U.S. Department
of Transportation

1200 New Jersey Avenue, SE
Washington, DC 20590

**Pipeline and Hazardous
Materials Safety Administration**

January 10, 2022

Mr. Matthew Williamson
Manatt, Phelps, and Phillips, LLP
695 Town Center Drive, 14th Floor
Costa Mesa, CA 92626

Dear Mr. Williamson:

In an October 23, 2020, letter to the Pipeline and Hazardous Materials Safety Administration (PHMSA), you, on behalf of Chemoil Terminals Corporation and its affiliates (Chemoil), requested an interpretation of 49 Code of Federal Regulations (CFR) Part 195. Specifically, Chemoil requests an interpretation pertaining to the definition of the term "buried" in 49 CFR § 195.553, and confirmation that certain breakout tanks located at Chemoil's storage facility in Carson, California are not considered "buried" and, therefore, do not require cathodic protection (CP) pursuant to 49 CFR § 195.563(a).

In the letter, Chemoil states that it has five breakout tanks constructed between 2002 and 2008, each with a 4-inch fiber mesh concrete pad, 80 mil high density polyethylene (HDPE) liner (sloped to provide drainage to monitoring wells), and a sealed ring wall. Chemoil also states that each tank design considered corrosion control in accordance with API Recommended Practice (RP) 651 and API Standard 653.[1] Chemoil asserts that because these tanks are not in contact with the soil, they do not meet the definition of "buried" under § 195.553 and, therefore, do not require CP under § 195.563(a).

Section 195.563(a) of the Federal Pipeline Safety Regulations requires each buried or submerged pipeline that is constructed, relocated, replaced, or otherwise changed after the applicable date in § 195.401(c) to have CP. The term "pipeline" expressly includes breakout tanks under § 195.2. Section 195.553 defines "buried" as "covered or in contact with the soil." Accordingly, only breakout tanks in contact with soil would be required to have CP under the regulations. Section 195.583(a) of the regulations requires that each onshore pipeline that is exposed to the atmosphere must be inspected for evidence of atmospheric corrosion at least once every three years. If a breakout tank is not in contact with soil, operators must consider whether the tank is

[1] PHMSA notes that the designs submitted with this interpretation request may not be in compliance with API RP 651, 3rd edition, 2007, where Section 6 – Methods of Cathodic Protection for Corrosion Control and Section 7 – Design of Cathodic Protection Systems, states that no cathodic protection systems are effective in protecting a HDPE liner if the HDPE liner does not completely and effectively protect the interface areas. API RP 651 allows for usage of HDPE liners when the liners eliminate contact with soil and do not allow moisture to reach the external bottom of the tank. API RP 651 describes a continuous concrete pad in Section 5.3.3.

exposed to the atmosphere and, if so, comply with subpart H of Part 195 to monitor and remediate atmospheric corrosion.

Chemoil asserts that the entire footprint of each breakout tank is separated from the soil by a fiber mesh concrete pad, a HDPE liner, and a reinforced ring wall and sump foundation and, therefore, there is no path for electrical current to travel from the soil to the tank. The designs submitted with Chemoil's letter, however, show the tank HDPE liner does not extend past the edges of the tank and stops where the concrete pad and reinforced ring wall meet (interface area). The drawings submitted by Chemoil do not show that the HDPE liner goes past this interface to ensure that the tank is not in contact with soil or that it eliminates moisture from entering the interface area. Actual inspection results provided by Chemoil show that at least one breakout tank developed corrosion on the bottom of the tank, indicating moisture was able to permeate either the concrete floor, the interface area, or from outside the reinforced ring wall. This moisture penetration created a corrosive environment on the bottom of the breakout tank. Based on the submission, it is unclear to PHMSA whether the tank is in contact with the soil since it appears that there is an electrolytic path to the tank bottom. Please see the footnote below for applicable sections of API RP 651.[2]

If Chemoil's tanks are in fact not in contact with any types of soil, they would not be considered "buried" under the regulations. However, if the tanks are not in contact with soil and are exposed to the atmosphere, then Chemoil would be required to monitor the tanks for atmospheric corrosion, pursuant to § 195.583. It appears, from the information provided, that there is an electrolytic path to the tank floor bottoms, so the tanks may be in contact with soil by that path, or exposed to the atmosphere at the tank bottom interface area, which would require compliance with either §§ 195.563 and 195.565, or § 195.583, respectively.

As mentioned above, your inspection results indicate that at least one of the breakout tanks described has developed corrosion on the bottom of the tank. PHMSA notes that Chemoil is required to take corrective actions to remedy the corrosion in accordance with §§ 195.401(b), 195.573(e) and 195.583(c).

