

## Tank Removal Program

### FACT SHEET

This fact sheet describes the Underground Storage Tank Removal Program, which ran from 1988 through 1996.

September 1996



Air Force  
Flight Test Center

# Edwards AFB celebrates last Tank Yank

### UST program and purpose

The average U.S. military base has about 125 underground storage tanks (USTs). At Edwards Air Force Base, there were, at one time, more than 500 USTs.

The Edwards Tank Removal Program began in 1988 to remove all the underground storage tanks that did not meet new requirements established by the Environmental Protection Agency. These standards must be met by Dec. 22, 1998.

The first tanks under the Edwards program were removed in 1990. With the removal of the program's final tank, N055, the Tank Removal Program has beaten the deadline by more than two years.

Ranging from 25 to 50,000 gallons in size, most of the tanks were made of steel or fiberglass, although a few concrete tanks were found.

Placed in 1944, N055 is a 5,000-gallon steel tank that stored gasoline for use in military personnel vehicles in the north base area. The cost to remove this tank is approximately \$17,000.

The program has been funded through two separate sources. The Defense Environmental Restoration

Program (DERP) funds clean-up and restoration efforts and funds the removal of tanks placed before 1984. Military construction (MILCON) money is used for tanks installed in 1984 and later.

The total cost of the UST removal program was approximately \$6.8 million. About 70 percent of the money was

spent locally in Southern California, and much of that in the Antelope Valley. Salaries, materials, equipment rental, supplies, regulatory fees and food and lodging comprised much of this cost.

### Leaking USTs cause contamination

Leaking USTs are the biggest contributor to underground contamination at Edwards Air Force Base. Most of the tanks were more than 30 years old. Older bare steel tanks such as the final UST to be removed under this program are prone to leak and contaminate the soil. It made sense to remove them before they got a chance to leak.

Older tanks are more prone

to leak because of their varying quality in manufacture. Many of the tanks at Edwards were not intended to be in the ground as long as they were. An additional problem at Edwards is the presence of high levels of alkali occurring naturally in the soil. When steel is exposed to alkali for a long period of time, it deteriorates more quickly than normal.

### Investigation and removal

The Environmental Management Directorate contracted with Earth Technology in Long Beach to oversee the removal of tanks that were abandoned before 1984. The removal of these older tanks was funded with DERP money. Earth Tech subcontracted the actual removal of tanks to state-certified contractors. As prime contractor, Earth Tech developed the project plans and provided on-site supervision at all times.

Computer Sciences Corporation did daily monitoring to help support Air Force documenting of each site.

Civil Engineering contracted with the Amond Corp. to remove MILCON funded tanks installed after 1984.

In most cases, tanks were found through common sense and field investigation — there were few maps or records indicating where they were located. Sites near former Air Force activities were surveyed. Telltale indicators included pipes sticking up out of the ground

and cement slabs. Geophysical surveys were taken using a device like a metal detector to find and size underground metal objects.

There were 512 tanks found on the base. They were located in all active and abandoned areas of the base. Of these 512 USTs, 409 were removed. Three of the tanks were abandoned in place. After this last removal, there will be 14 up-to-1998-standard underground storage tanks remaining on the base. In addition, there are eight currently in design for upgrading to the 1998 standard.

The remaining 78 underground storage tanks were not found once investigation began at their suspected sites. Tanks were not found for several reasons. In some cases, the tank had been removed long ago and Environmental Management did not find documents relating to its removal. Sometimes, the aboveground indicators of a tank were there, but the tank was not.

In these cases, careful examination of the area around the suspect site was conducted. Soil samples were also taken in the event that an already removed tank may have leaked.

