

3-18-1993

DDASaccident368

Humanitarian Demining Accident and Incident Database
AID

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DDAS Accident Report

Accident details

Report date: 02/07/2014	Accident number: 368
Accident time: 10:30	Accident Date: 18/03/1993
Where it occurred: Chana Pale, Xangongo, Cunene Province	Country: Angola
Primary cause: Inadequate equipment (?)	Secondary cause: Field control inadequacy (?)
Class: Missed-mine accident	Date of main report: [None]
ID original source: HE/HGK	Name of source: HE/HGK/Others
Organisation: [Name removed]	
Mine/device: TM57 AT blast	Ground condition: agricultural (abandoned) bushes/scrub sparse trees wet
Date record created: 21/02/2004	Date last modified: 02/07/2014
No of victims: 1	No of documents: 1

Map details

Longitude: 15° 02' 54" E	Latitude: 16° 44' 28" S
Alt. coord. system:	Coordinates fixed by: GPS
Map east:	Map north:
Map scale:	Map series:
Map edition:	Map sheet:
Map name:	

Accident Notes

mechanical detonation (?)
inadequate communications (?)
inadequate equipment (?)
protective equipment not worn (?)

Accident report

No formal investigation of this accident was carried out. This record is derived from interviews with the field managers, supervisors and deminers who were present. Some parts of those

interviews and subsequent questions resulted in internally inconsistent statements. During the investigation, the site was visited and the remains of the tank examined.

The accident site is accessed by taking road No. 6(8)A from Xangongo to Ondjiva. Turn onto a dirt road 6.3 km from Xangongo and drive 3.4 km through bush.

History of the area

The demining group were clearing an area mechanically laid with TM62B, TM57 and TM46 AT mines. The machine dug holes at 3m spacing and the mines were placed either by men or machine. There were two (sometimes three) rows of tank mines. In some areas, the mines were protected with PMD-6 AP blast mines. The PMD-6 mines were not placed on the outer side and were placed "randomly". One person who laid the mines claimed that the PMD-6 mines were not "armed".

Some mines in the area had been collected and removed by local people. This was in response to a "bounty" offered for mines across the border in Namibia. The bounty was paid by the South African armed forces based in Namibia at that time. They apparently believed that the mines would be collected inside Namibia and so they were reducing the local risk to their soldiers and vehicles. In fact they were encouraging civilians on both sides of the border to gather mines, and several of them are reported to have died collecting and transporting mines.

The roller system

The demining group had been deployed with Soviet T55 tanks with KMT5 roller systems mounted on the front to use in mine-clearance. The tanks had been modified by having the barrels and gun mechanisms removed (with the exception of the rotating base-plate). The demining group had discovered that the rollers did not reliably clear mines and so generally did not use them in this role, but it was part of their official mission description that they should use the tanks as clearance machines.

The events leading up to the accident

Clearance was being carried out without knowledge of current best-practices in Humanitarian Demining. As a result, the clearance was taking place without concern for safety distances, adequate communications, medical provision or PPE, and without the site-manager having strict control. The demining was conducted by a small group of people who worked as a "team", sharing decision making and learning as they went. (In 1993, people were learning what "best practice" was).

Normally, the mines were located with metal detectors using the most experienced men to locate any PMD-6 AP mines that had been used among the AT mine belt. The deminers removed the thorn bushes, checked the area with the detector and exposed a part of each AT mine. Follow up deminers then exposed the rest of the mine, removed the fuze and carried the mine and fuze to a collection point.

The ground was waterlogged in the area where the accident occurred. Despite this, it was used by locals who moved their livestock around the area. The demining group had fenced the area with marking tape and mine warning signs (as used by the German Army) to close-off the uncleared area, but these signs were not respected by the local population.

The ex-pat site-manager, [Victim No.2], decided to use the tank and roller system for this specific area because it was too wet for manual demining. He decided that the deminers would return later for manual QC. [Victim No.2] knew that it was usual practice in the NVA (former East German army) to use the tank and roller system to clear AT mines in depths up to two metres of water while snorkelling. The task was started at around 10:00. The work was recorded on slide-photographs from a secure vantage point for publicity purposes by an Angolan supervisor.



The picture above shows the tank in the water after the accident.

[Victim No.2] started the clearance and was alone inside the tank at first. As it entered the area it set off a tank mine and the roller system was thrown backwards with far more force than anticipated, hitting the tank. The detonation made the driver's view ports of armoured glass muddy, so [Victim No.2] called a deminer to clean it. The tank progressed and initiated another three AT mines. The glass needed to be cleaned after each detonation. Each time the deminer [Name removed] "[Victim No.1]" came forward to do this.

Photographs of the work in progress showed that the tank and rollers tended to skid left or right on the soft/wet ground. This meant that the tank tracks did not always follow the roller tracks, and so it was possible that the tank was sometimes driving on unrolled ground. [Victim No.2] stated that it was very difficult and sometimes impossible to drive the tank in a straight line. As a result, it was even more difficult to roll the next lane overlapping the existing curved lane.

After the third detonation, [Victim No.1] approached the tank and cleaned the view ports from the outside. After the fourth detonation, [Victim No.1] approached again and explained that he had been inside tanks when mines detonated before (he had been a combat tank driver/mechanic) and [Victim No.2] gave him permission to enter the tank so that he could be immediately available to clean the view port's glass (and avoid any risk from the AP mines that might be present outside).

According to one witness, [Victim No.1] then drove the tank [but this is dismissed as conjecture because the witness could not see who was in the driving seat].

