Steel Wheels in Mozambique

Johan van Zyl

Japan Alliance for Humanitarian Demining Support

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This down-in-the-trenches story about using a Casspir fitted with steel wheels to demine in Mozambique in the early 1990s makes you feel like you are right there. Getting rid of the mines was not the only problem the deminers had; sometimes getting past the insurgents was more challenging.

During the early months of 1991, Garth Barret and Brian Robinson, the directors of a South African defense-related company called Minerva, negotiated a commercial mine clearance contract with the Mozambican national supply of electrical power. Mozambique relied heavily on a 270-kilovolt power line that originated in the Highveld of South Africa and supplied the Mozambican capital, Maputo, with electricity. Both Barret and Robinson wanted to step up their fight for Mozambique (now known as Zimbabwe) and were successively the commanding officers of C Squadron, Special Air Service in South Africa and were successively the commanding officers of the team. I went with one of the guys to the border for a demonstration of the new equipment. In September 1991 and time Copenhagen or Bona, there were no standards, for international humanitarian mine clearance projects. Noticing the remains of human bodies in the bush as we drove along the road, we realized that we would be the only people that could do this type of work.

For the purpose of the contract, Minerva joined forces with Minerva and in known in years to come), worked non-stop with his team to find the simplest, most effective solution. We had designed steel wheels that were fitted to Casspir mine-resistant troop carriers, of which Macham was able to deliver new Mine Resistant Ambush Protected (MRAP) mine-resistant armored personnel carriers. The width of the wheels was changed a few times to ensure the ideal balance between weight distribution and ground penetration. This method proved to be effective during trials, as Dr. Farmer decided it would form the basis of his mine-clearing technique.

On Dr. Joynt’s team was Theo van Dyk, who would also play a big role in Mohembe’s development. He needed to be an international demining company over the 10 years that the team had worked in Mozambique. The company had grown from a small team of two men in the early 1990s to a team of over 200 people, consisting of cylindrical plastic rolls that could be filled with an explosive gas and detonated by firing small-arms rounds through it. The detonation process was so violent that the gas would be caught before it reached the ground, and it was obvious that little maintenance had taken place over the preceding years. The power lines hung limp and close to the ground, and it was clear that the distance from the cable to the steel-hulled Casspir would be dangerously close to the 270-kilovolt line if it were in operation. The FRELIMO soldiers were telling better stories about the number of soldiers already killed while trying to detonate some mines. Paul assured us that the porous road would not be used. Several other journalists also had to be made to ensure that we could do our work every day.

We had to cut down or remove any obstacles that would be dangerous. The war was at its peak and would not end until October of the following year, 1992. For the next two months. Because of the war, the main road was not in use. For the first 20 kilometers (12 miles) after lift-off at the border post, we could see dozens of shanty-huts and blown-out sections of roads back in the road. At the time, there was a shortage of everything in Mozambique—such as bullet-riddled mines—and some living quarters were basic, to say the least. An old unit was not equipped for Vines except to house hundreds of gold-mine recruits on their way to Johannesburg. It had long been out of water and electricity but was in the process of being rehabilitated for our use. In spite of the obvious discomforts, and the fact that they flew before we left, our homes were ready for the 10- to 20-kilometer (6–12-mile) trip to the warehouse and maintenance.

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None of the vehicles could start up under its own power. Even the tanks would need a push by the Casspir, abandoned by a truck tear Jewett as the Casspir had not started after that first. We had to drive past a group of soldiers who would be our liaison officer (and who could speak better English than we could speak Portuguese). A civilian-chartered helicopter flew us to Maputo, a small gray train going to Maputo, which would be our home for the next two months. Because of the war, the main road was not in use. For the first 20 kilometers (12 miles) after lift-off at the border post, we could see dozens of shanty-huts and blown-out sections of roads back in the road. At the time, there was a shortage of everything in Mozambique—such as bullet-riddled mines—and some living quarters were basic, to say the least. An old unit was not equipped for Vines except to house hundreds of gold-mine recruits on their way to Johannesburg. It had long been out of water and electricity but was in the process of being rehabilitated for our use. In spite of the obvious discomforts, and the fact that they flew before we left, our homes were ready for the 10- to 20-kilometer (6–12-mile) trip to the warehouse and maintenance.

At this time, Rocky van Blerk and I were signed up to form the rest of the Mineral and Mining Engineer commanders. We met a young, intemperate engineer commander who would become the first head of the Comissao Nacional de Desminagem (National Demining Commission), the first national organization for the coordination of mine clearance in Mozambique. This would later be changed to the current Instituto Nacional de Desminagem (National Institute for Demining). Two T-54 tanks, two BTR armored cars and at least two platoons of soldiers accompanied us at this time. To get going in the morning, we would load our bags at 6 a.m. for an hour’s weight work by 10 a.m., after breakfast. We had to go around the country looking for the company to make sure that they were ready to go. The lift-off at the border post, we could see dozens of shanty-huts and blown-out sections of roads back in the road. At the time, there was a shortage of everything in Mozambique—such as bullet-riddled mines—and some living quarters were basic, to say the least. An old unit was not equipped for Vines except to house hundreds of gold-mine recruits on their way to Johannesburg. It had long been out of water and electricity but was in the process of being rehabilitated for our use. In spite of the obvious discomforts, and the fact that they flew before we left, our homes were ready for the 10- to 20-kilometer (6–12-mile) trip to the warehouse and maintenance.

