“OPERATION WILD BOAR”
The Tham Luang Cave Rescue In Thailand
Presented by Derek Anderson

OVERVIEW
- Tham Luang Cave
- Chronology
- “3-Day Rescue”
- Lessons Learned
- Questions

THAM LUANG CAVE
- Located in Chang Rai province, Northern Thailand on the border with Burma/Myanmar.
- 4th Largest cave in Thailand. Approx. 8 Km long
- It’s a ‘Dry’ cave 6 months a year. After Monsoon rains arrive in June/July, it becomes flooded the remainder of the year.
- Extremely dangerous once high rain flows enter “restrictions” in the cave and flood the sumps.
TIMELINE/CHRONOLOGY
SATURDAY, 23 JUNE 2018

- The Wild Boar Soccer team and their coach decided to go hike Tham Luang cave after soccer practice. (They HAD done this before a few times together, kind of a “right of passage” for newer members)
- Family members begin to worry once nightfall arrives and none of the boys arrive home or are heard from.
- Their bicycles and some back packs are found chained at the mouth of the Cave that night.

THE SEARCH BEGINS....

SUNDAY, 24 JUNE 2018

- Local Search and Rescue crews from Mai Sai and civilian volunteers are responding to the cave.
- Local Thai Government request Thai Military assistance
- An EX-PAT named VERNON UNSWORTH who has been exploring/mapping Tham Luang the last 5 years is contacted by some local villagers who request his assistance. He attempts to make his way back into the depths of the cave to locate the boys.

MONDAY, 25 JUNE 2018

- A contingent of Royal Thai Navy Seals arrive with minimal equipment and link up with Vern. They are able to initially hike past the T-Junction known as “Sam Yak” before they begin diving the flooded “Sumps”.
- The rains are beginning to fall harder and the water flows in the cave are beginning to increase.
- The Seals establish a small Base Camp at the T-Junction and run electric wire, phone line and bring back a generator/pump tubes in an attempt to drain the sumps.
TUESDAY, 26 JUNE 2018

- Heavy consistent rains have caused flood levels to rise quickly.
- Thai Seals/Vern are now being forced out from T-intersection to Chamber 3. (Pumps/wire/generator all left in place due to speed/force of the flooding).
- Vern now realizes they are in trouble and calls in fellow caver Rob Harper and UK Diver Rick Stanton and John Volanthen.
- The US INDO-PACIFIC command is contacted by the USSEMB via the Thai Government and a request for assistance is made.

WEDNESDAY, 27 JUNE 2018

- Dives are still being attempted by the Thai Seals but with little progress.
- Divers Rick/John arrive at night, move to the cave site, and begin their first exploratory dive.
- A rescue team of approx. 32 U.S. INDO-PACOM Pararescueman/Combat Controllers and support staff deploy from Okinawa Japan to Chang Rai, Thailand via a C-130 Aircraft. (18 hours from notification to on-site)

THURSDAY, 28 JUNE 2018

- U.S. Leadership arrives at cave site around 3 am. Pouring rain. Conduct link up with Thai Seals and get a situation update.
- We were entering chamber 1, Rockwells rise 2 feet and drive us back out to the mouth of the cave.
- Around 8 am, we meet with local Thai civilian and military leadership and introduce ourselves. We also provide our capabilities. We were trying to understand the Chain of Command or Incident Command at the site.
THURSDAY, 28 JUNE 2018

- Hollywood TRICKS a lot of the world. We are not all Jason Borne and we don't have "undeveloped technology" (Satellites that can see through mountains)
- Dozens of organizations. Little unity of Command. Everyone is doing their own thing.
- No established or developed Courses of Action (COA) besides the failed diving attempts early on.
- Solution: Level the playing field with all key leaders and begin methodically building and executing multiple COA's.

GOAL: Establish a CLEAR command structure between the Royal Thai civilian/military agencies and the international rescue teams.

29 JUNE- 01 JULY 2018

- Rick and John said that they would not be diving anymore due to the high water flows and dangerous "strainers" in cave.
- 1st Line of effort (LOE) was to focus efforts on surveying the mountain side and scanning for a "DRY" area in the cave where we could drill. (Engineers arrive)
- 2nd LOE was to send dozens of teams to comb the mountain and look for an alternate entrance into the cave. (There was no shortage of manpower)
- 3rd LOE was to get Huge Pumps and try to lower the water levels in the cave!

