Exercise Evaluation Report

2019 Deep Cave SAREX

Location: Ellis Basin Mt Arthur – Kahurangi National Park

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Contents

Executive Summary

A Deep Cave SAREX occurred in March 2019 involving a significant number of cavers operating from Motueka and open Mt Arthur. The key target was to practice cave rescue techniques in a real environment that creates realistic learning opportunities for participants. These are run as real-time exercises over three days that are designed to refresh personnel and test systems.

The SAREX was the continuation of Cave SAR exercises that started in the 1950s and have grown to meet the changing needs of caving in NZ. It was a well-planned and well-executed event that allowed new participants to the experience the reality of cave rescue and to refresh the old hands.

The outcome of this SAREX will guide and direct training of Cave SAR in NZ for the next three years.

1. Recommendations

1. Continuation of relevant real-time training and scenario-based learning through SAREXs.
2. Ongoing regular review of pre-plans & methodologies to ensure that capacity is mutinied against the reducing number of competent & currently fit deep cavers
3. Strengthening capacity & competency of the IMT through more exposure to CIMs principles and methodologies
4. Ongoing training for cavers to remain up to date and current in rescue techniques
5. Use the outcomes to direct training and develop systems

2. Introduction

Every three years the New Zealand Speleological Society (NZSS) conducts a deep cave SAREX. A deep cave is a cave usually found in remote alpine environments and are typically over 300m deep and requires more than 3 hours travel time from an entrance to the lower levels and can often take up to 8 hours of travel to a remote camp.

Deep caves represent some of NZs most difficult & demanding rescue terrain with rescues lasting many days and requiring over 60 SAR personnel. Deep cave rescues are rare due to the competency required to get there in the first place and are typically fall events resulting in the immobility of the patient.

Cave SAR can only be carried out by highly experienced competent cavers due to the unique and challenging terrain. The deep cave SAREx has been largely developed over 20 years to ensure that cavers get together to discuss, develop and implement cave rescue techniques.

3. Background

3.1 Background to the Exercise

Since 1990 NZSS have conducted a deep cave exercise every three years. These typically occur on either Mt Arthur, Mt Owen, or Takaka. The 2019 SAREX was held in a cave called Exhalair a cave explored in the early 1990s and due to changing exploration focus become a part of the very large Ellis Basin cave system rarely visited.

NZSS chose the location this year to test cavers, IMT and systems in unfamiliar terrain and refresh knowledge of the site should it become part of future exploration efforts. The set up of the exercise involved many aspects of the CIMS process with a SAR base at Motueka and a forward base at Mt Arthur and several staging areas. Several other roles unique to cave but fitting within CIMs such as Cave Entrance and the Underground Controller also feature as critical elements of the operation.

The exercise plays a key role in readiness for rescue for NZSS to meets its obligations to LSAR & the NZ Police.

3.2 Dates, location, organising agency(s), key people

- **Date of Exercise**
  - 1 March 2019
- **Location**
  - Mt Arthur – Kahurangi National Park
- **Exercise Organisers**
  - NZSS
  - Nelson Speleological Group

3.3 Participating organisations

- NZ Police
- New Zealand Speleological Society
- Canterbury Caving Group
- West Coast Cavers
- Nelson Speleological Society
- Wellington Caving Group
- Manawatu Speleological Group
- Hamilton Tomo Group
- Auckland Speleological Group
- Motueka Land SAR
- NZSAR
- NZ Land Search & Rescue

3.4 Exercise aim

To carry out a real-time deep cave exercise in real conditions

3.5 Exercise objectives

- Carry out a basic search for an overdue party to locate a missing party.
- Extricate a patient from a deep cave environment.
- Implement, staff and run an IMT over multiple operational periods.
- Test systems and preplans for readiness

3.6 Exercise Scenario

Deep Cave Scenario – IMT Release

Interview notes from MCKAY K, WHITEHOUSE C – Conducted 0800 28/02/2019
Interview conducted by Hugh FLOWERS - NZP 20183
Cave Advisor John PATTERSON in attendance

Events
Wednesday 28/02 two cavers from Nelson (addresses available)
David ELLACOT (M) AGE
Chris WHITING (M) AGE

Due to enter Exhailair Entrance of the Ellis Basin System and continue rigging on into cave following the first trip on Tuesday with Kieran MCKAY (M) & Chris WHITEHOUSE (M). KM & CW left the mountain on Tuesday evening and expected a text on Wed evening after DE & CW exited the cave. Reception is poor on the hill, but they were due home around 2300 on Wednesday night as they were only doing a short trip and were going to text as soon as they had reception.

The plan was to complete rebolting and refurbish the whole of the route to Siren junction and out to 20 Days to Oxford to recommence exploration in that area following new leads found below Exhalation area of the cave system. There was some discussion Tuesday about the poor state of rigging in the cave and it was agreed that any old rigging would be removed, and all terriers would be replaced with modern rigging to meet NZSS standard. MCKAY said that there was some debate around which Entrance they would use on Wednesday as the old cross over route was possibly quicker.

WHITEHOUSE with WHITING went up to Expelair on the Monday and had shown him the entrance. WHITING & ELLACOT are familiar with the route over the last few days but have not spent any other time in this part of the cave and are unfamiliar with the cave outside of the route. There were a few other stray tasks to carry out just off the main route that, if time permitted, were going to carry out these rigging tasks on the way home.