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[2] API RP 651, Paragraph 5.3.3.3 gives an operator the following information concerning installing a concrete pad under an aboveground storage tank:

Due to numerous complex factors that can affect the corrosion of a tank bottom underside in the presence of concrete, prediction of the propensity of corrosion in this case is extremely difficult. Thus, care should be observed with tanks on concrete pads since cathodic protection most likely will not help reduce any corrosion that might occur.

Also, API RP 651, Paragraph 5.3.3.2 states that "[i]n situations where water may condense on the tank bottom or water is retained above the concrete pad, accelerated corrosion may occur."

PHMSA provides written clarifications of the Federal Pipeline Safety Regulations (49 CFR Parts 190-199) in the form of interpretation letters. These letters reflect the agency's current application of the regulations to the specific facts presented by the person requesting the clarification. Interpretations do not create legally enforceable rights or obligations and are only provided to help the public understand how to comply with the regulations.

If we can be of further assistance, please contact Tewabe Asebe at 202-366-5523.

Sincerely,

JOHN A GALE

Digitally signed by JOHN A GALE
Date: 2022.01.10 08:08:45 -05'00'

John A. Gale
Director, Office of Standards
and Rulemaking

manatt

Matthew Williamson
Manatt, Phelps & Phillips, LLP
Direct Dial: (714) 371-2538
MWilliamson@manatt.com

October 23, 2020

Client-Matter: 66255-030

VIA FEDEX

Mr. John A. Gale
Director, Office of Standards and Rulemaking
Office of Pipeline Safety (PHP-30)
Pipeline and Hazardous Materials Safety Administration
U.S. Department of Transportation
1200 New Jersey Avenue, S.E.
Washington, D.C. 20590-0001

Re: Request for Written Regulatory Interpretation

Dear Mr. Gale:

I am writing on behalf of Chemoil Terminals Corporation and its affiliates ("Chemoil") to request a written regulatory interpretation from the Pipeline and Hazardous Materials Safety Administration ("PHMSA"). Specifically, Chemoil is seeking an interpretation pertaining to the definition of the term "buried" at 49 C.F.R. § 195.553, and confirmation that certain breakout tanks located at Chemoil's storage facility in Carson, California are not "buried" under this interpretation and therefore do not require cathodic protection pursuant to 49 C.F.R. 195.563(a).[1]

49 C.F.R. § 195.553 defines the term "buried" to mean "covered or in contact with soil." The Final Rule establishing this definition stated the following: "**The definition of 'buried' reflects the common corrosion control practice of treating any portion of pipe in contact with the soil as if that portion were buried.**" Controlling Corrosion on Hazardous Liquid and Carbon Dioxide Pipelines, 66 Fed. Reg. 66995 (Dec. 27, 2001) (emphasis added).

At issue in this instance are five breakout tanks constructed in 2002 and 2008 with a 4-inch fiber mesh concrete pad, 80 mil HDPE liner (sloped to provide drainage to monitoring well), and sealed ring wall. The design of the tanks considered corrosion control in accordance with API Standards 651 and 653. This design was confirmed by William Johns, P.E., who reviewed the design of Chemoil's tanks and concluded the following:

[1] Pursuant to 49 C.F.R. § 195.563(a), cathodic protection is only required for a "buried or submerged pipeline", and the term "pipeline" expressly includes breakout tanks. *See* 49 C.F.R. § 195.2.

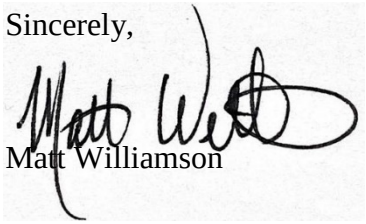
> At the time of construction of all the subject tanks, there was a general trend, particularly in the local California tank storage industry, to provide built-in secondary containment and leak detection into the foundation of new tanks. The Chemoil tanks were likewise constructed with a concrete subfloor and impermeable liner (See attached drawing SK-1 which depicts the key features of the design). . . All the tank foundations are basically the same. Key features include steel reinforced concrete ringwall and sump foundation, 80 mil HDPE liners, 4" fiber reinforced concrete slab deck, cone down to sump, leak detection pipe and inspection well, and double wall sump. . . **The entire tank footprint is separated from the subsoil by the liner, 4" deck and the Reinforced Ringwall and sump foundation**.

See **Exhibit A**, "Engineer's Opinion Foundation – Cathodic Protection Design Conformance of Breakout Tanks" (W. Johns, P.E., 2020) (emphasis added).

