

LAPD Tank Cleaning Report

RLS 7/17/09

The LAPD tank was cleaned at the Midwest Imperial shop by SET Environmental on 7/15/09. The tank was lying on its side on a wooden cradle. All tank access was through the roof manhole. SET provided confined space procedure and equipment. The cleaning procedure was reviewed by Dan Kuffel of Midwest and Richard Schmitt of Fermilab. SET had a crew of three, the worker, an observer/helper and a supervisor. The procedure and detergent had previously been approved by Fermilab.

Cleaning procedure

- Scrape loose material from welds(welds were polished by Midwest, this step probably not necessary)
- Spray with detergent
- Scrub with nylon brush
- Rinse with high pressure De Ionized water
- Tap water run through carbon filter, DI bottle and post filter, to high pressure pump and to spray nozzle
- DI outlet has switch which indicates when conductivity is above or below 1 Mohm-cm.
- Vacuum out water
- New vacuum hose used inside, older hose used near tank wrapped with new plastic
- Dry with lint free rags
- Clean inside nozzles the same way as much as possible. Small nozzles just sprayed only.
- Cover manhole and manhole cover with plastic when finished
- Cleaning notes
 - Scraping of welds uneventful, welds were already polished
 - Spray with hand pressurized bottle, detergent diluted to 10%
 - Scrub with nylon brush
 - Grit gathers in tank bottom, clearly visible with soapy water
 - Rinse twice, vacuum out water until dry each time
 - Inspection with bright flashlight indicates five permanent markers lines still visible
 - Removed them with nuclear grade Scotchbrite and concentrated detergent
 - Rinse, vacuum out all residue, rinse again vacuum again
 - Ladder feet inside wrapped with adsorbent mats
 - Wiping with lint-free rags, a hint of fine gray-brown dust or grit was found on the lower shell ring and the tank top. All other wipes had no visible dirt. Rags inspected in sunlight and with bifocals on.
 - Re-spray with detergent, scrub with brush and rinse again.
 - Lower shell ring not improved much, if any. All other locations clean

- Re-cleaned lower shell ring with more concentrated detergent and scotchbrite scrub pads
- Following rinse and vacuuming test wipes in three locations on lower shell ring were clean
- Dried interior with lint-free rags. High spots dried with rags on a long handle
- The surfaces were still damp in spots, but all drips and heavy films removed
- Top flange cleaned separately using same procedure
- Roof opening covered with plastic
- Manhole cover wrapped in plastic
- Time consumed
 - One hour to review procedures, set up equipment, connect hoses.
 - Two hours for initial scraping, spraying, scrubbing, cleaning
 - One hour for second spraying, scrubbing cleaning
 - 1.5 hours for third scrubbing lower shell ring, rinsing and final inspection
 - 1 hour to pack up tools
- Total effort, 19.5 man-hours by SET crew plus travel time
- Fermilab engineering 6.5 hours plus travel time of two hours, plus two hours to write report
- Midwest Imperial 6.5 hours time

Conclusions

- Nylon brush not aggressive enough, had to use scotchbrite in some locations
- Don't know what the fine grit was. Grinding dust is suspected.
- Cleaning a large tank could be done from a boson's chair or a scaffold
- Shell material is 'as-rolled'. A better finish would make cleaning easier.