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UPON ANOTHER SHORE

Extortion 17, and the Story of a Curious Friendship

by

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بې وروره مه شې که هر څو زورور يې

د ورور په شا باندې دښمن سترګې وهينه

May you not be without a brother, even if you are strong.

It is the brother at your back that catches the enemy's glances.

- Pashto Landay, Anonymous (transl., the author).

Introduction

In the summer of 2011, I said goodbye to several friends from the US Navy who I had befriended through a video game, and who were leaving on a deployment. When they did not return, I was left wondering who they really were, and what had become of them.

It eventually became clear that their disappearance was connected to one of the worst single losses of life of the war in Afghanistan.

Much of their work was and remains a secret. Nevertheless, this is their story, as far as I can tell it.

Extortion 17

In the early morning of Aug 6th, 2011, a US Army CH-47D Chinook helicopter, call-sign "Extortion 17" flew into the Tangi Valley in Wardak, Afghanistan. On board were 38 people: 5 crew members from the US Army National Guard and Reserve, and 33 passengers.

The passengers included several squads of assault troops: a troop of fifteen SEALs from Naval Special Warfare Development Group (NSWDG); two other SEALs from a West Coast SEAL team; and seven commandos from an Afghan partner force.

Supporting the assaulters was a squad of eight specialists: a Navy technical expert in communications, and another in signals intelligence; two explosive ordnance disposal (EOD) technicians; a Navy dog handler, and his dog; two US Air Force pararescue medics (PJs) and a Combat Controller to coordinate aircraft. They were assisted by an Afghan interpreter, the only civilian on the flight.

As it approached its landing zone, Extortion 17 was attacked by Taliban troops. They were a small team, young men from villages in the area, and equipped with

rocket-propelled grenades, OG-7Vs. Designed to detonate with a lethal bloom of shrapnel, these were formidable weapons.

The attackers fired a volley from a range of about 200 metres. At least two, but more likely three, fired into the dark at the approaching helicopter.

One of the rounds struck a blade on the rear rotor of the twin engined helicopter. It detonated, spraying the helicopter with hot metal and shearing off 3m of the blade. This caused the catastrophic destruction of the aircraft. There were no survivors.

US Army Rangers who had been operating in the area hurried to the scene, braving random enemy fire and roadside bombs to do so. Soon, a massive recovery and security effort was underway.

Within hours of the incident, casualty assistance officers began calling on the families in the US, letting them know the news; within days, flights home were to be arranged, post mortems carried out, and burials or cremations planned.

Meanwhile the attackers fled, but were soon being tracked by US intelligence. They would not live long.

At the time, I knew none of this, nor would I know much about it for some years afterwards.

Part 1. – The Friendship

I have often wondered what I was doing at the moment Extortion 17 went down. Pretty sure I was at home, curtains drawn, under the blankets, hiding from the thunderstorms happening that Summer evening. Never been wild about thunderstorms, have to say.

Back in 2011, I was working a corporate IT job here in the UK, designing scientific systems. Flying into hostile airspace under rocket fire was a long way from my life, which tended to involve rather more typing into a laptop, perhaps accompanied by a cup of tea and a sticky bun.

The job involved working long hours, and to unwind from the pressure of the day I enjoyed spending time in the evenings on the Xbox, playing the game "Halo."

If you are unacquainted with the game, it involves teams of players running around in brightly coloured science fiction settings, trying to blow each other up with comedy space weapons.

It was through playing Halo that I got to know several of the Navy people on the Extortion flight.

The first thing to say about them is they were going through a bit of a time.

1.1 Life at war, at home

By 2011, the US and UK were in the tenth year of the "Global War on Terror".

For those in Special Operations billets, the wars in Afghanistan and then Iraq had led to a round of continuing deployment cycles: five or six months or more "downrange" (in a hostile country where you get shot at, hence the term), followed by roughly six months in the US, followed by another deployment. Once training was factored in, perhaps parachuting in Arizona, or diving in Florida, people in these units could be gone from home for as many as 300 days a year.

This takes a toll on social and family life. There is pressure from spouses and partners to spend time on home matters: to work through the “honey, do” list on the house, carry out childcare, to be a husband, or father.

So there was a need to blow off steam, to connect with buddies in the same line of work. They were young men, in their twenties or early thirties, and for their generation video games provided a way to relax and get together. So, Halo it was.

They had been through a lot. Stress and trauma bonds a group together but may become toxic when turned on outsiders.

I should say that because of this, a mutual friend warned me off – but they need not have worried. The boys turned out to be gigantic goofballs: hilarious, sharp, caring, and the time I spent with them would turn out to be an absolute joy. A few tears. But mostly there was shooting… with comedy space weapons.

1.2 With friends like these

In the first half of 2011, I’d play with the gang one or two evenings a week, work allowing. Login late evening, get an invite after a bit, join whatever was happening in Halo. It might be ‘King of the Hill’, where we all ran around blowing each other up; or ‘Infection’ where we were trying to stab each other, “New Zombie! Sword, sword, sword!”. Usually it was one of the many team modes.

T. was my regular “battle buddy.” Caring, supportive, solid. I adored him. Although we often partnered up, we used to delight in “red teaming” each other: joining the opposing side to hunt each other down, laughing uproariously over the voice comms as we threw space-grenades at each other.

D. was the hub: encouraging, funny, and technically brilliant. He was a communications expert – an “IT guy” – and true to form, he ran the group like a network. Sometimes as

himself, sometimes as Spotswoode from Team America or Agent Smith from The Matrix. He was excellent company. The tech in 2011 was scratchy, but D. kept the channel open.

N. was the "Dad" of the group. A relaxed, phlegmatic EOD (bomb disposal) tech, which explained his calm in the chaos. I would stay up into the small hours just to catch him online; he was simply lovely to be around. We would chat about family camping spots in his home state, which he made sound like heaven. "Oh, like the song?" "Like the song."

S. was the "Mathlete". A cryptologist – an intel specialist; very funny, but always kind, insightful, and measured. He was also a runner. I used to joke that he and D. ran further each morning than I had run in my entire life. He was the warm heart of our little group, albeit one fuelled by the high-calorie comfort food of his hometown. We would sometimes be kept waiting while a particularly delicious meal or call to his family was completed. "Where is he? It's game time." "Oh, he's getting chow." Priorities. (I think we came in fifth, just behind the Phillies).

When we teamed up, the personalities bled into the gameplay:

T. would prefer to get on the sniper rifle, dropping into the backline to provide overwatch. He was part of the "external security" team in the real world, keeping eyes and ears open for incoming trouble. Not much got past him. I always felt protected when he was around. "Right behind you… in a good way!"

D. would aggressively charge the front, looking for trouble and calling out targets with enthusiastic control. "Two on the left! High!" He relied on the team to clear the way. "Get some fire on that guy!" "Little help!" "I cherish our friendship!"

N. held the centre. The calm EOD tech put up a chaotic wall of fire with machine guns or rockets, suppressing the enemy to support the fighters up front. "Get some! Ha! Get some! There you go!" "He's in cover! Flank him!"

And S. was our flanker, slipping past the enemy like a shadow, cunningly using the power ups in the game to turn invisible or create distractions. While N. and D. were giving the enemy something to think about, he would move up and take them out. An absolute monster with the Magnum pistol, always in just the right spot. “He’s low! He’s done!” Clinical, precise, lethal.

They were terrific players. I could never really keep up, so my strategy was simple: keep the boys alive. If anyone comes near my friends, I shoot them in the head. It was a running gag.

Them: “If you ever make it over here, we’d introduce you as the woman who shoots everyone in the head.”

Me: “Or, you could just introduce me as your friend from England… like normal people.”

Them: “Of course, you’d have to promise not to actually shoot anyone.”

Me: “You know I can’t promise that.”

Sometimes the games would involve battling “dreaded rivals”. On one occasion this included the US Army Rangers – the finest Halo players in all the land – who were skilled and determined foes.

I joined them (not knowing who they were) to “red team” my guys. Always a good time.

Me: “So are you guys sailors too?”

Them: “Army. Rangers.”

Me: “I don’t know what that is.”

Them: “Ever seen… (they named a film)?”

Me: “No. Not a fan of war movies.”

Them: “…”

Me: “…”

Me: “Let’s shoot some sailors!”

Them: “Now that we can do!”

After their inevitable victory over the boys (during which I did virtually nothing by the way, other than shoot T. a few times, which hardly counts), the Rangers were characteristically magnanimous, “Just leading the way, man, just leading the way.”

This is why Rangers have no friends. Well, maybe one friend: they were good fun. A little intense. But fun.

My guys were rather more, “Go Navy” and left it at that.

1.3 Call it

In many ways the games were like long group phone calls. We would shoot the breeze about anything: favourite foods (“chow”) and beverages; favourite/disliked movies (Team America, Mean Girls, Full Metal Jacket were canonical but we all agreed “Iron Man 2 never happened”); camping trip plans; sports stuff (“Go Packers”, “Go Hawks”); musings on the existence of aliens, whatever was in our heads. All under our agreed Vegas Rules: what we say in Halo stays in Halo.

Voice calls were never a 1:1 affair – a security mitigation, I later realised, rather than just propriety as I thought at the time. But T. and I would often trade 1:1 texts, via the game chat. I was going through a tough time in my personal life, and he was very supportive via the keypad. We kept it intensely practical: WiFi / VPN troubleshooting, engine maintenance, or how to eat better. Just the stuff of day-to-day life. He was not above telling me off. I once mentioned picking up food at a well-known fast food chain and got a blast back: I don’t think I went there again in over a decade.

Sometimes we’d be in a larger group game, and they’d bring in other buddies, mostly from the Navy, who I also grew really fond of. It was like spending time with a big, extended family. In that life, they say, your friends are either from work, or the bartender. Or, I guess, your gamer pals.

While they were never unkind, I did not escape the gentle hazing the boys enjoyed among each other.

There had been rumours that playable members of the game's "Noble Team" would be in future updates. I logged in to find the boys assigning roles.

T. was going to be Jun, the sniper. Made sense.

And of course N. was going to be Jorge, with the big machine gun. How could it be anyone else?

Interestingly, they decided, S. (who was running late) was going to be Carter, the team leader. "He's going to be in charge of the Navy someday, so." Good choice.

Two Noble Team members were left. At this point, I should have known it was a trap.

"Hey, that must mean I am Kat!" I said. She was the sardonic technical wizard, the only woman, and definitely the coolest member.

"Um no. That's D., he's the IT guy." D. was like, "I am. Definitely that."

I started listing out the members, trying to remember who was left. Then one of the boys was like, "Here it comes..."

The trap was sprung.

"Oh, so I am Emile. The knife guy. The psychopath. Oh that is just peachy! Oh thank you so much!"

They laughed together, heartily enjoying my discomfort at the mild betrayal.

For all the gentle ribbing, I found them a real antidote to the sweary, sexist / racist / homophobic lobbies so prevalent in gaming at that time.

On one occasion I logged into the game to discover game call-outs and battle-cries were being made in the Hawaiian language. Why this should be, I genuinely didn’t know. D., who was somewhat frustrated with the whole thing, looked to me for maturity, “See, Kirsten is rising above it!” “Imua!” I replied, as I charged into the fight.

And if you have not heard D. and (I later inferred) a Team Leader in the Command acting out the phone calls from “Mean Girls”, you have not heard Shakespeare as it is meant to be played.

When sleep eventually overtook me, I would typically leave them to it with a regular phrase, “wrap up warm, don’t eat junk, call your mums!”

1.4 “Who are these guys?”

I should say, although I knew some of the fields they worked in or “rates” and that they “did infantry stuff”, I didn’t know anything about their real work, or which unit they were in. At that time, I genuinely had no idea what a SEAL was, nor would I have cared.

There were some clues.

We took several weeks off while some of the boys headed out west for “jump school”. This made me reflect a bit.

By this time, I’d convinced myself that the group was a security team for the U.S. Navy, which was technically true: but in my head that involved staying on a Naval base – not doing high-altitude freefall jumps. And I knew N.’s EOD work also involved diving. It is fair to say the combination boggled my mind.

“So,” I asked him, “to get on a ship at sea, wouldn’t you have to parachute into the ocean?”

“Yes, ma’am.”

“And then you dive under the ship and disarm bombs?”

“Hopefully not underwater.”

After the training finished, there was much joy in their triumphant return. As well as relief on my part that they had avoided crashing into the Sonoran Desert at 120 mph.

Gradually we came to know each other pretty well over time, at least outside the secret areas of their work. As the phrase has it, we held each other up.

1.5 The “Men Don’t Suck” Party

One evening, toward the end of our time, I logged on in bits. A relationship had finally imploded and I was so downhearted about it. The boys quickly realised something was up – I think my morose, “Ugh. Men suck!” comment as I came online gave it away.

They prised the details out of me, and within a few minutes they had arranged an online, “Men Don’t Suck” party.

There was music, (D. set up a feed of Irish rebel songs), there were shenanigans, there was maxed-out charm and humour. Pals on the various teams in the Command got invited in: it was always a good time when the whole gang could join us. I felt surrounded by love. A dozen or so guys stayed in full-on clown mode until I cheered up – which I did.

They made a point of checking in afterwards too. After that, they were family.

How could they not be?

