

**Navy Closure Task Force –Red Hill  
Tank Cleaning Verification Plan  
January 10, 2024**

**Introduction:**

The Navy Closure Task Force – Red Hill (NCTF- RH) is submitting this proposed tank cleaning verification plan in response to General Comment No. 1 in the Hawaii Department of Health (DOH) letter dated November 15, 2023. NCTF-RH is requesting concurrence from DOH and the U.S. Environmental Protection Agency (EPA) to proceed with this tank cleaning verification plan no later than January 19, 2024.

Due to the absence of prescribed tank cleaning standards in both EPA and DOH regulations, NCTF-RH is proposing to use a standard of cleanliness that, after washing, rinsing, and drying each tank using forced ventilation, results in the removal of product, vapor, sludge, or residual from the interior tank surfaces (including piping and appurtenances). This will result in a tank that is free from fuel residue and foreign matter that will effectively eliminate further risk to the environment and public health.

**Tank Cleaning Quality Verification Methods:**

Verification of tank cleaning quality will be accomplished using the following process.

**Step 1 - Gas Free Tank Certification:** Gas free certification is the means by which APTIM will confirm harmful vapors are no longer present inside a tank. As part of APTIM’s quality control (QC) program, APTIM will be responsible for using an industrial hygienist/marine chemist will certify the tank is gas free and suitable for personnel occupancy. As part of the NCTF-RH quality assurance (QA) program, NCTF-RH will ensure this procedure is completed properly and the results documented. The NCTF-RH quality validation (QV) program will independently review documents to confirm work has been successfully completed and documented before forwarding documentation to DOH and EPA for their records. APTIM will be responsible for ensuring each tank is safe for personnel occupancy prior to personnel entry throughout the cleaning process.

**Step 2 – Water beading inspection:** Excessive water beading is indicative of the presence of residual fuel residue on the interior surface of the tank. During tank cleaning operations, APTIM’s QC program will be responsible for ensuring product, sludge and residual is removed from the interior surfaces of each tank. The primary method of confirming residue has been removed is to visually confirm there is not an excessive amount of water beading on the surface.

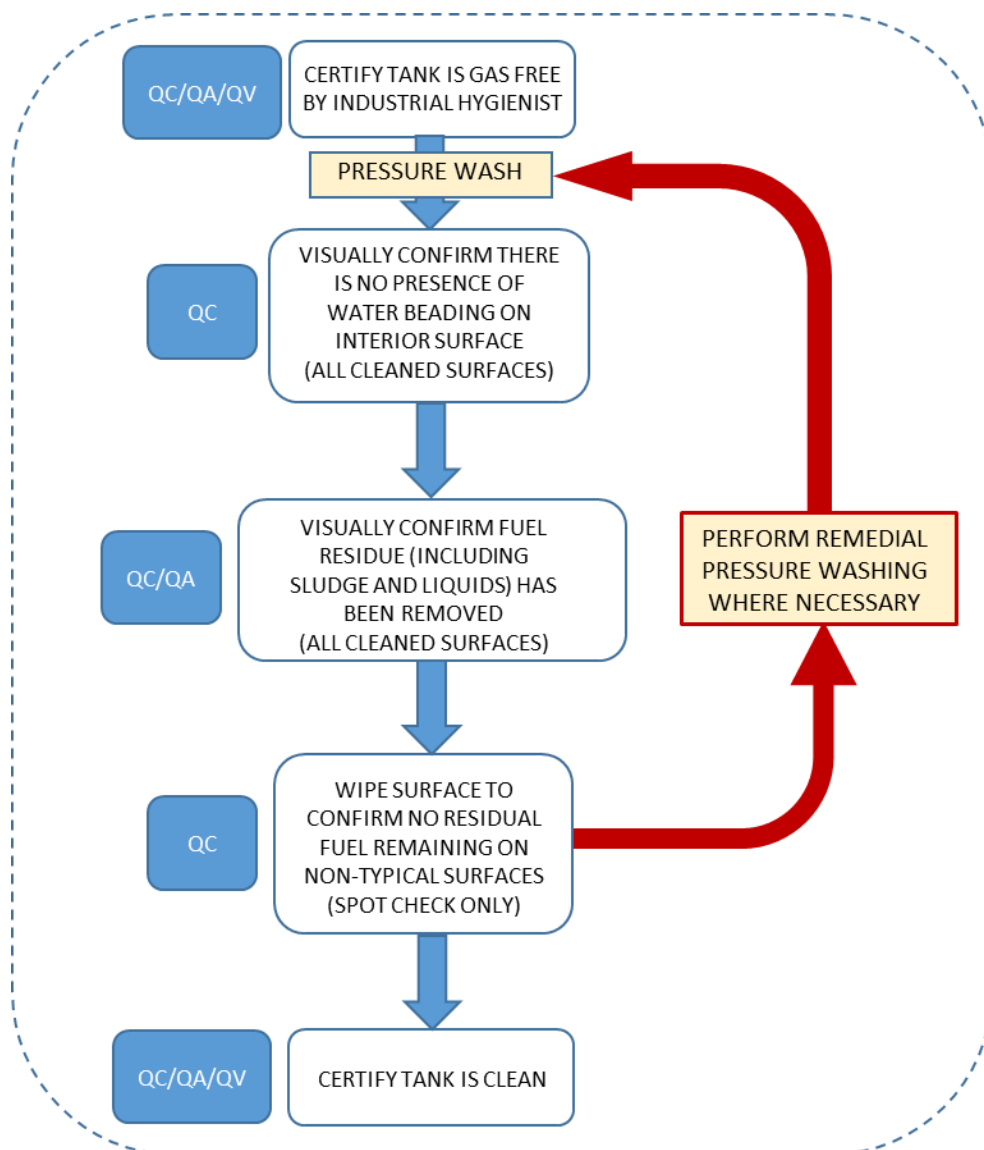
**Step 3 – Lack of presence of product and sludge:** During tank cleaning operations, APTIM QC will be responsible for confirming product and sludge has been removed from inside the tank. APTIM will visually confirm the product and sludge has been removed from the interior surface of each tank. Additionally, once the tank is dry, NCTF-RH QA will inspect the inside of each tank to confirm APTIM has successfully removed all product and sludge. NCTF-RH QV will be

