A Project for the Disarming of Anti-Personnel Mines

By Jock Masson

This article describes the detection, disarming and removal of anti-personnel mines in Egypt. These were left over from the 1973 Yom Kippur war involving Egypt and Israel.

Prior to 1976, tankers carrying oil from Saudi Arabian ports in the Persian Gulf had to sail all the way around Africa to reach destinations in the Mediterranean because they were too large to go through the Suez Canal. To ease this situation, King Faisal of Saudi Arabia arranged the funding of twin 30" pipelines in Egypt that would run parallel to the Suez Canal from a point 18 kilometers south of Port Said to a new port at Ain Sukhna in the Gulf of Suez. The project, named Su-Med (short for Suez to Mediterranean), included tank farms at each end of the pipelines, pumping stations, and ancillary equipment. This provided a more direct path to get the oil to the Mediterranean.

Unfortunately, the area through which the project ran had zones that contained anti-personnel mines. The mines had to be located, disarmed and disposed of before work could commence in those areas.

Ain Sukhna is Arabic for "Hot Eye". The site was named for a very hot spring, 30 to 40 feet in diameter, which had previously fed two swimming pools as the hot water ran toward the gulf. Nearby were two former motels. Before the war, it had been a resort for rich Egyptians. During the war, the Israelis bombed the resort administration center. The swimming pools were now full of sand and mines had been planted in them. The locals were living in the motels and had de-mined a narrow path to the gulf using survey stakes to find the mines. The ones they found and removed were left by the side of the path because they had no explosives with which to destroy them.

I had been working for Bechtel Engineering in Argentina when they contracted for the pipeline project in Egypt. They needed someone to supervise the removal of the mines and, since I was the only one with a blasting license I was selected, even though my knowledge of mines was zilch. Bechtel's Project Manager was Ken Wharf and the Construction Manager was George Hoeffert. My immediate supervisor was Ed Sohl from Santa Rosa, California.

Prior to work starting on the project, OPEC raised the price of oil by 14%. When Bechtel raised the price of doing the work by a like amount, the financial backers balked. A consortium of Italian contractors, including Montubi, Snam-Projetti, C.I.M.I and Vatican agreed to do the job for the original amount. King Faisal, who was a friend of Steve Bechtel, said he would agree only if Bechtel did the management and inspection on the project (hence my involvement).

While we were waiting for Mukhabarat (the secret police in Arabic countries) clearance to stay overnight in the military area, Ed and I lived in the Mena House, a hotel adjacent to the pyramids. We were there while Kissinger, Menachem Begin and Anwar Sadat were negotiating in that same hotel.

For the first three months, with a vehicle and driver, I was all over Egypt to find a contractor with enough equipment and support to move the massive quantities of earth on site for the tank farms and pipelines.

There had been an embargo on all imports from the U.S. since 1953. All contracts had to go to Egyptians. They had lots of broken-down Russian equipment. The exception was Wadi Komombo. They had a full shop, machinists and old LeTourneau C Pulls (U.S.-built motor scrapers) ready to go to work. They were the managers of what had been a British sugar cane plantation. They had held firm, kept their best men, and survived changes in the Egyptian administration. They had been in business since Nasser forced the British out.

Amin Shawarbi was CEO and Mohamed Eid was the Accountant at Wadi Komombo. Shawarbi bid the job at £2 Egyptian per cubic meter and convinced Su-Med that he needed front money to go to Japan to buy equipment. Wadi Komombo within weeks had a lineup of new Komatsu equipment which was on site, lined up but never started. They were waiting for slow, wet season on the Nile Delta. One morning there were hundreds of tents and men, farm tractors and four-wheel wagons with sides (no dumps) and Lantz Bulldog, single horizontal cylinder diesel tractors. (Germany traded through the embargo.) Eight men to the unit moved the mass, on time at £1 per cubic meter.

The area for the tank farm required excavation, but was in hard shale. The tank farm consisted of twelve 80 ft diameter tanks. As it was not possible to place mines in the hard rock, the tank farm did not require mine disarming. Two D-8 sized dozers, two D-7 sized dozers, four motor scrapers and a motor grader were delivered to the jobsite, but never started. The pressure was on me to have W-K use this equipment. None of us knew that the stall was until the Nile farmers were done for the season. They finished ‘on time’. Hand shoveled onto the wagons. Same crew shoveled off at the fill areas. They were on piece work, so if it went on the haul unit, the same crew had to off-load it.

While the tank farm did not require de-mining, the area along the road, the area from the tank farm to the gulf (which included the pipeline area to the tankers) and the lay-down area for equipment all had to be de-mined.

My problems with the Mukhabarat were while I was riding around with Shawarbi and Eid. W-K also had a contract to dismantle the Israeli positions, dug into the spoil pile on the east side of the Suez Canal that came from the excavation of the Canal. There was a floating bridge. No foreigners were allowed on the Sinai on the east side of the Canal.

Without my knowledge, the driver was told to take us to the east side and look at what W-K had for equipment. I'm sure the driver reported that a westerner (me) had been on the Sinai side.

On the east side the Israeli positions had dugouts made of 12 inch pipe, notched as we might notch a log so that they could be locked together at the corners. These were then encased in concrete in excavations in the spoil from the Canal. They were invincible for years until the Yom Kippur war. The garrisons were scarcely manned as most had gone home to Israel for Yom Kippur.

Only two of us, Ed Sohl and myself, eventually had Mukhabarat clearance to live in a military area. The Italians did not have a problem, but my having been in a forbidden area on the east side of the Canal had held things up though.