1.6 Two Minutes Out

Not long after, in mid to late June 2011, I got a message from T:

Him: “Can you make time for us on Thursday?”

Me: “ ‘Make time?’ Are we making appointments now?”

Him: “Are you available?”

Me: “Looking at my not-so-packed schedule… sure. What’s up?”

They were about to deploy.

When we got together, I immediately picked up the change in their voices.

There was no joking or goofing around. For this group to be so subdued was… uncharacteristic. They were sober, focused. Professional.

They could not tell me where they were going or exactly when they’d be back, or what they’d be doing while away.

They were clear about the potential for visibility from the deployment. If a bad thing were to happen, they said, “it would be on the news.” And that if it did, they expected me to keep a low profile.

“Well, I am not going on the TV with my mascara running.”

I replied, “So you better save all our blushes by coming home safe.”

I refused to say goodbye, only “cheerio”. Quoting the musical ‘Oliver’, “I love you, that’s why I say cheerio, and not goodbye.”

And that was that. The last word I said to them was, “Cheerio.”

I turned the XBox off, and sat for a moment in the darkness and silence.

I was never to hear from any of them again.

1.7 Off Comms

The weeks of summer that followed the boys' departure were hot, bright, sweltering.

My time was spent volunteering, organising peace protests, in the run up to the arrival of a gigantic arms fair in London that September.

I had stopped being a local councillor in May of that year, and time had been weighing heavily. So I went back to grassroots activism. I found myself sitting in small groups in Friends House in Euston, writing on flip charts in Finsbury Park, handing out leaflets in Trafalgar Square.

There was little to keep me by the XBox, which sat unused in the corner of my flat, which was gradually filling up with banners, posters, a megaphone, all the paraphernalia of campaigning.

Then, on 4th August, Police stopped a minicab in Tottenham, and shot one of its occupants. Mark Duggan, a 29 year old man, died at the scene.

London exploded. Nearly twenty boroughs in the city saw large scale street disturbances and attacks on property. The uprisings spread to a dozen UK towns and cities that week, and it genuinely felt the country was spiralling out of control.

News from Afghanistan barely registered. At any other time, the images from the US of bridges festooned with American flags, hearses escorted by motorcycling Patriot Guards, a dog sat by his late master's coffin, would have got some press attention. As it was, UK eyes, including mine, were focused on our burning cities.

September's arms fair saw thousands of arms dealers and cops swarming East London. The National Gallery was hosting some of them for dinners, so that was where we were, draping its porticos with banners and signs.

October was Occupy London. St Paul's churchyard filled with tents. I stopped by as often as I could with whatever goodies I could carry: flapjacks, first aid supplies, sticky tape.

All of which is to say that Christmas arrived quickly. But when I returned to the XBox, there was no sign of the boys. Their accounts had vanished.

Despite that, I was not alarmed. I had seen nothing on the news; people move on in gaming circles all the time. Perhaps they had bought Playstations. Perhaps they were still away, and XBox had quietly put their accounts on ice for their return from deployment, which happened a lot in those days.

Spring of the following year, I found myself watching the closing credits of The Hunger Games. Sitting in the dark, listening to Abraham's Daughter by Arcade Fire; Safe and Sound by Taylor Swift. Kingdom Come, by the Civil Wars.

It dawned on me that this continuing absence was not normal. If something had happened, T. would have found a way to send word. If something had happened to T., the others would. There was a logical conclusion to this. I did not let myself reach it.

Sitting there in that cinema, I realised all I had was a patchwork of nicknames or first names; rates; home states; and which food, alcohol, and movies they liked. Enough to miss them, but not enough to find them.

They were gone.

1.8 On the news

Over the coming years, I would make different attempts to find them. I looked for big casualty events, IED blasts or helicopter crashes, but I naively assumed that being sailors these would be near an ocean or a port or a ship. Afghan incidents were not on my list.

What I did not do is take all the details I had and put them into a search engine. Vegas Rules.

At some point I reached the limit of the details I had available, and the rules I still felt bound by. So I was left with one thing to do. Every year, on St Patrick's Day, I would raise a glass. "Absent friends."

And so it was until August 2021.

In August 2021, the images from Kabul were inescapable. Aircraft leaving Bagram with people hanging from the outside. Taliban fighters photographed in vacant American bases, surrounded by billions of dollars of abandoned equipment.

By this point, I was working for Campaign Against Arms Trade, part of which involved writing and giving talks. And what everyone wanted to talk about was the war in Afghanistan, and that equipment. What was it, who made it, who profited?

As I researched a talk for a small peace group based just outside Oxford, the phrase "Extortion 17" kept coming up a lot. Extortion 17. Finally I gave in: "what is Extortion 17 and why am I hearing so much about it?"

When the file loaded from a memorial site, it listed the details of the fallen. It gave their names, their ranks, and the states they came from. I recognized many of the combinations immediately. The date matched the silence.

My heart sank. Even then, my reaction was denial: “No way. Not my guys…”

Within several hours it became increasingly clear that they were in fact my guys, though it would be a process of weeks to fully confirm all the facts.

S. was confirmed first, N. soon after. Biographical details matched what I knew; families revealed likes and dislikes; I knew N.'s deployments from early in the Iraq War. This was already my worst nightmare. I found a picture of S.'s grave in Arlington. I stared at it, not fully believing it.

D. was harder, but I found a video piece by his mum for the Library of Congress: the person she described was clearly him. His love of Marvel movies; his unbreakable positivity; the silly voices (noting he had wisely kept his Katherine Hepburn impression quiet).

T. was a challenge. In the end I brute forced it. I went to his Memorial page and went back over ten years of posts, all the comments. It took me a full month. Finally I came to a video posted by his family of his birthday in 2010. In it, he is interviewed by his brother in law, joking as his family make a fuss of him. A Hawkeyes design is shown on the cake.

I had spent hours talking to T. while we fixed stubborn bits of technology (while a pal listened in, not saying much). He had a very distinctive way of speaking. I would know his voice anywhere. And he made no secret of his love for the Hawkeyes.

After I found the video, the air left the room. To feel better, I went to the kitchen and put the kettle on, to make a cup of tea. Coming back into the lounge, my knees buckled. I had heard of this, but never experienced it.

I came round on the floor.

The next few weeks went by in a bit of a blur. I felt slightly "punch drunk" by the revelations.

Winter arrived. Christmas was spent with old friends, New Year's spent with new ones, both in old houses in Shropshire. The county is called "The End of Ambition" for a reason: it is so beautiful, people turn down promotions just to stay there. From memory, there was just enough ice and snow to be pretty, not enough to be inconvenient. It was the place I needed to be. I threw myself into all the festivities.

Once the year started again, work was busy, but satisfying. I worked most weekends but when I was free, I still enjoyed gaming with friends.

By this point, I had taken to playing Dungeons and Dragons and similar games at a local pub instead of going onto XBox. Paper, pencils, funny shaped dice, and the pub dog under the table – mostly watching the door, but always ready to hoover up the occasional dropped snack.

St Patrick's Day came round. "Absent friends." Except now, I knew where they were, and understood the reason for the silence. I took to lighting a candle for the boys at the local church each week, two on a birthday.

It was when I approached the anniversary of the shootdown in 2022, in August, close to D.'s birthday, that I began feeling... unsatisfied.

To understand more about my friends' lives, I had started watching podcast interviews - a world I had previously known nothing about. It put a lot of previously inexplicable remarks in context. But it also brought with it a thicket of theories about the shootdown - from families, from friends, from commentators. Plausible, implausible, angry, grieving. Nobody seemed to have a clear account of what had actually happened.

That August I did a ten mile hike on D.'s birthday, round the lake in Rutland, as part of a virtual memorial walk. As I cursed my lack of fitness, remembering T.'s scoldings about how

my sedentary lifestyle would lead to bad things - and here we were - I realised I needed to look into the shootdown.

1.9 Pencil and Paper

I was determined to find out exactly what happened to my boys.

Here is how I went about it.

First I assembled all the sources I could find: all the published official reports (Colt, JCAT), all the books, including those by Ed Darack, Billy Vaughn, Charles Strange. The flight manual for the CH-47D Chinook. Plus reports on arms supplies in that period, local Pashtun culture, military doctrine, weapons specification sheets, and NGO reports on the Night Raids. If there was a podcast on the subject, I listened to it. If there was a film, I watched it.

Some material remains classified or redacted. Where that is the case, I have said so, and worked from what the redactions themselves tell us.

I took all the available data and, as far as I could, turned it into coordinates or vectors, assembled these into a machine readable dataset, and plotted them onto a map. Compared to 2011, we now have access to high quality terrain maps and satellite images.

With the timeline from the Colt and JCAT reports, this gives us the where and whens. What was needed then was the how - the mechanism.

First, I needed to work out how the Taliban fire team made the shot: this involved calculating where the helicopter was when the rocket was fired, and what that meant for how the RPG was aimed. I then needed to understand how the shooters knew the helicopter was coming, which meant determining the role and capabilities (confirmed and potential) of the Taliban observer network. The final step was to look at the decision around loading the helicopter and calculate what that decision would have meant for the helicopter's handling.

And I needed to put this into context. Why were the Americans there, why was the target important, what else was happening in the valley, where did the weapons come from, and how did those weapons, in the final moments, bring down the aircraft.

The following narrative, the maps, the dataset are my best assessment on how Extortion 17 was shot down.

Told as accurately as possible, in memory of all those on board. This is, most of all, for them and their loved ones. We remember.

"Imua e nā pokiʻi a inu i ka wai ʻawaʻawa, ʻaʻohe hope e hoʻi mai ai"

"Forward, my younger brothers, and drink of the bitter waters; there is no turning back."

- attributed to Kamehameha I

Part 2. – The Investigation

Prologue

The Tangi Valley, 65km southwest of Kabul, runs from northwest to southeast. The fast-flowing Logar River winds through the valley floor, which is bounded by steeply rising ground and high mountains. Running alongside the river, the Tangi Road connects the Kabul-Kandahar highway and the city of Sayad Abad at the western end to the scattered villages and small towns in the area.

To the Pashtun people who live in the Tangi Valley, it is a place of apple orchards and groves of apricots, supported by an ancient irrigation system supplemented by mountain streams; famous for its literary culture, rural hospitality, and the prowess of its warriors.

To those fighting the war in Afghanistan in 2011, it is a vital corridor funneling weapons and men to those resisting the US-led coalition: the Taliban and their allies in the Haqqani Network. The Taliban and the Americans have been contesting control of the valley for months: by August 2011, the Taliban are gaining the upper hand.

The local Taliban commander is Qari Tahir. Recently put in charge of operations across the Tangi, with a history of ordering suicide bombings and improvised explosive devices, and with strong links to the Haqqani Network, he is on the American target list.

At 23.00 local time on August 5th, two helicopters land a platoon of Rangers, some 47 men strong, near a location thought to be hosting Tahir. By 23.30 the Americans have taken control of the compound, but not before a small group of men escapes.

US Apache helicopters engage a second group of armed men moving north of the compound, killing six. Rangers give pursuit to the original group, which they believe includes Tahir and which has headed northwest into the valley. By 01.35, this group has grown in numbers to some ten men.

The Rangers realise they are being drawn deeper into terrain that favours the Taliban. They halt their pursuit at the edge of one of the settlements, Spin Wersek.

Tahir is about to escape.

Commanders decide to deploy a unit of 17 SEALs from Naval Special Warfare Development Group as an Immediate Reaction Force. They will land ahead of Tahir, cut off his escape, and capture or kill him.

Around 02.00, commanders add 5 supporting NSWDG troops to this force, along with 3 USAF Special Tactics airmen, 7 Afghan partner force troops, and an interpreter. The 33 passengers and 5 crew will go together in a single helicopter, a CH-47D Chinook. Its callsign: Extortion 17.

Tangi Valley, Maidan Wardak, Afghanistan.

2.00AM on August 6th, 2011.

39 minutes before Extortion 17 is shot down.

Three questions. How did the Taliban know the helicopter was coming? How did they make the shot? Why were 38 men and a military dog all together in one helicopter?

This account brings together the physics, the terrain and the known capabilities of those fighting in the Tangi Valley that night, based on published sources, to offer an explanation beyond the simple claim, "it was a lucky shot".

Let us go back to Tahir, the target of the Extortion 17 mission.

