donations rather than selling tickets.

I organised for both Gary Cullen and Steve Woolven who had been part of the filming crew to come down for the weekend and we would all attend the event. A display of both GCRG and film related pictures was put together and on the Friday evening the three of us headed over to St Arvans. Chris Stott also helped out with a copy of the cave survey and Dave Hardwick who featured in the film also came over.

The Hall is split into two sections and one half had been set up with all the chairs and in the other we set up the display. It was equipped with a computer projector and screen which we were able to connect a laptop to. However, the sound system had the wrong plugs for connecting to the laptop which was a bit of a problem as sound is really quite important!. Fortunately, just before leaving the depot we had put a set of speakers into the car which were retrieved and connected up. Not perfect but they saved the day.

So, everything was ready all that was needed now was people to come and watch the film. Having not sold tickets Rachel did not have any real idea about how many people would be turning up. So, we just waited and slowly people started to arrive. By 19.30 hrs when the film was due to start it was standing room only. A brief introduction by Rachel, a few words from me and then it was lights off and press the play button.

This was going to be the first showing of the film to an audience that was not primarily made up of cavers. What would the reaction be? Well, if silence could tell a story, then in this instance it was one of sheer enjoyment and spellbound concentration. Laughs at the appropriate time and when the film ended the applause said it all. Success.

Many questions were asked and where we could between us, we gave answers. Lots and lots of talking. Explaining the survey, the filming etc all in all a resounding success but the big question was had it raised any donations? Rachel came to me and asked if I had any idea of what had been raised. I thought well maybe £150 - £200 based on the numbers of people. When she told me that the actual figure raised was £432.50 was just amazed and thanked her and the team.

We all headed back to the depot in a very happy and elated mood. What an evening it had been! Adding everything together so far, the film has raised £1872.50 for GCRG which is excellent.

I am very grateful to everyone who has contributed to this total. If you would like a copy of the film then they are still available. Email chairman@gcrg.org.uk £15.00 or £18.00 with P&P and on Friday May 18th 2024 the film is being screened in St Mary's Priory Chepstow primarily as a Fund raiser for the Priory (Jan Karvik is now the resident repairman and asked me if it would be possible) It's a fantastic location and we hope it will raise a nice lot of money for the priory along with a donation to GCRG.

Paul Taylor (GCRG Chairman)

ANOTHER WAY TO RAISE FUNDS & ADVERTISE GCRG?

Over recent years, as a way of raising much needed funds we've tried all manner of ways to help get people (GCRG members & non-members) to part with their cash! We've sold calendars, films (and had film nights), run marathons, had many excellent raffles and sold mugs etc but so far have not yet tried a Cave Rescue "Cook Book". Many other organisations (WI, Scouts, schools, workplaces etc) manage to do this so why not GCRG as well?

Given that all of us like our food (or drink) and no doubt all have our own favourite recipes, why don't we collate all of these into a book as a way of raising funds (would make for some excellent christmas presents etc) and also promote the group.

Looking some examples shown here, the recipes could be divided up broadly into:

Soups/Starters/Snacks

Main Courses

Vegetarian

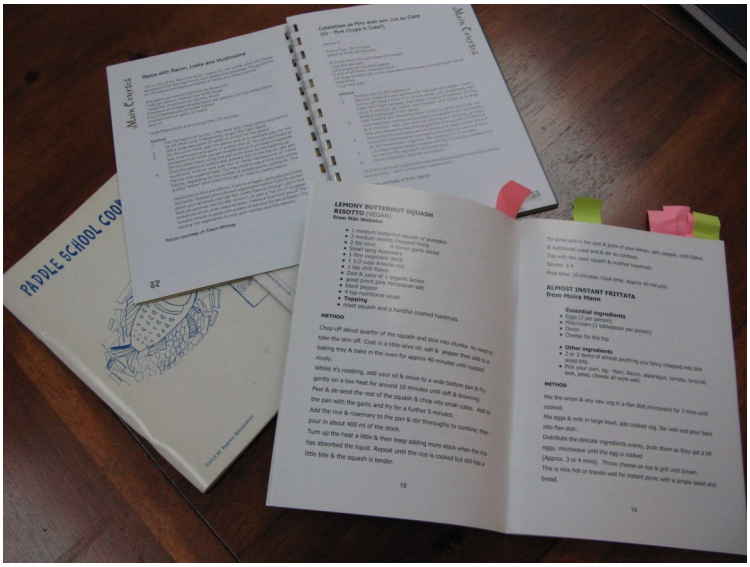
Side Orders

Puddings

Bread/Cakes/Bakes

Booze/Cocktails (ie favourite Sloe Gin recipe etc)

Also, we'd need to have photos taken of at least some of the recipes in question & so how about some caving/cave rescue ones to go with it? What about also photos of some of the recipes being eaten - or cooked even? - underground? (there's a challenge?)