### New Federal UST requirements

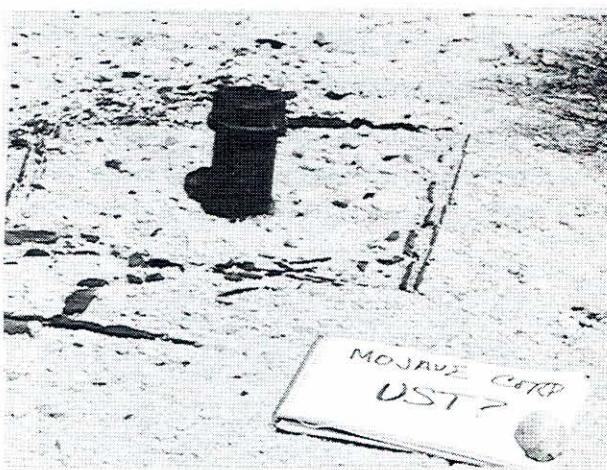
The new 1998 Environmental Protection Agency regulations for tanks require USTs to have spill, overfill, and corrosion protection. Tanks must have catchment basins to contain spills from delivery hoses.

To protect spills from overfills, tanks must have automatic shutoff devices, overfill alarms, or ball float valves.

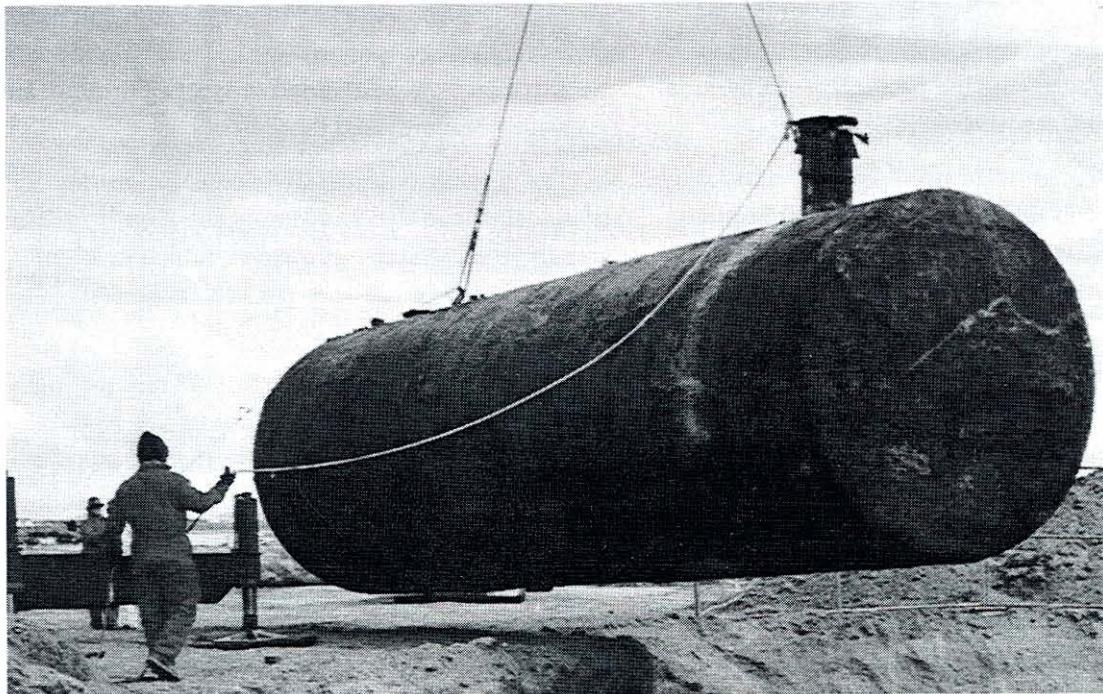
Corrosion protection can include a corrosion-resistant coating either inside or outside a steel tank along with cathodic protection.

The options for complying with these regulations allow us to add spill, overfill, and corrosion protection by Dec. 22, 1998; close the existing USTs by Dec. 22, 1998; or replace the closed existing USTs with new product delivery devices.

Adding protective measures on existing non-compliant active tanks is a much more expensive solution than removing old tanks and replacing



Pipes sticking out of the ground may indicate that an underground storage tank is present.