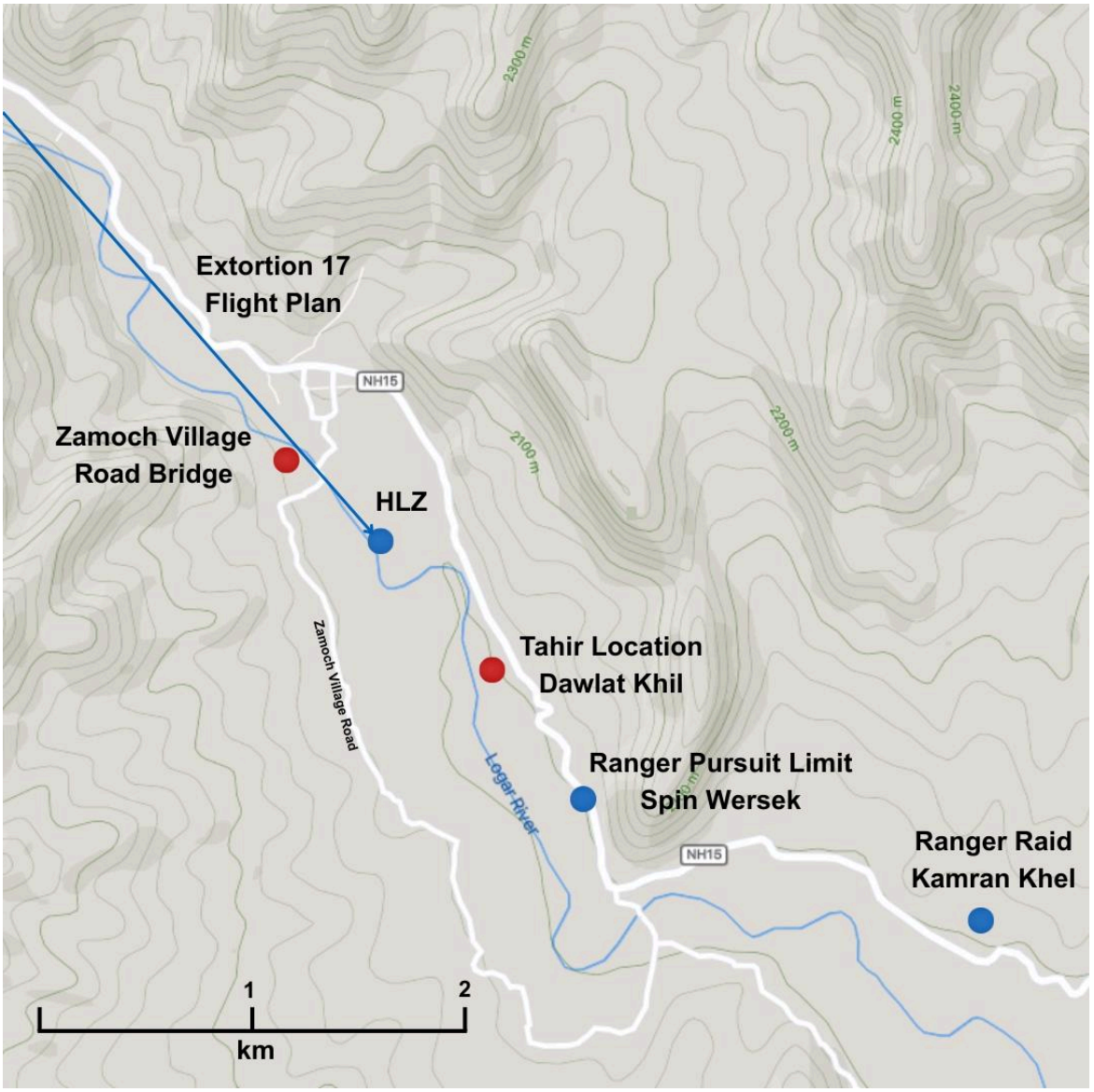

Fig. 1. Overview. Tahir escapes pursuit. After a raid by the Rangers in Kamran Khel in the southeast of the map, Tahir, thought to be the Taliban commander for the area, is now in Dawlat Khil, 3.3km along the road from the Ranger raid location. US forces plan to land a helicopter carrying an interdiction force 800m north west of him: the approx. intended helicopter landing zone (HLZ) is shown. The distance from Tahir's location to the Zamoch Village Road bridge and his allies is 1.3km. Mapcarta © OpenStreetMap and Mapbox

2.1 Tahir

Tahir is in trouble. He had not expected to spend his evening running for his life from the Americans.

The Taliban boss had nevertheless successfully evaded the Rangers, and headed northwest, moving 3.3km (~2 miles) up the valley through a narrow strip of land, several hundred metres wide, caught between the river to the west and rising ground to the east.

He and ten of his men are now in the village of Dawlat Khil, 1.3km southeast of a bridge carrying the Zamoch Village Road.

The bridge is held by another Taliban unit, who are based in the northwest of the valley.

The area between Tahir and the bridge is covered in orchards: good for concealment. Staying under the trees, he can avoid being spotted and attacked by American aircraft, join up with his allies and get away.

Tahir and his men are so close to safety, 1.3km from their allies: less than a mile.

2.2 The Web: Ayoubi and the Spider

The Zamoch Village Road bridge is one of three nearby bridges over the Logar river, and the closest usable bridge to Tahir. Bridges are important in Afghanistan: their loss can lead to detours of miles, as Tahir has been finding out.

The bridge is held by a Taliban relief force, including a small RPG fire team which is situated nearby in a towered mud brick building, or “qalat”. (Source: Joint Combat Assessment Team, JCAT).

The fire team is led by Ghulam Hazrat Ayoubi, said by local media to be a man in his early to mid twenties, once a student of the local high school, liked astronomy they say. The question to ask is, why is Ayoubi’s team located where they are, in a qalat 150m west and slightly south of the bridge?

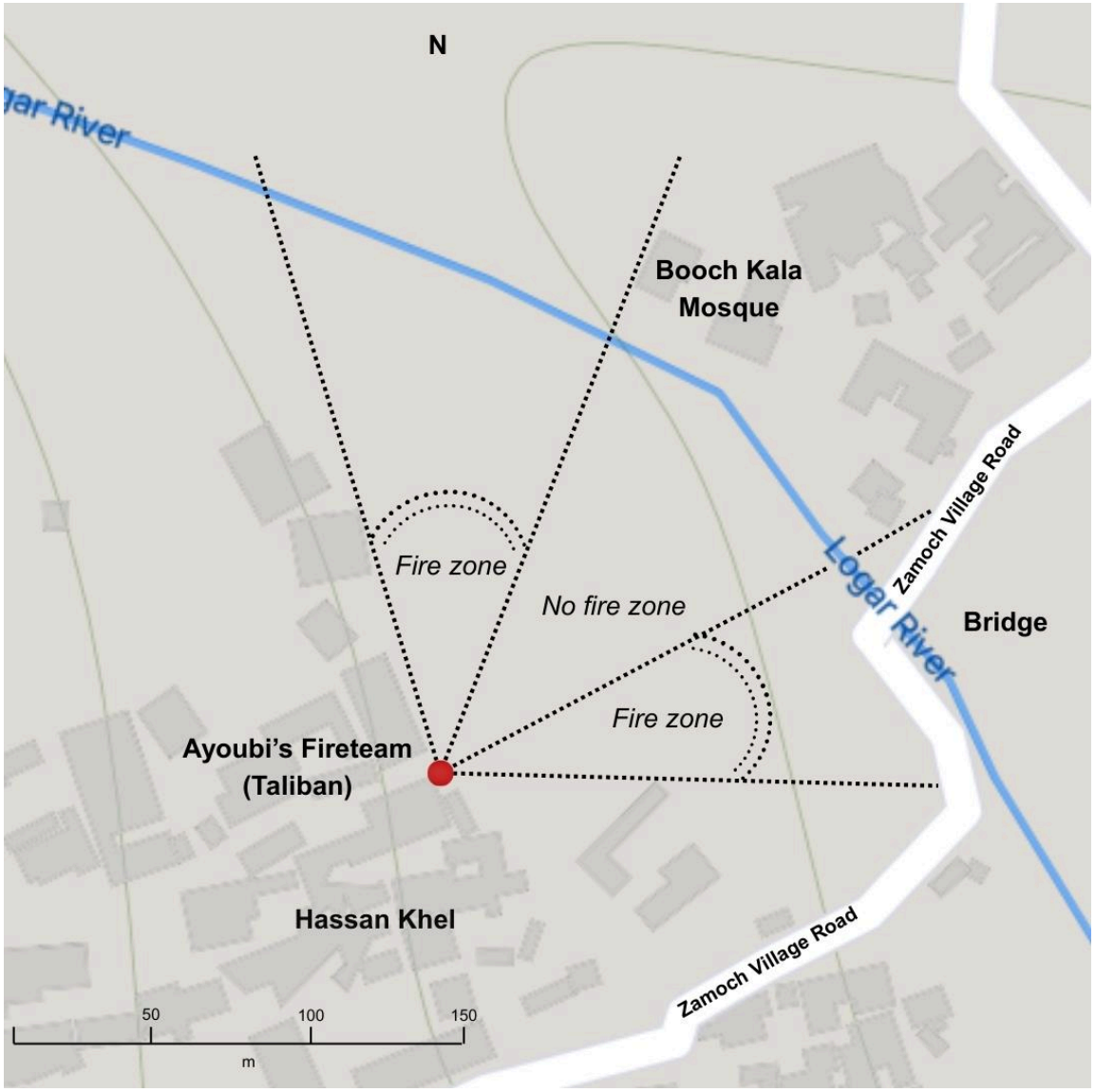

Fig. 2. The Taliban (Ayoubi's) fireteam and bridge carrying the Zamoch Village Road. Distance from the fire team to the centre of the bridge, and the river, 150m. The mosque and other buildings limit Ayoubi's zones of fire. Google Maps. Mapcarta © OpenStreetMap and Mapbox

Why were they there?

The position offers a good view over the river valley and this would be instrumental in the shootdown. The view of the bridge is arguably as important. As well as being an ideal place

to fire at anything crossing the Zamoch Village Road bridge, their position also controls its approaches. The distance from the fire point to the bridge is around 150m.

This is within the effective range of the OG-7V antipersonnel rounds the team has for their RPG launchers. Close enough to be reasonably accurate, far enough away for the team to safely manoeuvre after the shot. We know from intelligence in the Colt Report that this bridge was repeatedly mined with improvised explosive devices (IEDs): the Taliban understood its importance.

It is probable Ayoubi's team are there to maintain situational awareness on the bridge and to ambush any American troops who try to cross it. They have VHF radios to report any comings or goings (which was how they were eventually tracked down).

They also likely know there could be incoming aircraft, transports bringing in American troops, but also drones, fire support aircraft, attack helicopters, which is why at 2AM they are staying in cover. The warmth of the summer night and the heat retention of the mud bricks disrupts any thermal signature. The reports mention the mission's "ISR" surveillance aircraft were focused on the original raid area several kilometres away. The team was very difficult to detect at this point and, in any event, nobody was looking in their direction.

How did they know the helicopter was coming?

A call comes over the radio.

The Colt Report notes that the Taliban had a "warning system" in the valley that reported on the activities of the US-led coalition. We can therefore assume Ayoubi's team are not alone: there are observers further up the valley. We know these observers existed: the US Army's Pathfinder unit engaged "forward observers with VHF radios" during the recovery. Extortion 17 would stay behind the ridge line on the Tang Dara valley specifically to avoid contact with them.

Where might these observers be located at 2.00AM?

Evidence in the Colt Report notes Taliban observers tended to situate themselves on the valley ridge lines, and in villages, where they were often stationed as night watchmen for the local bazaars: markets typically co-located with the area's mosques and near the main road.

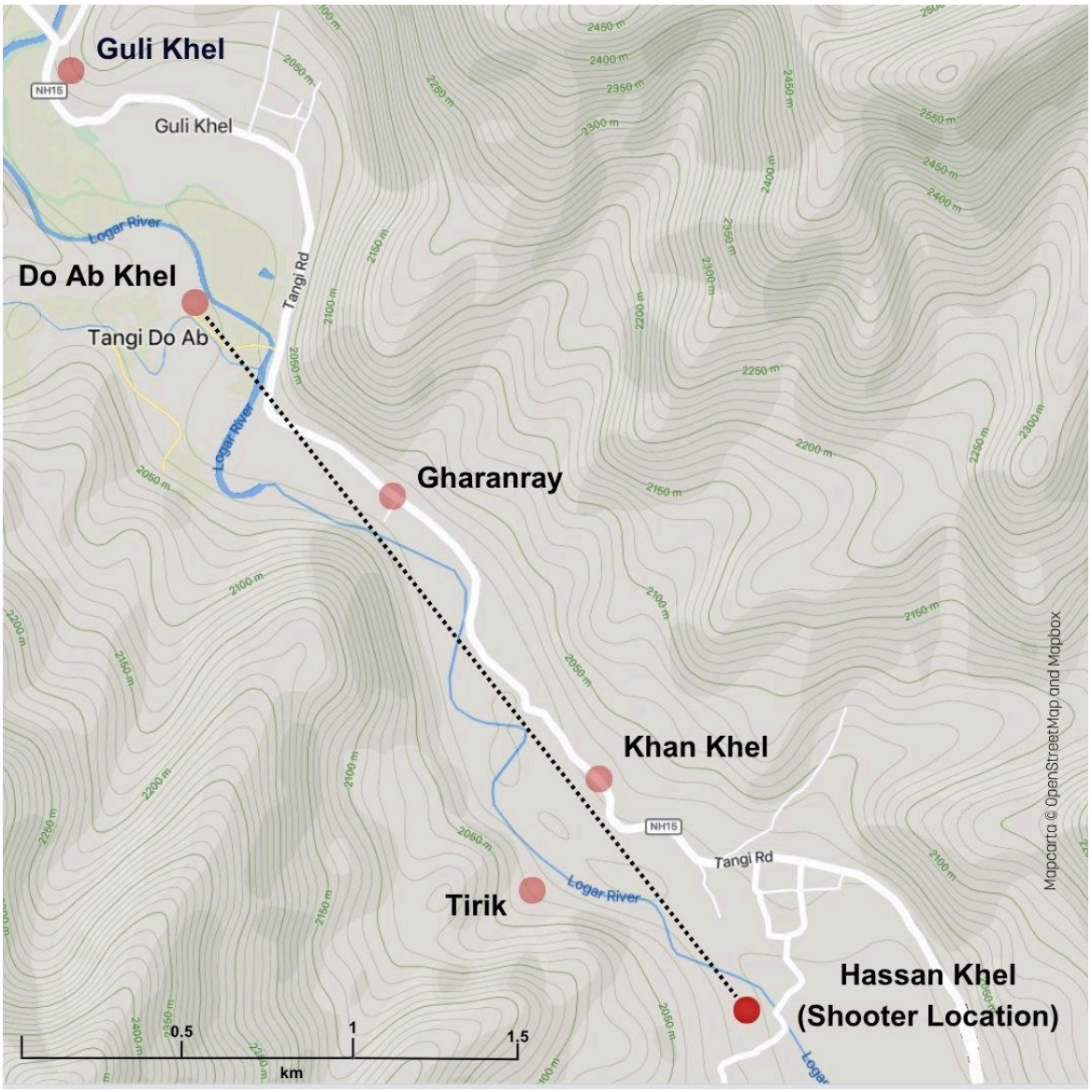

Fig. 3. View of possible Taliban positions showing likely control point at the Do Ab river confluence next to the main road, and another likely observation point at Guli Khel. It is 2.5km in a straight line from Do Ab to the Zamoch Village Road Bridge and the Taliban fire team (at ~30m elevation over wadi level). Line of sight shown. Note mountain ridgelines. Mapcarta © OpenStreetMap and Mapbox