The de-mining team were from Bocami De-Mining in Milan, Italy. They did excellent work. Being as I had a blasting license and a military clearance, I was elected to do the inspection. Casper Weinberger and George Schultz, both ex-Secretaries of State, were Bechtel employees, which made our travel to work sites easier.

Bechtel insisted that Bocami's men wear bomb suits. The suits were of three layers, Aramid topped with Nomex, with a Kevlar hinged face mask and crotch protection. They were open at the back, closed with Velcro and were supposed to withstand a projectile at 1000 feet per second. With the suits on, the men looked like penguins and could not see their feet. The men proved to me that the suits were useless as they needed to carefully inch ahead while looking at their toes.

The anti-personnel mines that had to be located and disposed of were made of a plastic explosive, PEX, Paste Extrudable Explosive (See Figure 1). A spring-loaded plunger was held in the 'cocked' position by a thin fuse wire that passed through a hole in the plunger. When a person's weight was applied from above, the fuse wire would bend, allowing the spring-loaded plunger to impact a shotgun primer, detonating the mine. Prior to placement, a safety device prevented the plunger from contacting the primer. After placement, the safety device was removed and replaced by a plastic threaded plug to prevent sand entry. The only metallic parts of the mine were the plunger, fuse wire and brass coil spring. You had to be able to detect these in order to locate the mines.

Bocami used Foerster metal detectors from Germany. In the morning, they would sweep a path one meter wide. They had a 50 meter spool of line paid out under tension from a clip-on winder on the right side of their belt which gave them a line. They would sweep in two-inch overlapping increments and then move their feet forward two inches. When they reached the end of the 50 meter line, they would stab the winder into the sand and then reverse the sweep, using

the line as a guide. When they got a signal on the metal detector, they pushed a pin flag into the sand 6 inches to the left of the target.

In the afternoon, the men dug into the sand by hand to expose the mines. They then secured the plunger with surgical forceps to keep it from detonating the mine, removed the plastic plug and inserted the safety device. The mines were then loaded onto a kid's snow sled. The sled was pulled by hand on a clothes line (approximately 100 feet long) to the next flag. When loaded, the sled was towed to the demolition area down the beach a short distance. They were then blown up with a stick of powder. This avoided contaminating the previously cleared area with debris. The mines in the project areas were all cleared without any accidents.

As an aside, there was an unfortunate occurrence involving Ed Sohl that almost included me. As our work was drawing to a close, Ed left Egypt to work on a Bechtel project for Occidental. He was taken captive and held for ransom by F.A.R.C. in Columbia and, unfortunately, died while in captivity. Prior to Ed's leaving Egypt, the Dutch had just obtained military clearance to establish a small craft harbor to service tankers at the new oil port at Ain Sukhna. Their exploration vessel hit an anti-shipping mine and blew everyone on board into the shallows and onto the beach. Now a new area of beach needed to be checked for anti-personnel mines. If it were not for this extra work that I was involved with, I would have probably been with Ed Sohl when he was captured in South America.

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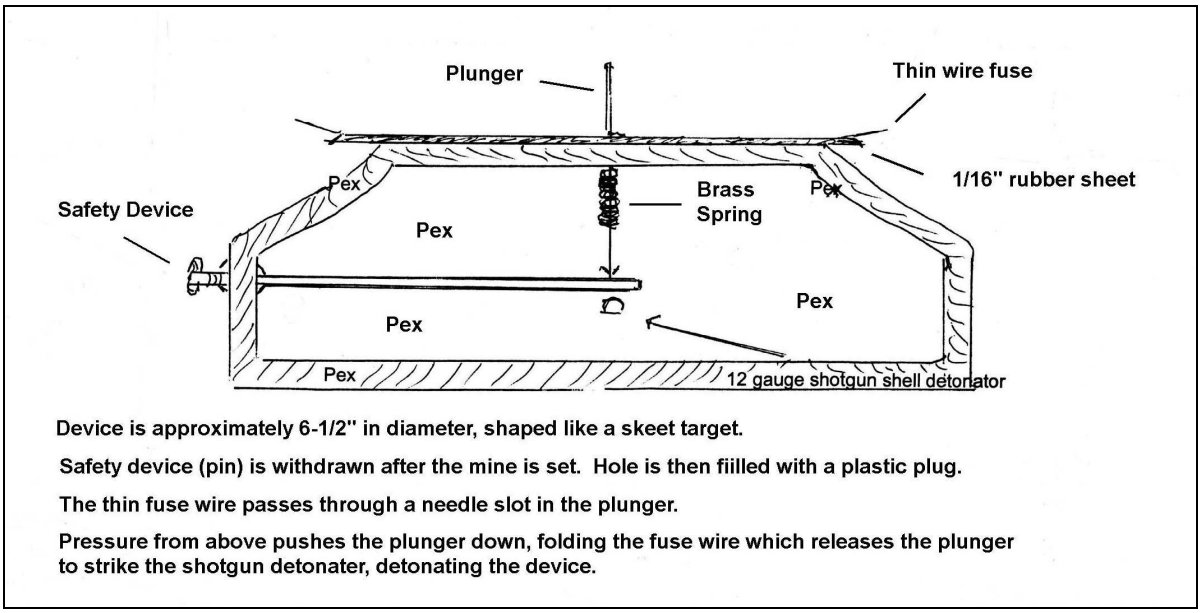

Figure 1.