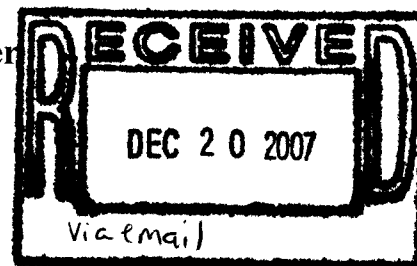


Update On Environmental Projects at Giant Refining Gallup Refinery

Prepared for NMED and OCD

By Jim Lieb, Environmental Engineer

December 18, 2007



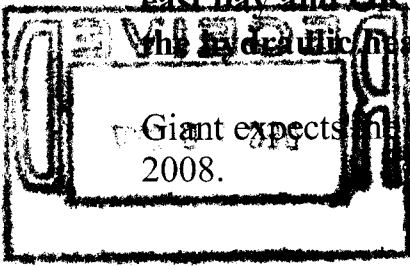
New API – Leakage Stopped

Giant has repaired one bay (the west bay) of the new API separator (NAPIS). The repairs in the west bay were completed on November 16, 2007. The repairs include the coating of the interior of the west bay of the NAPIS with an impervious coating that serves as the secondary containment and the fabrication of a stainless steel liner inside the concrete bay. So, essentially, now the west bay of the NAPIS is a tank within a tank. Leak detection is provided by a standpipe that was installed outside the NAPIS. The standpipe connects to the interstitial space between the concrete wall and the stainless steel liner.

We had expected to have both bays completed by now but technical issues and contractor issues with Siemens Water Technologies (SWT) that cropped up caused nearly insurmountable delays that made completion by this date not possible. Giant worked diligently in working with the contractor to resolve the issues. Insight and the experience gained in solving issues during work on the west bay should facilitate progress on the work in the east bay and the ORS.

On November 27, 2007, the second bay (east bay) and the oil recovery sump (ORS) of the NAPIS were emptied. We are now operating using the west bay. Cleaning of the east bay and ORS has been completed and SWT will come out to Giant to remove the internal equipment in the east bay. The east bay and ORS will then be coated with the flexible impervious coating that was also used in the west bay. After the bay has been coated with the liner, SWT will come out to Giant for the fabrication of the SS liner in the east bay and ORS. SWT expects that work to remove internals from the east bay may commence during the week of January 7, 2008.

Giant considers that the leakage from the NAPIS has been eliminated as of November 27, 2007 because the west bay has been repaired and the east bay and ORS were emptied and cleaned, hence there is no longer the hydraulic head needed to push waste water into the ground.



Giant expects that repairs to the east bay and ORS can be completed by May 2008.

New Monitoring Wells at NAPIS

Kleinfelder will put in new wells to replace the wells they had placed there this spring. We anticipate the wells can be installed by mid March. The wells placement will need to be carefully coordinated so as not to interfere with the work on the east bay and ORS. On behalf of Giant, Kleinfelder has prepared an extension request letter that was submitted to NMED and OCD by Kleinfelder on December 12, 2007.

Stormwater Engineering Design Plan

Tetrattech (formerly Vector Arizona) has prepared an engineering design for the stormwater management system that Giant will implement to replace the Old API Separator (OAPIS). The stormwater design involves the use of the two large tanks located by the 90-day storage pad. Stormwater from the process area will be piped down to the two tanks for temporary storage. The accumulated stormwater will be pumped from the tanks at a controlled rate over to the NAPIS for separation and thence to the benzene strippers for removal of benzene. The piping has been designed such that untreated process waste water can be diverted to the two large tanks for temporary storage in the event of NAPIS malfunction. The two tanks are already provided with secondary containment a high berm. The berm was reinforced and heightened in the summer of 2007.

The Tetrattech design will be provided by Giant to NMED and OCD prior to the December 31, 2007 deadline. Giant expects that the construction can commence in mid 2008.

Treatment System Study and Design

Giant is conducting a pilot plant to evaluate the effectiveness of the *activated sludge* treatment process as an alternative to the aeration lagoons. Activated sludge is a commonly used treatment method for refinery waste water in refineries worldwide. It is one of the aggressive biological treatment methods listed in 40 CFR 261.31 as not contributing to the formation of F037 and F038 listed classifications of sludges. In the activated sludge method, bacteria and higher microbial life forms are cultivated in waste water in tanks. Multiple tanks are used in which the sludge is recycled. Microbial growth in the sludge increases as the sludge is recycled. The recycling of the sludge increases the retention time and availability for the bacteria to degrade toxic organic molecules. Through bacterial action in the sludge, complex organic molecules are degraded and broken down into smaller, less toxic, molecules. Ring type molecules such as naphthalenes and phenols which are typically highly resistant to degradation are amenable to degradation in the activated sludge process due to the greater retention time afforded by the recycling of the sludge. As an enhancement to the activated sludge process, Giant is evaluating the PAC process in which activated carbon or zeolite is added to the tanks. The carbon can absorb organics but the main benefit is the huge surface area the carbon and zeolite particles provide for growth of bacterial colonies and other microbes.

The sanitary waste water from the Pilot Travel Center will be treated along with the refinery process waste water in the activated sludge process. The PTC waste water will provide the nutrients (phosphates, potassium, nitrogen, minerals and salts) that the microbes need for growth.

A membrane based bio-reactor ultrafiltration unit will also be evaluated as a tail end treatment as an alternative to a conventional clarifier. If the bio-reactor ultrafiltration unit proves to be effective in the piloting, Giant will strongly consider its use in a full scale system as it will virtually eliminate the carryover passage of any oil into the first evaporation pond.

Pilot plant data will be used in the design of a full scale activated sludge process that will replace the two aeration lagoons. Results of the activated sludge waste water pilot plant treatment study and the final WWTP design will be provided to NMED and OCD by the June 6, 2008 deadline.

The Giant Gallup Refinery's waste water consultant, Hubble, Roth & Clark, Inc. has prepared a short letter describing the activated sludge process. It is attached to this email for your review.

Fuel Oil Loading Rack Secondary Containment Enhancement

Giant has completed installation of concrete secondary containment on one side of the fuel oil loading rack. Construction diagrams of the fuel oil loading rack secondary containment design were provided to OCD and NMED during the meeting at OCD last July 30. A recovery sump was constructed provided with secondary containment and a leak detection stand pipe. The sump including the secondary containment and leak detection pipe is entirely fabricated from stainless steel. Pictures are provided of the work completed to date. Giant expects the other side of the rack will be completed before the end of the year.

RR Rack Fan-out and Trench (SWMU 8)

Trihydro is conducting additional investigation in this area during the week of December 17, 2007. A status report was submitted to NMED and OCD last month.

Crude Oil Tanks 101 and 102 Investigation

Trihydro conducted a ground conductivity study (EM-31) of the Tank 101 and Tank 102 area during the summer of 2007. Trihydro is preparing a status report on the results of the EM-31 study. Trihydro expects the report will be ready for submittal to NMED and OCD before the end of 2007.