2.5km to the North West, along the Tangi Road, is the next bridge over the river, in the Do Ab ("Two Waters") area, a river confluence between the Logar and Tangi rivers. It is highly probable the Taliban had an observation point in the area, and if so, the intelligence in the Colt Report would suggest it is likely located between the Do Ab Khel mosque and the bridge. This location appears to have line of sight to Ayoubi's position overlooking the Zamoch Village Road bridge around 3.5km of winding canyon away: an apparent fluke of geometry.

The location at Do Ab also has an apparent line of sight up to buildings on the rising ground overlooking the bridge at Guli Khel, the next bridge up the river, and the last before the Tangi Road leaves the valley and goes over the mountain to join up with the Ghazni-Kabul Highway. The area between the bridge and the Guli Khel mosque, again, probably has an observation point.

It is possible the Do Ab location even once had line of sight to buildings close to the bridge in the village of Spin Wersek in the south of the area, 5.2km away in a straight line, until modern buildings appeared (they obscure the terrain in satellite photos).

Regardless, VHF reception from handheld radios, which benefit from line of sight, would be optimal between all of Guli Khel, Hassan Khel, Do Ab Khel and Spin Wersek – covering over 6km of the valley (7.5km of the winding road or river). The Colt report mentions the Taliban using tracer rounds, visible bullets, fired in the air as signalling devices, which would be a workable line-of-sight warning system across these locations.

The Do Ab location is an obvious control point which means it is likely to be the observer's regular station and would be immediately reinforced once news of the nearby battle with the Rangers was received. The map shows several ridgelines overlooking the village, the roads and the rivers. If the Taliban has a web of lookouts and armed men in this part of the Tangi Valley, this is the home of the spider.

And Extortion 17 will fly right past it – less than 500m away – the flight plan shows the helicopter passing south of Do Ab Khel village.

Fig. 4. Map showing Extortion 17 flight plan from the Colt Report in blue, tracking the ridge line south of the Tangi Dara valley before flying past Do Ab into the Logar River valley (the plan route nominally goes through the ridgeline: the helicopter would turn into the valley). Red dots are possible or confirmed Taliban positions. Distance between the Nav point 1 and 2 is 2.1km Mapcarta © OpenStreetMap and Mapbox.

Such alignments might appear coincidental. Should the reader find themselves in the region with the leisure to look around, they would discover forts, towers, and caravanserai, with some sites dating back to the Bronze Age. Thousands of years of conflict.

Roads, bridges and villages are built where they can be defended. Before VHF radios and tracer rounds, signalling was done with beacons, mirrors, lanterns, fireworks and flags. Night watchmen or “Pasban” in Afghan towns have been signalling with lanterns since antiquity. Mosques share the timings of religious fasts using flags to this day: they are built where they can be seen. The Taliban didn’t invent these geometries and techniques: they just used them.

For Ayoubi and his men, the main threat is not the base that the NSWDG troops and their attachments took off from, FOB Shank 30km off to the east. It is the Government troops, police, and American soldiers based in the city of Sayad Abad eight km (5 miles) by road to the west.

These people are the usual banes of Ayoubi’s life. To go further into the valley, they have to pass through the Do Ab area, whether coming from the north, or via the Tangi Dara mountain pass and river valley to the west. Just as empires have for millennia. This back door would not be left open, especially given the firefight to the south earlier that night.

Let us say it plainly: at 2.37AM when Extortion 17 goes through Do Ab – which it must – it is highly probable that there is a Taliban soldier with a VHF radio and a digital watch timing its progress.

The Colt report says observers in the area had been carefully noting the routes taken by US aircraft over the previous few months.

He would know the helicopter has to navigate carefully between the two ridgelines southeast of Do Ab. The valley narrows to some 200m wide at the hamlet of Gharanray, 500 metres away from where Extortion 17 enters the Logar River Valley.

So when the helicopter flies past, we can imagine he will call it in. “Invader helicopter heading your way. Just over a minute, brother.”

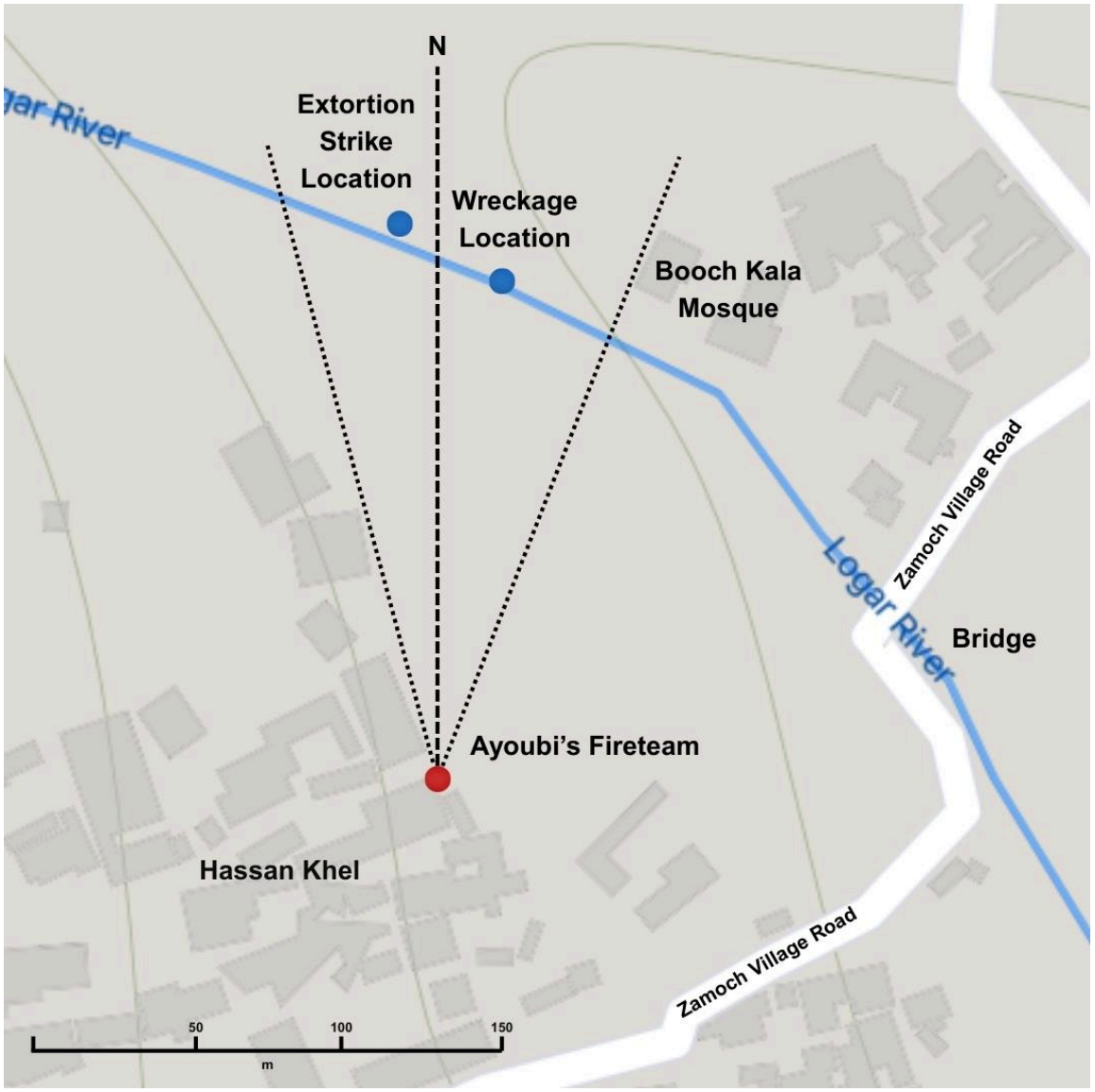

Fig. 5. Map showing shootdown area. Ayoubi’s team has to fire due north, (actual shot was ~3 degrees west of due north) to avoid hitting comrades likely positioned near the bridge and nearby buildings, including the local mosque. Arc limits shown in dotted lines. Distance between Ayoubi and strike is 190m. Mapcarta © OpenStreetMap and Mapbox

He would have made similar calls a dozen times before, to warn his comrades about American airpower heading up or down the valley. Normally the Taliban troops hide. Tonight is different.

Ayoubi will hear the call. He is wide awake. Colt says the Taliban in the valley have a high level of readiness, following the Ranger raid.

Radio intercepts reviewed afterwards confirmed Ayoubi was part of a separate team from the Taliban group fleeing the Rangers. His team were not panicked refugees from the raid, firing blind into the night: they were part of a determined and organised relief force.

We can nevertheless assume Ayoubi's team have likely heard their comrades' VHF radio calls from the earlier battle with the Rangers 3.5km away. They will probably be aware that many of those comrades are now dead. The local honour code, Pashtunwali, demands vengeance. It also demands they protect their surviving comrades from further American attacks. Ayoubi and his team head to the roof and ready their weapons.

How did they make the shot?

The data in the JCAT report indicates that the shot was fired ~3 degrees west of due north. Which makes us ask two questions: 1. why fire north, and 2. why not fire exactly north?

Ayoubi was not debriefed by Coalition forces after the shootdown: understanding this must therefore be a process of inference.

The terrain and nearby buildings block the shooters' aim to the west. They likely want to avoid hitting the mosque to the north east.

So the team chooses a zone fire strategy: they get ready to fire a volley along a single azimuth where they believe the helicopter will eventually be, that will also take any missed shots away from their own people.

The Taliban later released propaganda praising the shooter, mentioning his supposed love for astronomy and knowledge of the stars. To the press (and to the author, for several years), this sounded like poetic fluff: echoes of historical heroes navigating by “stone and stars”.

Read in operational rather than poetic register, it can be taken as a resume. He may not just have watched the stars: he likely used them to control the fire from his team. Given the inaccuracy or “dispersion” of RPG rounds, he would have wanted to stay west of the azimuth pointing due north towards the star, to avoid hitting the Booch Kala mosque to the north east.

The “poetics” also imply familiarity with the use of optics at night.

The helicopter was reported to be “blacked out”, making it hard to see, according to the Apache helicopter pilots operating in the area (who were using advanced, third generation night vision gear). The crew of the AC-130 fire support plane covering the HLZ nevertheless noted the accuracy of all three RPG shots they saw fired, and speculated whether night vision gear was involved. Extortion 16, another Chinook nearby, noted that the attackers appeared to be responding to infrared light being shone on the landing site by the AC-130, the so-called “burn”. The burn was used to mark the landing zone for the incoming helicopter and to detect attackers who might be hiding close by.

With eyes fully adapted to the night, even a faint visual signature is enough through simple binoculars or the sights of an RPG-7 launcher. Obstruction of the star field by the fuselage of the helicopter might well have been sufficient.

Modern military level night vision gear was still very rare for the Taliban at this time. However, cheap night-hunting binoculars using the old Generation 1 technology were available, running to a couple of hundred dollars. Typically these were repurposed observer’s binoculars from the Soviet era (or occasionally consumer gear bought new on shopping trips to Dubai). The Soviet gear is, at the time of writing, still readily available on eBay, and there was a lot already in circulation by 1989 when the Soviets withdrew. The town of Darra Adam

Khel in Waziristan, just across the Pakistan border had a small cottage industry refurbishing such devices, allowing them to be run from consumer batteries. As far as the author knows, it still does.

An observer with a pair of these Soviet-era binoculars near Gharanray (2km northwest of the shooters), the village of Khan Khel down the valley (700m northwest of the shooters), or in Joi Zarin, Hassan Khel, or Booch Kala by the Zamoch Village Road bridge could have been able to see the infrared light on the landing zone. The "burn" covered an area the size of a football field. If so, they would have known exactly where the helicopter was heading. The sound of the circling Apache helicopters near the landing zone would also provide some indication: this is noted in the Colt report.