**The removal of underground storage tanks is an inherently dangerous process.**

them with new aboveground storage tanks or compliant USTs.

Edwards AFB opted to close and remove most of the existing USTs since the majority of tanks were located in areas of the base that were used years ago.

### Tank replacements

Where necessary, the USTs were or will be replaced by pipelines and aboveground storage tanks.

Aboveground storage tanks are more cost effective. For example, the cost to replace a 5,000-gallon tank with another UST would be approximately \$41,000. To replace this tank with an aboveground storage tank would cost approximately \$18,000. Despite these costs, sometimes an underground storage tank is absolutely necessary.

### Perfect safety record

Removing an underground storage tank is inherently dangerous.

Once fuel is drained from a tank, pockets of vapor can build up inside and might cause the tank to explode during its removal from the ground. A tank is constructed with two ends and a main fuselage. When it explodes, the ends shoot out with tremendous force, similar to a bomb going off.

In 1988, when the big push started to remove tanks, hundreds of workers nationwide were killed or injured during this process. Since that year, the EPA has provided guidelines for removing USTs.

Four hours before the removal, the tank is filled with dry ice, expelling any vapors that may have formed inside. The tank must then be removed from the ground and taken to the recycling yard, where it is dismantled within 72 hours. This prevents vapor from reforming after the dry ice has lost its effectiveness.

At Edwards AFB, this procedure has been followed closely and not a single injury has resulted during the entire UST removal program.

## Protecting cultural/natural resources

While the UST program was busy yanking tanks, the conservation branch of the Environmental Management office was overseeing the protection of Edwards' cultural and natural resources.

More than 350 acres were surveyed for archaeological sites by the cultural resources division of Environmental Management. During these surveys, many World War II-era artifacts were found, collected and curated.

Sites potentially impacted by the tank removals included a pre-war homestead, an old mining site, an area within the historic East Camp, and several sections of north base, which, during the '40s and '50s, was known as the Muroc Flight Test Base.

So important is this area's contribution to aviation history that north base has been deemed potentially eligible for inclusion on the National Register of Historical Places, as part of the JPL Edwards Facility Historic District.

It was originally built to house and test fly a top secret aircraft — America's first jet, the Bell XP-59A Airacomet, and from there grew into a permanent flight testing facility. New planes continued to be tested there, and north base was the site of many "firsts" — the first American turbo jet bomber (the Douglas XB-43) and the first American rocket-powered flying wings (the Northrop MX-324/334 and the Northrop XP-79B or "Flying Ram"). The CIA flew U-2 and U-2R reconnaissance flights from there during the 1960s and 1970s.

In addition to these important historic areas, the cultural resources division was concerned with several

prehistoric sites located close to tank removal work. Base archaeologists helped design work areas so that sensitive areas were avoided or worked around, and occasionally monitored these sites.

The natural resources division of Environmental Management served in a similar capacity. Its priority was to protect the desert tortoise, which is on the federal threatened species list, and its habitat, as well as other resources.

Base biologists evaluated the UST removal process and made their recommendations to U.S. Fish and Wildlife on how to best minimize the impact on the tortoise.

When an action takes place in a sensitive natural resource area, a biological opinion must be provided by the U.S. Fish and Wildlife Service and incorporated into the Environmental Assessment. Because the desert tortoise is a threatened species and mishandling could result in heavy fines or imprisonment, workers on the project must be educated how to protect the animal and its critical habitat. Sometimes a biologist is assigned to monitor the project in particularly sensitive areas.

Not only desert tortoises require protection. Whenever possible, wildlife and other natural resources were worked around during the UST program. In one instance, a baby owl had nested within a UST scheduled for removal, and wouldn't be able to get out until it could fly. The program manager was able to put that tank at the bottom of the removal list. This postponement of six weeks allowed the owl to grow into a fledgling, then a juvenile, and find another place to roost that had less human activity.

**Air Force Flight Test Center Environmental Management**  
*Supporting the Edwards AFB Mission Through Sound Environmental Stewardship*

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