So, please if you'd like to support the production of this book - or have any ideas regarding this - then contact the Editor & we'll start to pull together something which could be quite successful.

CARTOON GALLERY

A few caver-related cartoons to help fill the space where an article could go.

SOCIAL MEDIA

Website

The GCRG website has undergone a revamp, including the ability to donate directly to the group via PayPal and the following tabs/ buttons to go to specific areas/subjects:

Home About News Training Membership Fundraising-Callout/Safety Gallery Publications Contact & Links

Twitter

GCRG now also has its own account on Twitter, follow the group at

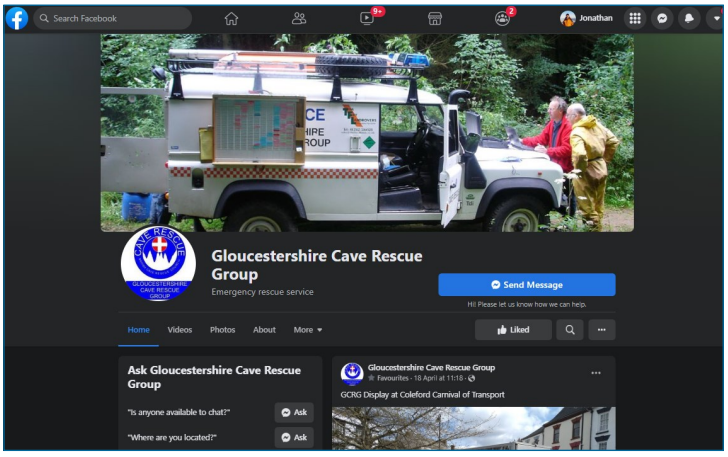
https://twitter.com/GCRG_CaveRescue

SOCIAL MEDIA

FACEBOOK

GCRG has its own presence on FB

https://www.facebook.com/Gloucestershire-Cave-Rescue-Group-1828966887343731/



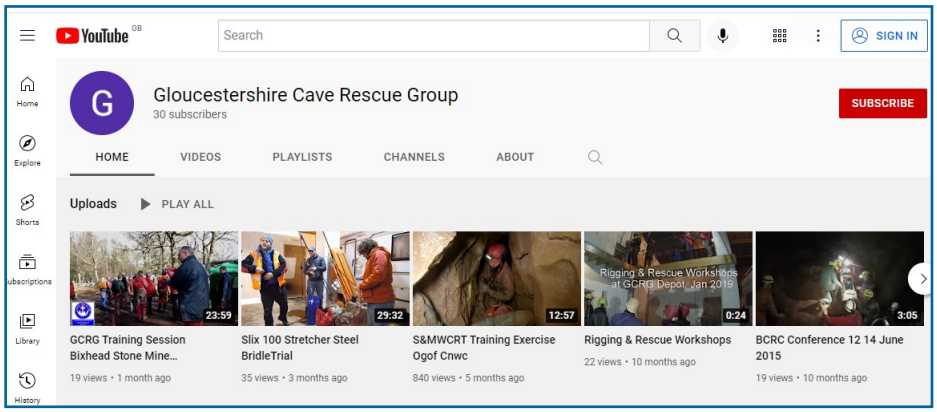
Rigging & Rescue Workshops

GCRG Training Session Bixhead Stone Mine...

GCRG Training Exercise Wetsink (Slaughter Stream...

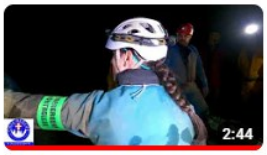
YouTube GB

See GCRG's own channel at *https://www.youtube.com/channel/UCbb3v4lcSbxSLyUF5FqlqwA*



GCRG Z Rig for Cave Rescue

JAG Bridle System For Cave Rescue Stretcher



GCRG TRAINING AT BIXHEAD STONE MINE MARCH 2023

Slix 100 Stretcher Steel BridleTrial