We cannot tell what visibility the Taliban had: it could be that the fire team were shooting entirely into the dark, aiming ahead of the sound of the helicopter. The observers on the scene suggested otherwise. Colt does not rule it out either.

The use of night vision was possible, but probably unnecessary. Acquiring the location of the Chinook as it moved through the valley was likely easily possible through sound. Because it was above the mountain ridgeline from the perspective of the shooters, they could straightforwardly have acquired it visually when it arrived nearby, despite the dark conditions.

From the position, altitude and heading data in the JCAT report, we can calculate that Ayoubi's team opened fire just as the helicopter cleared the line of buildings to their north, as it came in from the north west. At this point, calculations using the data in the JCAT report indicate that the helicopter would have been silhouetted against the night sky, being at 7-8 degrees above Ayoubi, just above the ridgeline shadow created by the mountains beyond Joi Zarin. The gunner in the helicopter would have had limited or no time to see the RPG shot or

fire back before the shooters moved back into cover. It is suggested he nevertheless did fire on the shooters: testimony in the Colt Report says spent casings were found in the wreckage.

We know Ayoubi must have allowed for a drop in elevation of an unguided shot (some 8m at that range using an OG-7V), so he knew how to work the sights on his launcher, which allow for range/drop (vertical) and lead/windage (horizontal). Like a bullet, OG-7V projectiles have no rocket built in, so they fly in an arc.

We also know he fired ahead of the helicopter, and so would probably have been sighted on a terrain feature (such as a high point on the ridge above him): had he fired directly at the helicopter he would have missed. As previously noted, it was reported he went to the nearby High School, so probably knew the landmarks well. Regardless, US-led coalition helicopters had been flying routes through the valley all year, and we know that Casio F-91W watches and similar (which had built in stopwatches accurate to 1/100th of a second) were widely used, to the extent they were called “Taliban specials” by UK troops: we can assume Ayoubi’s team had routes analysed with accurate timings.

Given the time from when the helicopter cleared the obstruction to when he fired, he must already have been set up to make the shot, which means he must have had sufficient warning to prepare ahead of the helicopter's arrival.

The attack as described here is characteristic of a prepared ambush from a defiladed position using an offset marker, the same strategy the Taliban repeatedly used to ambush road vehicles. Using terrain reference points to establish a line of aim and time the shot is a standard insurgent tactic.

It need not have taken long to prepare. Hassan Khel, where the shooters were situated, is 20 minutes drive from Sayad Abad, the natural location for the Taliban reinforcements to come from. Do Ab, as noted, is en route from Sayad Abad, 10 minutes away. Other potential observation points: Gharanray, Khan Khel, and Tirik, (opposite Khan Khel in the valley), are

either on the way or no more than fifteen minutes away from Hassan Khel on foot, a couple of minutes on a trailbike. The shootdown took place three hours after the Ranger raid at Kamran Khel: this allowed plenty of set up time for a team familiar with the terrain.

In any event, it is highly probable that when the helicopter ended up in front of Ayoubi's team, they knew within a small window where it would be and were lined up to take the shot.

2.3 The Target: Tahir

Let us go back to Tahir, the target of Extortion's mission. What is he doing at 2AM?

Tahir is 1.3 km away (under a mile) from the Zamoch Village Road, and from the bridge currently being guarded by Ayoubi's fire team.

The area containing Ayoubi's team, Hassan Khel, is residential. It is Afghanistan, 2AM: you do not open the door to random gangsters: Tahir had found himself knocking on many resolutely closed doors earlier that night.

The neighbourhood is likely to be friendly. "Friendly" in this context means weapons, men, food, maybe a vehicle… in other words, relief. Tahir could head into Hassan Khel and escape through the village of Koz Timurkhel to the south. Alternatively, reinforcements could cross the bridge and escort him into the built up Joi Zarin area to the north.

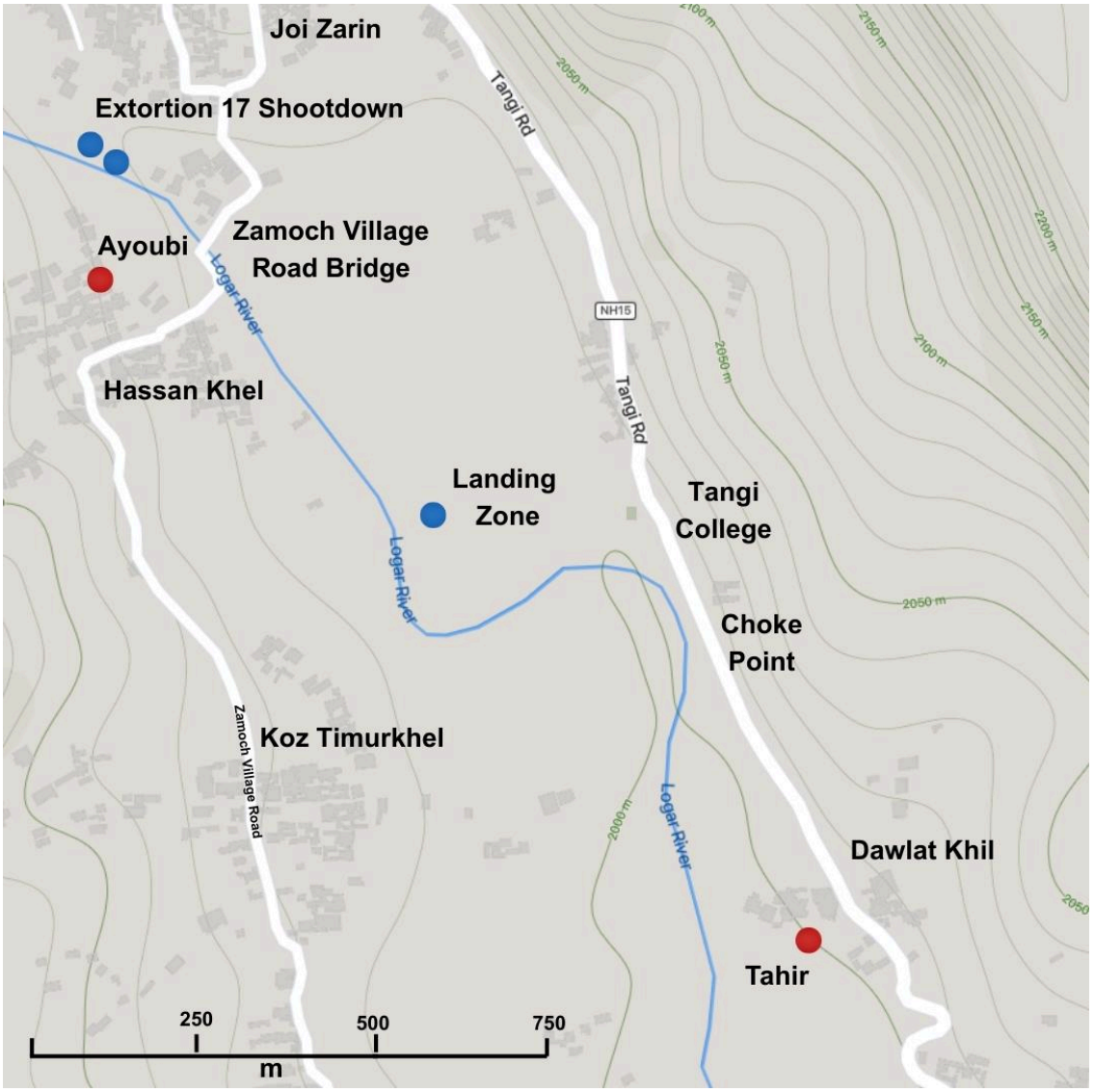

Fig. 6. Tahir's challenge. Tahir's allies are at the Zamoch Village Road bridge, 1.3km away to his northwest. If he links up with them, he can then flee to Joi Zarin in the north, or Koz Timurkhel on the road heading south. He is 650m south east of a choke point where the river and road come together. Mapcarta © OpenStreetMap and Mapbox

However, if you are Tahir you have a big problem: 650m north west of you, between you and the bridge, the strip of land you are on is about to narrow.

A bend of the river in the West brings it very close to the main road and rising ground to the East. You go on either of these, you die. Either attacked by the Apache helicopters who

just killed six of your men, or shredded by one of the IEDs your guys have spent the summer planting on that part of the Tangi Road. Or both. It is a classic choke point.

Worse still, much of the area is overlooked by the high ground east of Tangi College, which forms a perfect location for snipers or observers. Throw in the college buildings plus the lines of trees around it to the north, east, and west, and it becomes clear it is not just a choke point: it is a killing ground, and you have to pass through it to get to safety.

It is either that or jump into the river. And get machine gunned in the water.

It is really not Tahir's night.

He does not like any of these options. He hunkers down in a building in the sleeping village of Dawlat Khil, 650m southeast of the choke point, 1.3km from the Zamoch Village Road bridge, and a world away from where he wants to be.

2.4 The Interdiction Force: NSWDG

Now let us turn the tables. You are the NSWDG ground force commander, your mission is to stop Tahir meeting up with any relief force and escaping. After that, you want him dead or captured.

You choose a helicopter landing zone (HLZ) between Tahir and the Zamoch Village Road, 2-300m from the Tangi College choke point, or some 800m north-west of Tahir. We know approximately where the HLZ is: it is shown on the maps in the JCAT and Colt reports.

What you are expecting to do is advance on Tahir's position and either launch a house raid, or surround it and call out those inside (Colt implies this latter was the plan).

Why take so many people?

The challenge you have is Tahir has got ten guys with him (the range was 8-13). Maybe more are hiding in the orchards.

Suppose you have just the 15 SEALs from NSWDG, and the 2 West Coast SEAL augments to go and get him. Would that be enough?

If Tahir and his men come to you (not likely) the plan would clearly be to lock down the area around the Tangi college choke point, and win the gunfight. In which case, 17 SEALs is all you would need.

But you assume Tahir's team will instead have barricaded themselves in buildings in Dawlat Khil. You also assume, if so, that there will be IEDs, explosive vests or grenades in the mix: many of the Taliban killed near Kamran Khel were equipped with grenade vests.

Suppose Tahir finds another five or ten guys under a rock (or an apple tree): very possible. A Taliban relief force arrives from further up the valley: highly likely. He decides to fight it out. The SEALs start taking casualties. Troops get busy managing all that: the airspace and airwaves get crowded, and the firepower drops sharply.

In short, with just 17 SEALs, it could get very sketchy.

Additional support greatly strengthens the team.

EOD Technicians help overcome any IEDs.

A dog handler helps overcome barricades and finds hidden enemies.

A Signals Cryptologist gives the team eyes and ears in the electronic world, to spot potential threats and overhear plans. Along with the Tactical Communicator, they can also detect and neutralise radio triggers for IEDs, and stop the Taliban leader calling in help.

Communications are vital: "no comms, no mission." A Tactical Communicator provides expert comms troubleshooting and support to the commander, and frees up the SEALs' "radio guy" (the RTO) to act as a forward observer, as part of the reconnaissance team.

Pararescueman medics, PJs, provide critical care, stabilising and extracting any wounded: one can act as a JTAC, calling in close air support, freeing up another SEAL shooter.

A Combat Control Team member, a military air traffic controller, manages the stack of aircraft overhead (and manages the exfiltration of the team and any casualties).

All are skilled infantrymen, more than capable of being on a firing line. Bring them all, and you have a robust and flexible top-tier fighting force.

But that is eight more men. Add the 5 man crew of the helicopter, that is 30 Americans. Who would you want to leave out? Really, nobody. To repeat: Tahir is thought to be the regional boss for the Taliban. He is a piece of work. You need to bring everyone.

If Tahir stays in Dawlat Khil, moving up on his position to raid it will not be trivial, requiring a careful set up to be able to fight off any Taliban relief force while navigating the high ground and any IEDs. Nevertheless the choke point, used from the other side, will then serve to keep the raiding party safe from any force trying to rescue Tahir. It is good, but there are a lot of moving parts. One more problem: sunrise is at 0530, and it will start getting light an hour before then. The team will have a couple of hours to get it done. This cannot be a prolonged siege. Get in, get the bad guy, get out.

People like to talk about the heroism of Special Operations Forces but the work is often about navigating complexity while being pressed for time within the hard physical limits of a kinetic environment. That is exactly the situation here.

This complexity, time pressure, and need for careful control explains the presence of one of the Squadron's "Head Shed" (command team) on the helicopter: its Master Chief.

Why all in one helicopter?

So you need all 25 guys on the ground, but why all in one helicopter? The risk is Tahir could start moving at any time, moving quickly through the orchards towards the bridge and safety. Time is very short. He is also bringing numbers, and more are likely coming.

You simply cannot risk having half the force getting stuck in a second helicopter that gets waved away the moment an enemy fires a rocket near the HLZ. This risks mission failure, and could see the team left on the ground being overrun.

A small contingent of Afghan partner force troops is also added to the mission. They are experienced soldiers, and their presence is required by the Afghan government. But they are not Tier 1 operators. It might be easy to say, “then bring them in the second helicopter, if they get waved off, they don’t add much combat power anyway.” But this puts that second helicopter, its crew and passengers at risk and overlooks the fact that the valley isn’t deserted: it is populated.