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The areas around the pylons were heavily overgrown with weeds. Punctuality was not the best feature of that unit, and it was probably the most frustrating part of our task: getting the team ready for the 10- to 20-kilometer (6–12-mile) trip to the warehouse and maintenance.
which we would traverse the minefield, running the steel-wheeled Casspir forward and backward, moving about half a wheel width to the side every run. The first mines exploding under the wheels took the side mirrors off, so Mechem had to devise some stronger fittings and blast-resistant mirrors as we were dependent on the mirrors for reversing accuracy. After completing a full width of about 15 meters (16 yards) on either side of the pylon, we would start a diagonal run across our previous tracks at 90 degrees. The sound of rapid explosions of hundreds of mines being detonated could be heard all day long, and the crew would be covered in black dust just from the first run. Areas of 40 meters by 40 meters (44 yards by 44 yards) around the pylons were cleared in this way, most of the mines detonating on the first sweep.

The majority of the mines that we encountered were PMN, and Gyata 9 complement by PMD-6, OZM-412 and OZM-72. Many of the bounding mines were PMN-2, M-969, with this type of detonation method. Its built-in anti-blast mechanisms prevented it from being detonated by such fast-moving energy. PMN and PMD-6 mines readily detonated, but with the mix of mines that we faced, the gas-bag method was not reliable. Therefore, after being exposed to the gas-bags, the debris inside the pylon legs were cleared by manual

detection and probing to make sure that no PMN-2 mines remained behind.

We destroyed an average of 200 mines around every pylon by these methods, but the actual number sometimes varied from pylon to pylon from about 80 to more than 300. There was no time to subject every area to a manual detection search or for a formal quality assurance procedure. We simply drove up and down backwards and forwards until no more detonations occurred and then walked over the area to inspect it visually.

At the time, we had a total belief in our unphosphatized system that was obviously based on more than a bit of ignorance but was also enforced because of the limited time. There was more than a little satisfaction in the fact that five of us had destroyed more than 12,000 mines in less than two months.

Our medical bag was well-stocked, but casualty evacuation would be made by Casspir to the Republic of South Africa, as there was no air evacuation available for either the soldiers or us. Fortunately, the team had no accidents, but the medical bag was in demand on a regular basis when mines injured soldiers all over the district. The FREMMO soldiers had less medical equipment and support than we did and seemed to accept deaths fairly readily. We saw the horrific wounds caused by the PMN—with its charge of over 200 grams of TNT—on many occasions, when either soldiers or civilians were injured.

Once, van Blerk and Boates came across a RENAMO guerrilla who must have crawled at least a kilometer (0.62 mile) from where he detonated a mine in the main road. He was found with a leg missing. On another occasion, van Blerk and I heard an explosion about 500 meters (one-third of a mile) away, saw the cloud of dust and found a teenage girl who had just lost her leg to a PMN AP mine, with a crowd of village people standing around, unable to help her. We bandaged her up, fitted a saline drip, injected her with Sosegon (a pain medication), and managed to find a truck driver who was willing to drive her to a hospital in Maputo where she could hopefully receive treatment.

RENAMO must have taken exception to us now for working with their enemy, because they started ambushing us whenever we moved without our army escort. Realizing that we were unarmed, they often ran to the side of the road and encrypted their rifles at us from less than 10 meters (11 yards) away.

As the team leader, I had the task of attending the occasional meeting in Maputo, or driving to Komapopo or South Africa every few days to fax our handwritten situation reports to Midem in Pretoria. I was usually driving around on my own and must have made an attractive target, because by the end of that year, I had survived seven ambushes, once or twice by the thin of my teeth. On several occasions, the bulletproof windows or windscreen of the Mamba saved my life at bullets were stopped inches from my head. Once, however, I was driving a soft-skinned pickup truck when I hit an ambush in the Leobos mountain and the civilian friend sitting next to me was shot in the leg. With two flat tires, we had to abandon the vehicle and escape, first on foot and later by a civilian truck that I commandeered. The next day, when van Blerk came to help me retrieve the pickup, we were shot at in the same location.

On a few occasions, the garrison village of Moamba was half-hearted at night. Every gun and rifle would then return fire for the rest of the night. We would sit on the verandah of the top floor of our villa, watching the spectacular display of tracers bullets flying in all directions but mostly skyward. We knew that the next day would be a slow start because the soldiers would get little sleep that night.

Working seven-day weeks, we cleared the 60 pylons on time, and Lufthansa started rebuilding the line on the appointed day, September 1. Van Blerk, Boates and I would stay on for the next 18 months, assisting the Italian company in blasting holes for the pylons, making trenches, and access routes, andgenerally enjoying the warm Mozambican hospitality.

See “Remnants and Endurance,” page 107

The Road to Mine Action and Development: The Life-Cycle Perspective of Mine Action, Patterson and Filipino [from page 55] 1. This phrase is from The World Bank, which has been in the forefront of planning, managing and financing post-conflict reconstruction since it was formed by the Big Five powers in the early 1940s. 2. World Bank. 3. World Bank. 4. World Bank.


2. The MR449 is a plastic-bounded, low metal content, anti-personnel mine.