ADDITIONAL INFO – 1530 28/02/2019 from Oz PATTERSON
MCKAY & WHITEHOUSE left Motueka about 1510 to head back into the Ellis System on foot and re-enter the cave. This occurred after a heated discussion around not getting a helicopter and lack of action to date.
Police went to Flora Saddle around midday and ELLACOTS vehicle (Subaru Legacy – WDE192) was still in the carpark with no obvious issues. Sgt SWANSON Nelson Police SAR conducted an investigation of the vehicle and considers no one has returned to the vehicle since leaving it. There were “street clothes” in 2 separate piles on the back seat and a pair of trainers in the passenger footwell and a pair of jandles in the boot with a partially full sports bag. Due to dry conditions no, reasonable DOT was established and the carpark was heavily contaminated with sign.
Police flew the Arthur Track to Ellis Basin route and Baton Valley Track and did not see any persons on the route. Due to a technical issue, the Helo was unable to land at the Ellis hut.

4. Evaluation Methodology

4.1 The agreed outcomes of the evaluation activity

Carry out observation of the IMT and its function in a real-time scenario and assessment of the operation.

4.2 Evaluation scope

The exercise was evaluated from the Motueka SAR base and no field observations were carried out due to the remote location and helicopter logistics.

4.3 Aspects of the exercise observed, what was not observed

All aspects of the IMTs function was observed during the course the SAREX and measured against the relevant KPIs of the IMT in relation to the field outcomes. Prior to the event, the IMT carried out a team briefing and general discussion of the function of the IMT in an event of this nature, this formed an important part of the assessment process.

No observation was carried out in the field however field team KPIs could not be achieved without the appropriate actions of the IMT and these formed the basis of this report. It is also reasonable to assume that the appropriate actions of the Field Teams led to the success of the IMT.

4.4 The process followed in preparing and submitting the report

The Organising Group provided a detailed plan with a comprehensive understanding of the activity timings, general plan and safety process. The scale of the Deep Cave SAREX follows a well-developed plan that has been an ongoing development from previous SAREXs.

There was no need to follow up or carry out investigations outside of the SAREX.

A significant quantity of feedback was received via NZSS cave SAR email address on request of the organisers at the hot debrief. This was reviewed for the development of this report. NZSS is collating and forming a condensed report form this so will add this as an appendix once complete.

Note

When necessary any possible potential conflict of interest in making an unbiased assessment of the exercise was managed out throughout the weekend. As the Evaluator, I played a part in some of the development of this SAREX and many previous ones however I do not feel I could have influenced outcomes once the SAREX began.

5. Findings

The exercise met the desired outcomes of the SAREX and all KPIs through good planning and experience which ensured all facets of the operation were placed under real-time pressure and response. The observation of the IMT was carried out over multiple operational periods and both day and night shift where observed.

Cave SAR, in general, has a well-organised structure with a good understanding of the process around Responding & Resourcing a rescue operation. The general functions of the IMT are understood by the group and during the operation, the IMT also had less experienced members operating in a 2IC role and in their next operational period as the lead in that role. This was an effective training methodology and ensured that skills and knowledge were handed over.

Cave rescue by its very nature generates a significant resource and tracking load with a fluidity in the teams who vary task and location often quite dynamically throughout the operation. This places a significant challenge on the IMT to track and maintain overall control of the operation. During the SAREX it took several operational periods to settle into a coherent process to track events, people and activities underground.

Communication in Cave Rescue is both extraordinarily difficult and complex relying on several human relays. Recent advances in technology have meant Cave SAR has a “through earth” telephone enabling text capability to surface. This is then relayed by the surface team via radio to SAR base, communications are often technical in nature requiring specialist knowledge. Radio operators on the SAREX did not necessarily have this understanding and improvements could be made in this area to staff IMT radio communication with suitably skilled staff. This, however, must be carried out with caution to prevent radio operators from becoming decision-makers.

Due to the critical nature of communication in a Cave Rescue, it must be seen as a high priority in the IMT to plan, establish and resource communication at a very competent level early on in the operation.

The operation was spread out both geographically and chronologically and the IMT and Field Teams showed a high degree of competency in operating both autonomously and collaboratively. A degree of tension/friction ran throughout the operation as can be expected where delivery of the outcomes by the field teams are carried out in demanding and difficult conditions. Developing processes where all aspects of the operation understand each other's pivotal role in the operation will help to lead to higher performance across the whole of the operation.

Cave SAR is rather unique in the operation of the rescue by the use of the Underground Controller role. This person leads much of the operation largely autonomous of the IMT, reporting as needed. Recent training and focus on this role showed through in the operation reducing previous challenges in other operations. This was a key KPI in the SAREX and ongoing training and development of the role will deliver better outcomes in cave rescues.

6. Conclusions

Overall the SAREX was very well planned which ensured the delivery of a complex SAREX in difficult terrain was well run.

The conversations across the IMT and during the hot debrief showed the critical importance of ongoing SAREXs as participants clearly articulated not only what they had learned but what they had forgotten since the last SAREX.

Some key issues face CAVE SAR with a decreasing level of available physical resourcing for a major event in ever-increasing complex caves that continue to get a deeper and further from an entrance. NZSS Cave SAR has a duty to ensure they maintain a high level of competency to carry out deep cave rescues and this can only be achieved by SAREXs of this nature. NZSS needs to ensure that they maintain the necessary support, funding and commitment to this level of training at all levels into the future

Cave SAR needs to continue to develop a stronger IMT to ensure that personnel understand their role well and have a broad level of competency across all facets of IMT. Continuing development of field teams to understand the importance of IMT will strengthen the overall response.

In the cave, the pivotal role of the Underground Controller was clearly demonstrated with changes recently to the role and autonomy showing through in higher efficiencies.

7. Appendix