Feelings are running high – not least after tonight’s Ranger raid – in an area where most households are armed. It is the mission of the interpreter and the Afghan commandos to discourage the local residents from rising up against the Americans, as well as to get intelligence from the area and help control the perimeter. Colt is very clear: the team expected to move away on foot and be extracted the next night; that’s a whole day on the ground. The Afghans come with. With the interpreter that is 8 more men, bringing us to 38 in total.

The decision is taken to send all the American and Afghan troops in a single helicopter. The goal is to get the whole force on the ground and operating as quickly as possible - to “mass” the force - ready to protect itself from any Taliban attack and to get after the target.

When it takes off at 2.22AM, every passenger seat on the helicopter is full, with an additional passenger strapped in on the floor amid the mission equipment.

Let us look at what that will mean for Extortion 17’s flight profile.

2.5 The last three minutes

With 5 crew, 33 passengers, the helicopter is carrying 38 men. We know that they were planning to extract the ground team the following night, which means they are bringing sustainment: food, water, batteries, extra ammunition.

The aircraft has a maximum theoretical gross weight of 50,000 lbs.

How does this compare to the actual weight of the Extortion 17?

On the face of it, a CH-47D, operating weight ~26,500 lbs including mounting systems commonly fitted for cargo operations, plus another ~2,000 lbs for the various protection systems needed for Afghanistan (ballistic protection, missile warning/jamming, flares, dust protection systems), carrying 33 combat-equipped passengers and five more lightly-equipped crew (~11,000 lbs), fuel (~4,000 lbs), and say 1500 lbs of mission equipment (ladders, breaching explosives, additional sustainment) should be fine, running at around 45,000lbs. The Colt Report says as much, Ed Darack in his excellent book on the shootdown says the same.

Why was the helicopter flying predictably?

There is an additional factor to consider. Helicopters struggle when they are "hot, high, and heavy".

The mission is taking place at an altitude of 6700-7000 feet above sea level, in summer time (the pressure altitude at shootdown was 6605 feet). The temperature that night was recorded at 22 degrees C: this makes the air less dense vs. the reference level, giving a higher effective “density altitude”. The thinner air means the helicopter has to work harder to stay aloft.

At a pressure altitude of 6605 feet and a temperature of 22 Deg C, then according to fig. 7A-5-2 of the CH-47D flight manual, the aircraft has a HOGE (hover outside ground effect) lift capacity of ~48,000 lbs. The capacity is further reduced due to the dust filters needed for Afghanistan. The EAPS (Engine Air Particle Separator) dust protection filters rob the engine of inlet pressure, reducing the available torque, taking the HOGE limit down to an estimated ~47,000 pounds. What is not included here is any assessment for the Infrared Suppression System (IRSS) - designed to hide the effects of hot exhaust gases from gen 1 or better night vision gear - as very little published data is available. The combination of weight, balance issues and effects on the power of the engine due to the IRSS would lower the available lift

capacity still further. And the assessment also ignores the fact that engines in real world service never run at 100 percent of their theoretical capacity.

If the actual loading of the aircraft took it past the HOGE limit then the helicopter would crucially have required very careful handling. It would have been flyable safely, as the reports say, but it would not have been able to adjust altitude quickly, bank without losing airspeed, or slow sharply. It would have needed to maintain a broadly constant speed coming into the area, and then progressively decelerate as it drew close to the landing zone. As it is, it has very little spare torque. The author's most optimistic calculations put it at around 4%, for a conservative weight estimate of 45,000 lbs; more likely, it has no spare power margin. Either way it is close to its limit.

We do not know the actual weight figure for Extortion 17 carrying the Immediate Reaction Force. The figure is not given in the published version of the reports: the unredacted form DD 365-4 giving the loading at takeoff is not available, for example.

Perhaps we can make an assessment based on how the aircraft was flown.

Speed-wise, we know that the helicopter was doing around 57 knots at its last BFT transponder ping, 1.1km from the Landing Zone, 350m from the shoot down. The helicopter was reported at being around 50 knots at the time of the shootdown, 700m from the Landing Zone. This is characteristic of progressive deceleration.

What speed was it doing before that? Disappointingly this, too, is not included in the published reports either.

Let us see what we can do to fill this gap.

According to the flight plan, Extortion 17 came in from the west, tracking south of the ridgeline of the Tangi Dara valley before flying into the Do Ab area and turning south east into the Logar river valley. The only other data point we have is that it could see the "burn", the infrared illumination of the landing zone, 162 seconds before the shootdown (according to

the timeline in the JCAT report). To see the burn coming in from the west (after travelling south tracking the Kabul-Ghazni highway, and turning east just north of Sayad Abad), it would need to be clear of the bulk of the mountain of Zhanbarak Ghar to the south. In this case it would see the burn 4.5-5km of flying away, giving an average speed through to the shootdown point of 55-60 knots.

This is consistent with tracking the Kabul-Ghazni highway at cruising speed (~80 knots); turning and trading airspeed for altitude to head up behind the Tangi-Dara ridgeline, before going at a steady speed of between 55-60 knots along behind the ridgeline; then descending and turning into the Logar River valley, and progressively decelerating from there (down to 50 knots at the shootdown point).

This flight profile reflects a pilot flying a heavily loaded helicopter through a hostile, populated mountain area on night vision goggles. It appears he is trying to both minimize exposure to enemy fire and protect a fragile power margin while also tracking the rivers, ridges, and avoiding terrain hazards (mountains, canyon-sides).

Theoretical limits, calculated from charts, are just that. Actual mountains will have temperature gradients and air pressures that do not match a data point from a weather station in a valley. A flight path can be highly constrained once the geometry of making turns is factored in. For a helicopter running heavy, banking the aircraft increases G-loading beyond the engine's capacity, forcing the pilot to descend just to maintain rotor speed through the turn. David Carter, who Colt reports as flying the aircraft by this point, was one of the US Army's most experienced aviators flying into the hottest of hot zones: if he had more options available to him, we can assume he would have used them.

The many constraints meant Extortion 17 was effectively on rails after flying past Do Ab. By the time it came off the ridgeline and lined up with the Helicopter Landing Zone, it likely had no great ability to accelerate or decelerate sharply or make sudden changes in altitude. As

we have observed, the speed was therefore pretty constant until it was committed to the final approach, when it began a progressive deceleration.

The likely Taliban observers near Do Ab would therefore have known how long it would take the helicopter to get to the next bridge, the one carrying the Zamoch Village Road.

The unit at that bridge, Ayoubi and his fireteam, were ready and waiting for Extortion 17 to arrive.

2.6 The choice

So here we are. The decision the NSWDG ground force commander faced. There are 3 choices.

Option 1. Given that only the CH-47D is available, is operating towards its limits, and there is likely to be ground fire: do you risk the whole force in a single helicopter?

Option 2. Do you reduce the impact of a potential shootdown by splitting the force, at the risk of both failing the mission and seeing the NSWDG SEAL Troop being overrun?

Option 3 is that the ground force commander turns to the mission planner and says something like this:

“OK, let’s look at the map. Tahir is there (points at the village of Dawlat Khil). You want to insert the team here (points at the HLZ). You then either go in and get him; or if he makes a break for it, gun him down here (points at Tangi College).

To make this happen, you want to take a CH-47D, fill it with 25 of our top guys and 8 Afghans. Make that 38 top guys, including the crew.

You can’t run a helicopter up from the south because Tahir might notice a Chinook flying past his house, one might say, and there goes our element of surprise.

So you’ll fly the bird in from the north west. She’s running heavy so you’ll have to keep her on an even keel: fast enough to get past the Taliban, slow enough to avoid the canyon walls. All very Luke Skywalker.

So, track the Kabul-Ghazni Highway until about here. Haul the heavy bird up onto the Tangi Dara ridgeline here. Sneak it along the ridgeline, then drop it into the valley not far from the likely Taliban control point at Do Ab. Maybe wave as we go on by.

Stick it through the canyon east and south of Do Ab, while dumping a bit of speed.

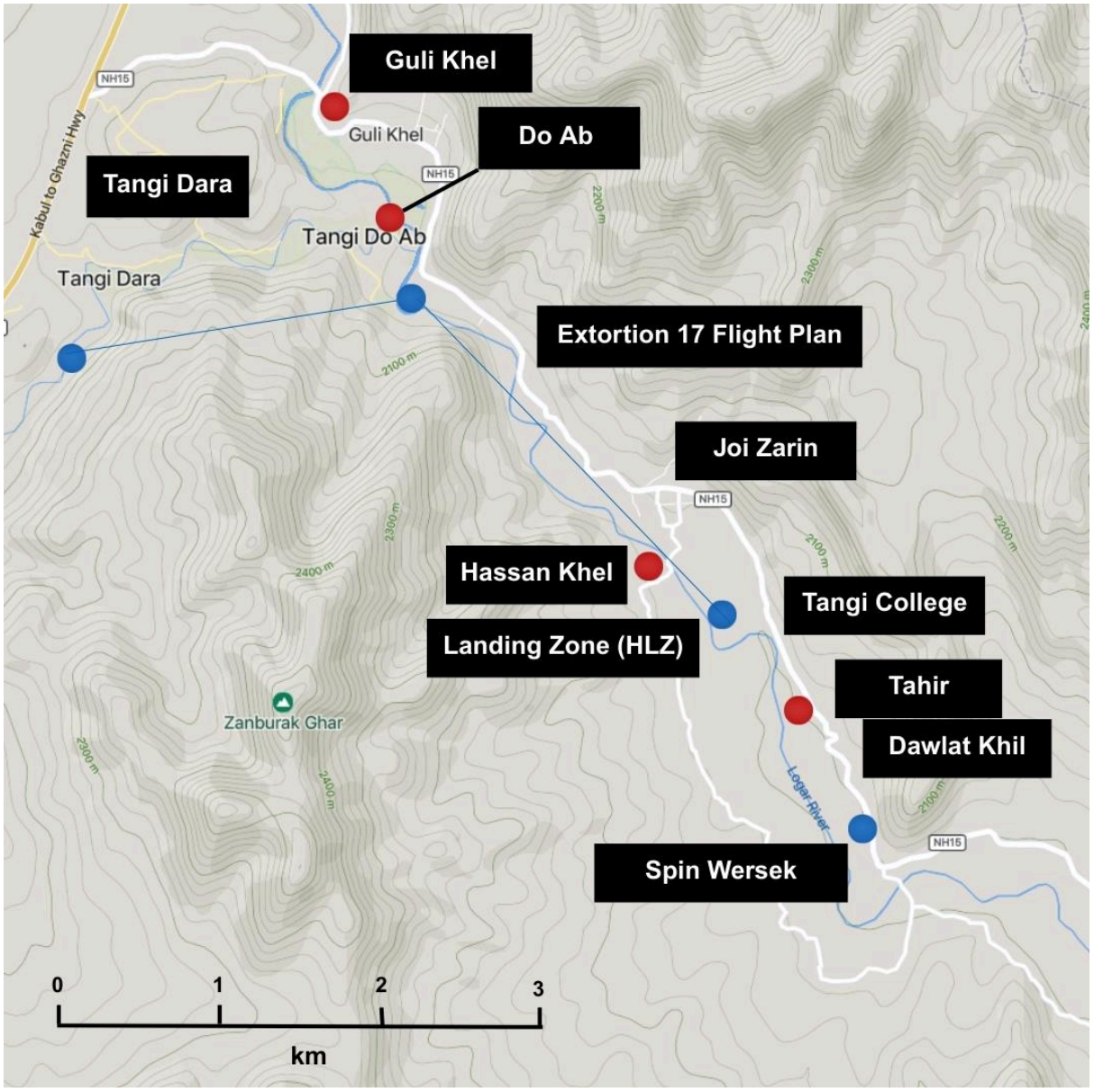

Fig. 7. Ground Force Commander's Map: Walkthrough of Option 3. Mapcarta © OpenStreetMap and Mapbox

Point it at the HLZ, then run it between Joi Zarin to the north and Hassan Khel here to the south, as you slow on the final approach, and hope nobody on any of these roofs has a DShK or an RPG. Which is a bet you know we're going to lose, thank you again Siraj Haqqani.

Then, after some off-the-charts sketchiness, sigh of relief. The bird hits the HLZ, the boys hop out and get after it. Swift justice is delivered to Tahir. Job done. Back home in time for chow.

OK. Let me tell you something. This guy didn't panic when the Rangers knocked on his door. He had a plan. He got his gang together and he ran into a fortress. He is relying on his guys to pull up the drawbridge and man the walls. Which I can guarantee you they are doing right now. It's going to be crawling with Taliban headbangers. They will come with everything they've got.

You go in there and one will get you two you're not coming out. Their house, their rules.

I'm not placing that bet. You don't have a mission. It's scrubbed. The Rangers let him get away this time. It's a shame. Get him next time.

Short of getting the Rangers' 11 Charlies to drop a few rounds on that roof, in the hope he comes out with his hands up, we've got nothing."

For the reader looking for a single-paragraph explanation of the shootdown, this is it: you are flying into a heavily defended area with really constrained flight approaches. Because it is so heavily defended, you cannot win. If you go in light, you risk being overrun. If you go in heavy, you risk the helicopter being shot down. If you scrub the mission, the bad guy gets away. To quote the computer in the film War Games, "A strange game. The only winning move is not to play."