The tank continued forwards for a few seconds through approximately 20cm depth of mud with its underside in contact with the ground or shallow water. A mine was initiated underneath the middle of the inner side of the left track of the tank, a position which implies that the mine may have been already under the track when [Victim No.1] boarded the tank. The rotating base-plate, without the support of the gun, flipped up inside the tank. The round, rotating-disk base-plate was more than a metre in diameter and about 15mm thick steel. There was a 60cm long and 10cm wide breach in the armour parallel to the left track. The second to last wheel on that side was blown 50m away. The tank and roller system (weighing 35 tons) was lifted high into the air.

The picture below shows the tank standing almost on end when the detonation occurred. Captured on slide-media, it is very poorly detailed.



At the time of the detonation [Victim No.1] was sitting on a fixed toolbox in the right hand side of the tank under the commander's hatch. [Victim No.1]'s injuries are consistent with his having been seated on the fixed toolbox.

[Victim No.2] stated that the driver's hatch (which had been opened and closed repeatedly for view-port cleaning) was so deformed by the blast that its two-part construction separated, pulling out the fastening mechanism and throwing it open. The commander's hatch above the toolbox seat did not blow open, but jammed. When the turret base-plate flipped up, it trapped the Victim by his legs. Water came into the tank through the hull-breach but it was only a few centimetres deep.

All non-metallic parts of the upholstered driver's seat were "shredded" and the instruments in front of the driver were shattered, but [Victim No.2] who was sitting in the seat and directly beneath the driver's hatch, was uninjured. He reported that he did not sustain as much as a "scratch" or bruise, and suffered no apparent hearing loss.

After the detonation, he scrambled out through the deformed hatch, and called for [Victim No.1] to follow. He reported that he called [Victim No.1]. When there was no response he put his head through the driver's hatch and heard [Victim No.1] stop breathing.

It was found that [Victim No.1]' legs were broken and he had a "few small fragmentation" wounds. On later examination at the demining group's base-site, the group medic declared that [Victim No.1] had not drowned but that his inner organs were destroyed by the pressure of the blast. How this was determined without a formal autopsy is unclear.

When asked how he had escaped without any injury, bruise or even temporary deafness, [Victim No.2] has repeatedly said that the only way he could explain it was that "God had taken him out of the tank for the millisecond that mattered".

[Victim No.2] returned to the site on the next day and threw hand-grenades inside the tank to ensure that it was never used again. He also painted a warning sign on the outside of the tank "Mina Mata" (Mines Kill).

When the interior of the tank was examined in 2003, the grenade damage had left it impossible to determine how much damage had been done by the AT mine, and how much by the later "demolition". The large rent in the hull beside the missing wheel was visible, as was the deformed turret base-plate. The driver's bay was clearly in the path of the incoming AT blast.

When asked why the tank was destroyed instead of being used for spare-parts (the group had several other tanks) [Victim No.2] replied that the tank was a "grave" and no one wanted to go inside it for spares.

[Victim No.2] reported that the area was cleared manually eight months later when it was entirely dry. He stated that eight undamaged and functional mines were found in the area the tank and roller had traversed. In 2004, when another accident occurred at the same site, he said that there must have been a mistake and the area around the tank had not been cleared after all. There was no formalised method of recording areas cleared or central database for the collection of that information in Angola at the time.

Following the accident, [Victim No.2] was sacked by the demining group – apparently alleging book-keeping irregularities which a court later found unproven.

Conclusions

Those involved speculated that the fact that the mines were underwater increased their power or directed their blast – as evidenced by the roller system being thrown back with unusual force.

The evidence of [Victim No.2] varied and was sometimes internally inconsistent. This is not unusual because victims of traumatic accidents involving shock are frequently unable to recall the events leading up to and immediately after the accident with any clarity.

[Victim No.2]'s suggestion that the driver's hatch "two-part" construction blew open did not match the observations made of the tank at the site. The only driver's hatch on the wrecked

tank was a single plate that pivoted sideways, so it would have been unlikely to blow open as he described. If it did not open, it is more likely that blast would be directed elsewhere, explaining his miraculous escape.

Recommendations

The remains of the tank were still at the accident site when another accident occurred there in November 2004. Another demining group (led by [Victim No.2]) was "testing" a different kind of machine around the tank. Several mines, AP and AT, were found before that machine was also destroyed by an unintended detonation.

The area around and beneath the tank should be cleared manually. This will involve moving the tank to a cleared area. The area cleared should be properly recorded and that record passed to the Angolan National Authorities so that further confusion over what has been done in the area can be avoided.

Victim Report

Victim number: 472

Name: [Victim No.1]

Age: 31

Gender: Male

Status: deminer

Fit for work: DECEASED

Compensation: not made available

Time to hospital: not applicable

Protection issued: None

Protection used: none

Summary of injuries:

severe Chest; severe Legs

FATAL

COMMENT: Victim died of internal injuries. No medical report was made available.

Analysis

The primary cause of this accident is listed as "Inadequate equipment" because the tank and roller system had been provided to clear the ground but could not do so. The secondary cause is listed as a "Field control inadequacy" because [Victim No.2] allowed a second person into the tank when this was not strictly necessary. However, there is no indication that this was breaching any [Demining group] guidelines that were in place at the time.

The blast breaching the hull caused [Victim No.1]' internal pressure injuries. The unsecured plate in the base of the tank was distorted and lifted in a way that broke his legs.

If the tank was vulnerable to a breach like this, it illustrates that it not only failed to clear all the mines (which was unsafe for the end-user of the land), it was also unsafe for the operators when deployed in this role.

Another accident occurred at this site on 30th October 2003. On that occasion, an AT mine detonated within two metres of the wrecked T55 tank. See Accident 385 in this database.