Thanet/Water diversion teams are slowing water running into the cave

With less rain falling, they are able to re-divert small streams into a nearby valley using sandbag dams and PVC pipes
- Large pumps are brought in and water levels are dropping slowly. Rains were slowing.

2 possible drilling sites were identified and teams were clearing them to sling load drills from helicopters.

The goal was to drill into areas that showed pockets of air. However, the nearest point, surface to cave, was 200m (600 feet).

Use of ground penetrating radar.

MONDAY, 02 JULY 2018

- Australian Federal divers are now on site assisting the effort.
- UK divers are now successfully diving deeper into the cave as water levels are down. They are laying ropeline as they go.
- Drilling has begun in some areas but there is not a 100% chance it will work.

- Teams have found some other cave entrances but they do not connect to the main chamber.
MONDAY, 02 JULY 2018

- The general attitude at the cave site is becoming doubtful. Many are now discussing body recovery if they are even found.
- Then around 2200 hours, ALL 13 ARE FOUND ALIVE and in decent mental/physical condition.

VIDEO OF CHILDREN

- There is a renewed energy and sense of purpose at camp.
- Also, extreme worry. UK divers told me they had 'Opened Pandoras Box'.
- We spent the next 48 hours brainstorming as a team developing dive rescue courses of action.
- We were trying to tackle a LOGISTICAL nightmare of tank numbers, support divers, rescue divers, rope rescue teams, labeling spent tanks, etc.
- Also, the kids CAN NOT SWIM WELL, HOW ARE THE GOING TO DIVE?
- 5 Thai Navy SEALs and 1 Doctor dive back to treat and stay with the children that next day. (Exhaust all air/lose masks while doing so)
Experts say, "No matter what the plan is, we MUST start forward staging tanks into the cave." So, an additional 300 tanks were brought in from all over and jammed with 4 compressors running 24/7.

A plan to forward stage 200 tanks to chamber 3 is enacted by 100+ volunteers from many countries.

- US/UK made plan to get children
- food/water pumps/headlamps/blankets.
- 100 US Meals-ready-to-Eat (MRE) are swam in with other essential items above.
THURSDAY, 05 JULY 2018

- The UK team seems in the meals and supplies. They also bring in a gas monitor and the reading's are 15-17% Oxygen in chamber 9. The living conditions are unsanitary.
- US divers and other support divers begin to try and clear much of the unneeded lines, wires and pumps that are not providing any value. They are just snag hazards.
- US and a local Thai mountain rescue team begin to set up rope systems in the cave (high lines) to transport tanks and possibly litters in the future.
A joint plan is being developed and is currently about 80-90% done. The Thai's and International team are not agreeing on all issues.

Rehearsals of the equipment that will be used for the plan is being tested.

2 seals return from chamber 9 and provide intel about what they saw. (3 seals and Doctor remain back)

Rick/John say they need more professional cave divers (5) and 2 Australian cave divers for our plan to be a success.

UK Divers swim back in to check on the boys and also bring in notes from their parents. The boys and coach write notes and they are carried out to the family's.

Trying on several full face masks on a 10 yr old boy to see if they would leak or would achieve a good seal.

Hand drawn map used for Operational Planning/ Briefings

It depicts areas that are completely under water, wading areas, and floatable areas in the cave chambers.

Talks about leaving the boys in the cave for 4-6 months is being discussed amongst the Thai's.

The Thai Seals are told to formulate a plan to run Oxygen tubing 2.5 KM back to where the children are from the mouth of the cave. Soon, a number of medical oxygen cylinders arrive on scene with a 3 km rubber hose.

The international team strongly advises against this plan. They advise that even if the hose get back, it will not re-circulate the bad air or remove CO2.

All international teams leave the site early that day and the Thai Seals attempt to run the Oxygen line into the cave.

Saman Gunan, a retired Thai Navy Seal diver has died during the operation trying to pre-stage tanks for the laying of the Oxygen hose.

REST IN PEACE
Saman Gunan
POOL REHEARSALS

Testing/Finding the best way to transport an unconscious child

We ensured we had smaller wetsuits.

- Wetsuit hoods
- Buoyancy Compensators
- Weighted them correctly
- Secured hands and feet to keep them streamlined

That the POSITIVE PRESSURE Full Face Masks would NOT LEAK!

- Pool Rehearsals with similar aged Thai children
- Testing our equipment that would be used for the rescue
- Wetsuits, Hoods, Full face masks, Buoyance Compensators
• Despite rehearsals being positive and equipment tested, the team still need approval from the highest levels of the Thai Government to enact the rescue.