For the account given here to be true, it only requires you to support two logical inferences, namely:

i) The Taliban had observers further up the valley, who warned Ayoubi's fire team posted by the Zamoch Village Road bridge of the incoming helicopter. We know these observers existed.

ii) The NSWDG SEALs brought additional troops and massed their force in one helicopter to improve the chance of mission success and to avoid being overrun by the Taliban. We know who was on the helicopter.

Both of these would be in line with standard military doctrine and the evidence in the Colt and JCAT reports. Everything else is a function of the terrain, the weather, the known positions of the combatants, and the equipment available.

These are the calculations of war. We have reconstructed them here from published reports and logical deductions, and with the luxury of time and distance.

The ground force commander had three options that night. He made his decision.

2.7 The Strike: Extortion 17 Shot Down

On August 6th, 2011 at approx 0239, a US Army CH-47D Chinook, call-sign "Extortion 17″ arrived in the valley area approx. 240m to the north west of the Zamoch Village Road Bridge over the Logar River. It was en route to a landing zone approx. 800m to the south east. On board were 5 crew and 33 passengers, and a dog being held in his handler's arms.

The helicopter was attacked by a unit of the Taliban, from an elevated position approx. 150m west and slightly south of the bridge. The Taliban unit fired a volley of at least two rocket propelled grenades due north (~357 degrees TRUE).

One of these, later confirmed as an OG-7V munition, travelled approx. 190m and struck one of the blades of the helicopter's rear rotor assembly. It detonated, shearing off a 3m length of the blade, and generating a bloom of shrapnel.

The damaged rotor became violently unbalanced. The resulting vibration ripped the rear pylon from the fuselage, sending the aircraft into an uncontrollable flat spin. The aircraft began to disintegrate, falling into the valley, where it exploded. There could be no survivors.

Those on board included some of the finest human beings in the world.

They are missed to this day.

2.8 Strategic Context – "An end to War"

2.8.1 The Weapon(s)

The OG-7V rocket that destroyed Extortion 17 was likely made by VMZ, the Bulgarian nationalised arms company, then a primary supplier of such ammunition to the Afghan National Army; typically it was contracted for this supply by the US Government through a third party intermediary. The JCAT test was with a "Bulgarian" OG-7V, and while other countries make OG-7 variants, the Bulgarian version has been iteratively developed such that it is significantly different. Modernised versions put out twice the bloom of shrapnel, for example.

The match to the JCAT test was so close that the author considers it highly probable: for practical purposes, it is as close to certain as the available evidence allows. For those with an interest, the most likely round would be the OG-7VMZ, a 2005-2010 era variant, made in the factory in Sopot, in the Rozova Dolina region. A photograph of one of these appears in the JCAT report. The explosive power, fuze sensitivity and accuracy matches the profile of the weapon used in the shootdown.

By this point in the war newly produced ammunition was flooding into the country, thanks to the American funding (Gyula Speck's article in the References refers). The weapon had been shipped to the Afghan Army and then stolen, most likely, but it may have been part of an international shipment diverted via Pakistan and smuggled by the Haqqanis. Either way, it

was the latest equipment: highly desirable. The Haqqanis provided experts to train and mentor IEA troops in the use of weaponry: was Ayoubi one of these? We do not know, but he did demonstrate a high level of proficiency.

It was just one weapon, worth a few hundred dollars, out of billions of dollars worth of arms shipments to Afghanistan. All made by manufacturers who profited handsomely from the conflict. The Rozova Dolina region where the rocket was likely made is said to be enjoying “a new golden age” due to the money made by arms factories in the area, but these days it is from the profits of the conflicts in Ukraine, Sudan and DRC.

2.8.2 Spinning the wheel: Tempo and Probability

The Tangi Valley shootdown did not occur in isolation. The rocket that destroyed Extortion 17 was fired as part of the third RPG attack on coalition helicopters during two months in that part of the valley.

The Spin Wersek area, the same place where the Rangers broke off the pursuit of Tahir, had seen an attack on 6th Jun 2011, exactly two months before. According to data in the JCAT report, 14 RPGs were fired from 5-6 points of origin at a US CH-47D Chinook. The location is ~2.5km south of the Extortion 17 shootdown point.

Just over a fortnight before Extortion 17, on 21 July 2011, a Nightstalker MH-47G Chinook was attacked by 1+ RPGs near Khan Khel. This location is on the approach vector for Extortion 17, about ~700m northwest of the Extortion 17 strike location.

During this period, JSOC was responsible for as many as 10 high risk missions per night across Afghanistan, almost all based on helicopter insertions (it may have been higher in peak periods: the Open Society report in the references, released a few weeks after the shootdown, records more than 20 raids per night in Afghanistan, the “vast majority” conducted by JSOC).

Some years ago, the author spoke to a croupier who worked roulette at high-end parties. He said he could empty the pockets of a room in ninety minutes. When asked how, he

answered as follows: "In double-zero roulette," he said, "the odds are roughly 5 percent in favor of the house. The faster you spin the wheel, the more times the house wins, and the sooner you get all the cash."

Every helicopter mission in Afghanistan was a spin of the wheel. Planning, pilot skill, and thermal sensors could stack the odds, but they could not eliminate the House Edge held by the Taliban. And in 2011, JSOC was spinning that wheel ten or more times a night. Sooner or later, the ball would land on Zero.

In the early hours of August 6th, 2011, in the Tangi Valley, it finally did.

2.8.3 The Islamic Emirate of Afghanistan

After their August 2021 victory, the Taliban and Haqqanis run the new Islamic Emirate government. The human rights situation in Afghanistan, especially for women, is consequently very poor. The economy is not doing well, not helped by continuing armed conflict with neighbouring Pakistan. The leaders of the two groups are nevertheless poised to make huge sums from Afghanistan’s enormous mineral wealth. The one-time operatives enjoy lives of comparative ease, which includes luxury cars, fine dining, and taking shopping holidays in Dubai.

Ayoubi, the Taliban shooter team leader, and Qari Tahir, the original target of the Ranger raid are not among them – they were killed by the Americans within a month of the shootdown.

Ayoubi had made the fatal mistake of claiming credit for the shootdown over VHF radio. The Americans were listening. He and his fire team were located and bombed.

Tahir had been spotted traversing a dry river bed - often used for back country navigation in the area during summer. Coalition forces promptly targeted him with an air strike.

Another commander would soon rise to take his place. Following the events of 2011, the Tangi Valley fell firmly under Taliban control, and would remain so until the end of the war.

"Dearest of all my brothers-in-law... twenty years are come and gone since I left my home and came from over the sea, but I have never heard one word of insult or unkindness from you. When another would chide with me... you would rebuke and check them with words of gentleness and goodwill."

- Helen's lament for Hector, *The Iliad* (transl., Samuel Butler)

Part 3. – Reflections

3.1 An Unlikely Friendship

The previous four generations of women in my family all married cops, soldiers, and spies. The World Wars, the Cold War, The Troubles – they all left their mark on my house. By my mid-forties, as I was in 2011, I already knew that the stories we tell about wars are often at odds with the reality of those who fight them.

I am still surprised that our little gaming group was in the centre of such a historic tragedy. I accept that the reader might find some assertions made in this piece hard to believe. Sometimes, I do too.

People might ask: "How can a peace campaigner be friends with operatives from such a unit?"

That is easy. It is because I loved them.

The opposite of war is not "anti-war," or even peace. The opposite of war is care. And I cared for the guys. Enough to look into some very difficult truths about the war in Afghanistan, and how it was fought.

3.2 Conclusion

We live in a world now where celebrity SEALs go on talk shows and podcasts, and are greeted with the same enthusiasm as rock musicians and movie stars – a long way from the "silent professionals" of the Extortion era.

The modern myth prefers Achilles: the invincible, rage-filled warrior who as Auden put it, "would not live long". But I knew the guys as Hector: the man who fights not for glory, but for who is behind him. The one who "accepts the inherent hazards" of his chosen profession and leaves the safety of the city to stand in front of the wall.

They knew there could be observers: which is why they stayed behind the ridgeline for as long as they could. They knew the Taliban were determined fighters, which is why they brought everyone. They knew the dangers, but they went anyway, as their duty demanded. "Send me."

I had told the boys once, before they left, that it would be a very quiet world without them. As it turned out, the world itself became noisier than ever, filled with movies and merchandise.

It is my world that is quieter.

There's an old Persian tradition of the night letter, or Shabnamah. I have repurposed the medium, as a signal of goodwill: one sent back into the night, for the reader seeking answers at 3AM. It felt like a reasonable way to respond.

I must confess I had hoped for a better outcome for the kind, gregarious souls I knew. I wanted to believe they were still out there somewhere, with hopefully fond memories of their silly English friend.

Years afterwards, I still miss them very much. And not just as individuals. I miss us: who we all were together. It was a time in their lives, and in mine.

All those affected by the Extortion 17 shootdown and its aftermath remain in my prayers, the Gold Star families especially. I remain grateful for the valour of the Rangers, Pathfinders, and others who worked the recovery: I believe my grandfather who fought with the OBLI in Caen by way of Sword Beach would describe them as “proper soldiers.” On our most difficult day, we should all have such brothers.

We shared a common faith, so I know that one day we will all be together, “upon another shore, and in a greater light.”

Until that day comes, cheerio boys. You didn’t suck.

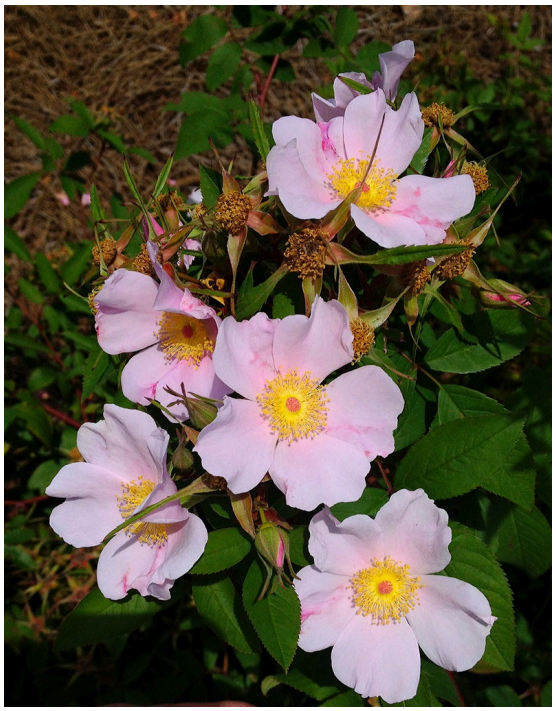

Fig. 8. The Swamp Rose, a wild flower that grows happily on land and in water, native to the Eastern US, from the marshes of Connecticut to the rivers and streams of Louisiana. Photograph by Malcolm Manners, CC BY 2.0

3.3 Dedication

This piece is dedicated to the guys and their families but also our mutual friend Bulldog, a retired US Marine who died in 2011. His health was deteriorating, so we all joined him in-game to mark that year's Memorial Day, which he hugely appreciated. It was to be his last, and theirs.

I had met the guys after several of them joined Bulldog and me in a game lobby: they were snowbound following storms just after Christmas 2010. They were pretty madcap, Bulldog was definitely not, and it was highly amusing. After the holidays, we stayed in touch.

Speaking like the former Senior Staff NCO he was, he once told me we would "report them to their Command" if they ever caused me grief. Bulldog, consider the report submitted.

At this point, if this was a traditional memoir, the response would be, "I have the watch", or something like. But that's not me. As the waitresses say, "not my table." But maybe it is yours. So, remaining true (always) to the Fifth General Order for Sentries of the United States Marine Corps, let me quit this post properly, by offering a heart-felt benediction:

"Wrap up warm, don't eat junk, and if you can, please, call your mum."

Kirsten Bayes

Reading, UK

Jun, 2026

Appendix

1. Mathlete Memorial Challenge: In Memory of "S."

Complete using data from Sections 1–6 of the Data page (https://bayes.org.uk/data/); or in hard mode, directly from the data in the JCAT report, supported by terrain maps from Mapcarta (https://mapcarta.com/).

- Using the flight telemetry, determine the precise position of the helicopter at the moment of firing.
- Calculate the azimuth from the Shooter to that position and compare it to the azimuth of the Local High Point.
- Calculate the angular elevation of the helicopter relative to the shooter's horizon at the moment of firing.
- Compare this to the angular elevation of the Local High Point from the same origin.
- Assess whether the alignment is consistent with coincidence or a pre-planned visual trigger, consistent with an ambush from a defiladed position using an offset marker.

Answer below in the Data Walkthrough, "Making the Shot."

2. Data Walkthrough: Making the Shot

Updated with v.3.02 of the dataset (which moved the ghost position ~1.5m from previous).

2.1 Calculating the Ghost Position

At 02:39 local, the aircraft's Blue Force Tracker (BFT) transponder recorded its final position: 34.0253720 N, 68.7825670 E. Speed: 57 knots. Altitude: 326 feet above ground level. Heading: 137 degrees magnetic - southeast, straight down the valley, directly toward the landing zone.

The BFT captures position once per minute. There would be no further recording.