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responsible for reviewing plate layout diagrams of the interior of each tank showing the date each panel was cleaned and rinsed and confirming surfaces have been cleaned and rinsed before forwarding documentation to EPA and DOH for review and concurrence.

Step 4 – APTIM’s QC program will be responsible for conducting simple go-no go spot check wipe tests (typically using only a cloth or glove) on areas inside the tank that are hard to inspect visually to confirm product and sludge has been thoroughly removed. The surface wipe test is intended to be a simple field inspection test to spot check locations to confirm there is no remaining product or sludge. The surface wipe test is only intended to be applied in areas with limited visibility such as weld beads and structural members inside the tank.

The following flow chart summarizes the proposed tank cleaning verification process.



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The cleaning verification processes, with the exception of the surface wipe test will be conducted throughout the interior surface of the tank to confirm product, sludge and residue has been removed.

**Tank Cleaning Quality Verification Tiers:**

Four independent tiers will be able to verify tank cleanliness quality. In addition to the final inspection by EPA and DOH, the quality of the tank cleaning will be validated by three independent entities throughout the tank cleaning process for each tank.

1. Initially, as pressure washing proceeds, the tank cleaning contractor, APTIM, will be responsible for executing QC over their tank cleaning operations. The QC program will be continuously executed throughout the duration of the tank cleaning process and APTIM will be responsible for removing product, sludge and residue from the interior surface of each tank.
2. Secondly, the NCTF-RH will be responsible for the QA confirming the contractor's QC. NCTF-RH QA will be responsible for inspecting all of the cleaning work completed by APTIM to confirm each tank is free from product, sludge and residue. QA will occur continuously throughout the tank cleaning process. Additionally, NCTF-RH will conduct a final inspection from inside the suspended scaffolding to confirm interior tank surfaces are free from product, sludge and residue.
3. Thirdly, NCTF-RH will contract with an independent third party contractor to provide QV to confirm the interior of each tank has been adequately cleaned. The QV process will be executed in a similar manner as currently executed by the Joint Task Force – Red Hill (JTF-RH). The third party QV contractor will visually inspect the interior of the tank to confirm interior tank surfaces are free from product, sludge and residue. If necessary, pressure washing will be repeated until QC, QA, and QV concur interior tank surfaces are free from product, sludge and residue.
4. Finally, both DOH and EPA will have the opportunity to inspect the interior surfaces of each tank (by physically inspecting the interior surfaces or reviewing video inspections of the interior surfaces) to confirm interior tank surfaces are free from product, sludge and residue. NCTF-RH would request this final inspection be completed as quickly as possible and a copy of the quality validation report will be submitted to both DOH and EPA for review and concurrence.

The NCTF will seek a regulatory decision on tank cleanliness immediately following completion of any DOH and EPA final inspections prior to removing the booms and baskets from each tank. In order to expeditiously clean all tanks in the shortest amount of time practical and reduce risk to the environment and public health as quickly as possible, the NCTF will provide final inspection reports immediately following completion of the QV process for each tank and quickly present results for regulatory concurrence.

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**Tank Cleaning Verification Documentation:**

For each tank and sump, QC, QA, and QV will confirm and document each of the following six cleaning activities as complete:

1. Sludge has been completely removed from the bottom of the tank.
2. Tank atmosphere is suitable for personnel entry without respiratory gear as certified by a marine chemist/industrial hygienist.
3. The interior surface of each tank has been pressure washed to maximum extent practicable with max 3% Simple Green solution.
4. The interior surface of each tank has been rinsed with clean water using a pressure washer to remove any remaining Simple Green residue.
5. Forced air ventilation has been utilized to dry the interior of each tank.

Documentation for Items 1, 3 and 4 above will include plate layout diagrams of the interior of each tank showing the date each panel was cleaned and rinsed as shown in Appendix A of APTIM's work plan. This work plan was included as Attachment 4B of the NCTF-RH's response to comments to DOH letter dated November 15, 2023.

Documentation for Item 2 will consist of the initial gas free certification for each tank.

Documentation for Item 5 will consist of the final inspection review completed by NCTF-RH staff (and EPA and DOH if desired).

**Summary:**

After researching EPA and DOH regulations, NCTF-RH has been unable to identify any EPA and DOH standards for tank cleaning. NCTF-RH is confident the above process can be used effectively to confirm the twenty Red Hill underground storage tanks, the four surge tanks and the two sumps are free from product, sludge and residue and pose no further risk to the environment or public health.