• The Thai Minister of the Interior, the local Governor, The Royal guard Generals, and all their staff held a meeting where we (International team and Thai Seals) briefed the plan in detail, two times.

• An American named Josh Morris who owns a rock climbing company who has lived in Thailand 18 years and knows the culture well helped facilitate this meeting. He was a great liaison.
Royal Thai Government informed us the Plan was APPROVED!

We requested all Non-Essential personnel must be out of the cave.

ALL MEDIA has to be removed from cave site area.

Plan had to be carried out exactly as briefed- No Deviations.

Contingencies and Emergency Situations were briefed and understood by all.

Medical plan and sedation was discussed by Dr. Harris, US/UK leadership, and THAI medical leadership.

'Hold Harmless' clauses were necessary if children died.
SEDATION

• After several discussions with Dr. Richard "Harry" Harris and Dr. Steven Rush (Phone calls), our Air Force Pararescue Medical director, the sedation drug would have to be Ketamine.

• 1 mg of Alprazolam PO (Given initially to calm them down)

• 1 mg of Atropine IM (To control their salivation in the FFM)

• 5mg/kg of Ketamine IM (Kids were placed in 2 categories: 40 or 50 KG’s)

• 2.5mg/kg Bump doses when needed during their exit. Each child got approx. 2 Bumps

THE RESCUE

• All Rescuers and the Joint Operations Staff Head Quarters did a quick Sync, ensuring there were no changes or questions.

• Around 10 am, Rescuers enter the cave and support help carry the additional tanks. (Around 100 pax)

• 13 Divers are the ones going deep into the cave, with only the cave diving experts going past chamber 3.

• 5 Divers will go all the way to the children. Dr. Harris (Harry) will be administer the sedation and provide support divers with extra syringes for further doses if/when the children wake up.

THE RESCUE-DAY 1

• 4 kids come out the 1st day. ALL ALIVE.

• The trip takes approx. 5-6 hours to get 1 kid from chamber 9 all the way to the mouth of the cave. (Feedback loop with Challen in Chamber 8)

• They are evaluated and medically checked several times on their way out (Separated by 45-60 min intervals)

• Field hospital on site with Pediatricians are on standby and receive the children.

• All key players conduct a de-brief/lessons learned
- 2nd Day, 4 more kids come out ALIVE.
- Times are shorter and processes are smoother than day 1. All team members are reminded to NOT TO GET COMPULSIVE.
- 3rd Day, last 4 kids and Coach come out. Smallest child needs Aquasperf mask since adult FFM won’t fit. (Not pos. pressure)
- Chris lost line/Harry swam last sump with his child.
- 3 Thai SEALs and Doctor dive out last. (needed gear/air brought in to them)
- Pumps fail in Chamber 3, Landslide Call is made over the radio. (Not all Thai’s had an air source in chamber 3)
Children’s Parents with some of the Rescue Divers after the Mission
THE TEAM

• THAM LUANG CAVE MOUTH IN SEPTEMBER
• CAVE REMAINED FLOODED UNTIL MARCH 2019!!

LESSONS LEARNED

Leadership/Command and Control
- Need for clear guidance, intent, and state and having a clear task organization is crucial. Especially within cross-cultural, joint/inter agency and complex/dangerous environments.

Cultural empathy and Professionalism
- High vs Low Context Cultures: Thailand = High context, US/AUS/UK = Low context
- Relationships are key. Develop and build trust amongst foreign/any leadership
- Credibility = Trust = Freedom to Maneuver/Operate
- Be professional even when you know people are making wrong/dangerous decisions.
- Realize the supported vs supporting relationship. (We were Advising and Assisting Only)

Teamwork
- Putting together the right team, having mutual respect, delineation of capabilities and gaps for each team. Each team had its lane of operation and expertise so efforts were complementary and not redundant.

Critical Decision Making
- You are not always presented “Good” options. The Thai’s wanted a “Zero” risk option, which didn’t exist.
- Gather all facts, understand what is unknown/known. Receive input from all possible sources
- Take into account all potential mishaps. Wargame everything. Be humble, BE BOLD!
- Make key decisions and provide information without emotion. Emotion often clouds judgement.

Media
- You are always on the record. Know the do’s/don’t’s. Have a spokesperson or Public Affairs specialist assigned to keep them informed but also away from the operation. (Vans, workspaces, etc.)
QUESTIONS?