Between the last transponder ping and the strike point - a distance of 352 metres - the aircraft decelerated from 57 knots to an assessed 50 knots. Using the average speed, that distance takes approximately 12.8 seconds to cover.

In that same interval, the aircraft descended from 326 feet AGL to 125 feet AGL: 61.3 metres in 12.8 seconds.

That is a descent rate of 4.79 metres per second — approximately 943 feet per minute.

The projectile - assessed as an OG-7VMZ fragmentation round fired from an RPG-7 pattern launcher - took approximately 1.3 seconds to travel from the shooter's position to the strike point.

In 1.3 seconds, an aircraft descending at 4.79 m/s drops 6.2 metres.

In 1.3 seconds, an aircraft moving at 50 knots travels 33.6 metres.

Back-projecting from the strike point (34.022959 N, 68.785032 E) along the reciprocal bearing of 319.75° true - 33.6 metres horizontally, 6.2 metres vertically - places the aircraft at the moment of firing at: 34.023190 N, 68.784796 E, 2059 m AMSL. This is the ghost position. This is where the aircraft was when the decision was made to fire.

3.2 Lining up the shot

The shooter's assessed position is 34.021228 N, 68.785188 E, at 2022 metres AMSL.

From that position, the ghost sits at:

Azimuth: 350.60° TRUE

Elevation: 9.50°

Range: 221 metres

Three kilometres to the north-northwest of the shooter, a prominent ridgeline rises to 2478 metres AMSL at 34.049444 N, 68.780000 E.

From the shooter's position, that ridgeline sits at:

Azimuth: 351.34° TRUE

Elevation: 8.18°

Range: 3174 metres

2.3 The Mathlete Memorial Challenge Solution

For S. — cryptologist, flanker, warm heart of our little group.

	Azimuth (true), degrees	**Elevation, degrees**
Shooter → Aircraft at time of shooting	350.60	9.50
Shooter → Ridgeline	351.34	8.18
Difference	0.74	1.32

At this range, one degree of azimuth subtends roughly 3.9 metres on the ground. The 0.74° difference is therefore about 2.9 metres - inside the ±3 metre uncertainty in the shooter's own assessed position. Within the precision the evidence allows, the bearing to the aircraft and the bearing to the dominant ridgeline are the same line.

In elevation, the aircraft sat 1.32° above the ridgeline's crest as seen from the firing point - close enough to read the skyline as a coarse altitude gate, far enough to clear it.

Assessment. The firing solution is consistent with a prepared, terrain-referenced ambush rather than reactive fire. The dominant ridgeline offered a fixed azimuth and elevation index a shooter could register against in advance. But a prepared position has to be occupied in time. The next walkthrough, "Alerting the Shooters," explains where that time came from.

3. Data Walkthrough: Alerting the Shooters

3.1 The Concealment Phase

For most of its approach, Extortion 17 was acoustically hidden from the Tangi Valley.

Flying northwest to southeast behind the Tangi Dara ridgeline - rising to 2300 metres AMSL - the aircraft's rotor and engine noise was directed away from the valley floor. An observer at Do Ab, at the river confluence two kilometres inside the valley mouth, would likely have struggled to know a Chinook was operating nearby.

That changed at Nav Point 2.

3.2 The Reveal

At Nav Point 2 (34.0364275 N, 68.7678044 E), the aircraft cleared the Tangi Dara ridgeline and turned southeast into the Logar River Valley. Two things happened simultaneously.

First, the aircraft entered a descending heavy turn - demanding significantly more lift, and therefore more engine output. Sound level increased by an estimated 10 dB above level-flight baseline.

Second, the high-frequency engine noise previously masked by the ridgeline became audible to anyone in the upper valley.

At Do Ab (34.0415115 N, 68.7668388 E) - 500 metres from the turn point, at the bridge and river confluence - the estimated sound level was **95+ dB SEL**: louder than a chainsaw, arriving suddenly on the valley floor.

At Gharanray (34.035415 N, 68.773707 E) - 450 metres from the turn point - the same.

This was not a gradual approach. It was an acoustic event.

3.3 The Warning Window

From the turn into the Logar Valley to the strike point is approximately 2300 metres.

At a modelled cruise speed of 30 metres per second, that distance takes **approximately 77 seconds** to cover.

An observer at Do Ab or Gharanray, alerted by the sound spike, had a window of 75–80 seconds to transmit a warning by radio to the shooter position.

The shooter position is assessed at (34.021228 N, 68.785188 E) - within direct radio range of both potential observation points, with no significant terrain obstruction on the valley floor.

Assessment: the warning window was sufficient. A single radio transmission of seconds' duration would have been all that was required.

3.4 What Potential Observers Could Determine

With a single sound event, an observer could confirm:

- An aircraft was present and approaching
- It was a multi-rotor helicopter (characteristic double-beat of tandem rotors at approximately 20 Hz)
- It was travelling southeast, down the valley

Speed could not be reliably assessed from a single point.

However, a potential observer at Tirik (34.0252324, 68.7784676) - approximately 650 metres from the strike point - hearing the aircraft pass Gharanray and then pass their own position, could time the interval. From the perspective of Tirik, as the aircraft reached Gharanray, it moved out of the canyon created by the steep sides of the valley: this would lead to a change in sound as the higher pitched sounds from the engine became audible. When it passed Tirik, the Doppler effect would fix its location precisely.

The distance from Gharanray to Tirik along the flight path is approximately 1200 metres. At 30 metres per second, ~ 58 knots, the transit takes **approximately 40 seconds**.

A practised observer could derive a speed estimate from this interval. More significantly, this technique could have been applied on previous helicopter transits through the valley - building a profile of typical coalition helicopter speeds and timings over time.

The prior SAFIRE record supports this interpretation. On 6 June 2011, fourteen RPGs were fired from five or six separate points of origin at a CH-47D in the Spin Wersek area —

2.5 kilometres south of the Extortion 17 strike point. On 21 July 2011, an MH-47G was attacked near Khan Khel, 700 metres northwest of the strike location, and directly across the river from Tirik. The valley had been actively contested for months. The acoustic profile of coalition helicopters was not unknown.

Finally, and in addition, the shooters themselves could detect the approaching helicopter from its increasing volume. However the change in sound levels would have been most marked in the last few seconds of the approach, pushing to a deafening 100 dB at the engagement point. They could not have reliably estimated its position much before the final few seconds due to the effect of terrain obstructions.

The defilade that protected them from attack by the helicopter meant they realistically needed the help of an active observer or data from prior observations to prepare the shot. And at close range, the sheer noise of the aircraft - reaching 100 dB at the engagement point - would have made ad-hoc verbal coordination of the three reportedly accurate shots all but impossible. They had to be lined up beforehand.

3.5 What the Infrared Burn Added - and Did Not Add

From T-162 seconds before impact, an AC-130 overhead illuminated the planned landing zone with an infrared spotlight described in the Colt Report as “football field size.”

This was visible to any observer equipped with Gen 0+ or Gen 1 night vision — equipment assessed as available to Taliban forces in the area, including Soviet-era 1PN33B military reconnaissance binoculars.

From positions forward of the strike point - Hassan Khel, Joi Zarin, Koz Timurkhel - the burn on the landing zone at (34.0182553 N, 68.7904788 E) was visible.

What it did not reveal was the helicopter itself. IR-absorbing coating and a probable Infrared Suppression System on the engines made direct observation of the aircraft highly

unlikely. The aircraft did not silhouette against the burn from observer positions behind the strike point.

Critically: knowledge of the landing zone location was not required to establish the ambush. Once Extortion 17 passed Do Ab, the valley geometry left only one viable route - southeast, through the choke points at Gharanray (34.035199 N, 68.773762 E, 124m Diameter Ground, 200m Diameter Air), Khan Khel (34.0269463 N, 68.7783680 E, Unconstrained Ground, 200m Diameter Air), and Hassan Khel (34.021479 N, 68.786435 E, Unconstrained Ground, 100m Diameter Air), past the strike point. A helicopter heading toward Tahir's assessed bed-down location at Dawlat Khil (34.0126713 N, 68.7963787 E) had to travel that corridor regardless.

The burn confirmed that an aircraft operation was underway. The geography determined where the aircraft would be.

3.6 Assessment

The probable shooter network did not require sophisticated intelligence to engage Extortion 17 at the assessed point of origin.

The acoustic signature of the aircraft's turn into the Logar Valley would have provided a clear, high-intensity alert to potential observers at Do Ab and Gharanray with 75–80 seconds' warning. The valley's geography removed navigational uncertainty entirely. The prior SAFIRE record indicates the valley's defenders had experience of coalition helicopter profiles; the geography allowed the tracking of helicopters from sound alone.

Realistically, once the helicopter turned into the valley and headed towards the target, there was no way to avoid alerting the shooters, thereby giving them sufficient time to set up the shot.

4. Strike to Ground Impact (JCAT Summary)

The following summary is taken verbatim from the JCAT report, and describes the sequence of events from the moment the helicopter rotor was struck through to the impact of the fuselage and other aircraft components with the ground.

“The second in a 2-3 round volley of RPG munitions fired struck EXTORTION 17 along the bottom forward surface of the aft red rotor blade spar-box. The weapon caused 122 inches of the outboard blade to depart the rotor system. The resultant imbalance effected the entire airframe and drive-train subsystem. A sudden and violent ~3.75 Hz oscillation of the entire aft rotor system led to the separation of the aft pylon within 2 seconds. This caused an immediate loss in lift as well as an unrecoverable clockwise spin. The forward rotor system, unable to compensate for the loss of lift and stability throughout the airframe, was stressed beyond design limits and separated in flight. The fuselage and separated pylon assemblies then impacted the ground. The entire event (from weapon impact to crash) likely lasted less than 5 seconds."

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If you obtained this file as a PDF, any updates will be available here: https://bayes.org.uk/downloads/

Data used to make the various assessments in the text and appendices is available here: https://bayes.org.uk/data/

The maps used in the Investigation section are available to download here (also includes links to the same data in Google Earth): https://bayes.org.uk/map-room-tactical-maps/

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Map images are terrain maps drawn from MapCarta, © OpenStreetMap and Mapbox, for which the author was massively grateful: they were absolutely pivotal to sharing the story told here.

Drone flight from Do Ab to Khan Khel (2024). Afghan Anar. YouTube. Visual reference at altitude ~500 feet AGL. Drone flight begins approx. (34.037530,68.769179) close to where Extortion 17 entered Logar Valley and ends at approx (34.0340408, 68.7751252), 1km from the shootdown location. The road in the shot is the Tangi Rd not the Kabul / Kandahar Highway asserted by the narrator (Lang: Dari). https://youtube.com/clip/UgkxFwtlsj_HKvmeFSDDG0vVpXFPcFW83pRM?si=cGmJlxIixaoVNOl8

Jonathan Saruk, View of the Tangi Valley [AFG: Combat Outpost Carwile], 5 May 2009, Getty Images News, editorial no. 104546096. Author's note: visual reference, view west over Dawlat Khil from the ridgeline above the village, showing the Tangi Road in front of the village and Logar River behind it. Tahir was reported hiding in this area (the reported location corresponds to the cluster of buildings low in frame, centre, nearside of the river). Note the winding Tangi road coming from left, passing over multiple low ridges (this is the road from Spin Wersek, where the Rangers reportedly broke off pursuit). https://www.gettyimages.co.uk/detail/news-photo/view-of-the-tangi-valley-where-units-from-the-3rd-brigade-news-photo/104546096.

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Photo: Kukri presented to the author on 4 Oct 2008 on behalf of United British Gurkha Ex-Servicemen's Association by Sher Bahadur Deuba, who served as the 32nd prime minister of Nepal for five terms (1995–1997, 2001–2002, 2004–2005, 2017–2018 and 2021–2022). This for her advocacy work for Gurkha ex servicemen, included here as a "Nishan".
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Finally, the reference to, "Upon Another Shore, and in a Greater Light" comes from:

Benson, Edward. "The Service of Nine Lessons with Carols." The Church of England. Accessed November 2025.
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The full quote is:

"Lastly, let us remember before God all those who rejoice with us, but upon another shore, and in a greater light, that multitude which no man can number, whose hope was in the Word made flesh, and with whom in the Lord Jesus we are for ever one."

About this project

Upon Another Shore is a forensic memoir examining the 2011 Extortion 17 helicopter shootdown in Afghanistan's Tangi Valley, and bearing testimony to the lives of those on board.

The author is a British civilian, working professionally as a peace campaigner and arms trade analyst. What she brings is a scientific background, experience analysing weapons systems and conflict data, and - disclosed in the manuscript - a personal connection to the fallen.

The analysis draws exclusively on declassified US government documents (the Colt Report and JCAT assessment), manufacturer technical data, academic sources, and open-source terrain mapping. No classified information is used or implied. No personal confidences are broken.

The piece exists because, years after the event, people were still asking what happened.

This is an honest answer to that question. The author hopes it will inform future work on this and similar incidents.

Thanks go to the many who have had a hand in helping this work come to fruition, especially Andrew Smith, Emily Apple, Clare Bonetree, Adam Landau and Kate Young. Huge gratitude goes to editors Randy Surles and Laura Graves for their help and encouragement.

Those on board the aircraft are loved and missed to this day. This is, first and always, their story.

We remember.