Chemoil requests an interpretation from PHMSA clarifying that where, as here, the tank footprint is not in contact with soil, such tanks do not meet the definition of "buried" under 49 C.F.R. § 195.553, and therefore do not require cathodic protection under 49 C.F.R. 195.563(a).

Please contact me at (714) 371-2538 or mwilliamson@manatt.com with any questions about this request for written interpretation. We look forward to receiving further guidance on this issue.

Sincerely,



Matt Williamson

326969247.2

Exhibit A

Engineer's Opinion
Foundation -Cathodic Protection
Design Conformance of Breakout Tanks

CHEMOIL TERMINALS
CARSON, CALIFORNIA

CHEMOIL

REGISTERED PROFESSIONAL ENGINEER
WILLIAM R. JOHNS
C-038292
Exp 3-31-21
CIVIL
STATE OF CALIFORNIA
7/24/20

Prepared by
William R. Johns, P.E.
California Civil Engineer
C038292

Utility Coordinating, Inc.
(714) 462-8413
UTILICOOR
UTILITY COORDINATING, INC

Introduction

Chemoil Terminals has been notified of violations of five Breakout Tanks as cited by the California Office of the State Fire Marshal Pipeline Division ("OSFM"). OSFM has stated that Chemoil must install retrofitted Cathodic Protection systems beneath the tank foundations for tanks, 100005, 100006, 20003, 50005, and 50006. Chemoil has challenged the requirement based on the existing foundation designs of all five tanks. This report identifies and clarifies the design features of the tanks. This report also discusses why the tank designs provide protection against shell bottom corrosion.

Reference Documents

Cited Reference Documents include the following:

- OSFM Notice of Probable Violations dated July 3, 2019
- Chemoil Response to OSFM Notice of Probable Violation dated August 30, 2019
- OSCFM Issuance of Final Order dated December 13, 2019
- OSFM Decision on Petition for Reconsideration dated April 13, 2020
- Original Construction Drawings (Tank & Refinery Services Co. -TARSCO) dated circa 2002 and 2007
- API 653 Inspection Report Tank 100006 dated September 20, 2019
- API 653 Inspection Report Tank 50006 dated June 25, 2020
- Farwest Letter

Relevant Codes and Standards

Based on the construction dates of the subject tanks, the following codes, standards, and industrial practices are applicable:

- 49 CFR Parts 195.563 and 195.565
- API 650, Welded Tanks for Oil Storage (10th and 11th Editions)
- API 653, Tank Inspection, Repair, Alteration, and Reconstruction (2nd and 3rd Edition)
- API 651, Cathodic Protection of Aboveground Petroleum Storage Tanks (3rd Edition)

OCFM Violation Claim - EN 19-014 and Discussion

In the Final Order *(Docket CA-2019013),* the OSFM found that Chemoil violated 49CFR195.563(a) by failing to provide an effective cathodic protection (CP) system to protect the soil side of the tank floor *(for the nine (9) breakout tanks)* in accordance with 49 CFR Part 195.595.

As presented in their letter dated August 30, 2019 and included as an Exhibit in the

Chemoil Response to OSFM Notice of Probable Violation dated August 30, 2019, Farwest Corrosion Control Company described the planned and implemented cathodic protection system incorporated in subject breakout tanks. To summarize this statement, the Chemoil tanks constructed in 2002 and 2007 were built with a foundation that isolated the tank from the soil by means of an impervious barrier (4-inch fiber mesh concrete pad and an 80 mil high density polyethylene (HDPE)). The resulting barrier precludes the use of an induced current cathodic system. However, the resulting cathodic system for the Chemoil tanks is an effective cathodic protection (CP) system because the tank bottoms are not on contact with the soil and the tank design is such that it should prevent the creation of a corrosion cell.

Tank Construction and Corrosion Protection System

Tank Foundation – At the time of construction of all the subject tanks, there was a general trend, particularly in the local California tank storage industry, to provide built-in secondary containment and leak detection into the foundation of new tanks. The Chemoil tanks were likewise constructed with a concrete subfloor and impermeable liner (See attached drawing SK-1 which depicts the key features of the design). The Chemoil foundations were built, accordingly, and they conformed to the requirements of API-650 Appendix I (Undertank Leak Detection and Subgrade Protection) and API 651 5.3. API 651 states *"A properly designed concrete tank cushion constructed on a stable, properly prepared subsoil may be effective in eliminating intrusion of groundwater, soil-side corrosion, and the need for cathodic protection"*.

The drawings for the subject tanks were reviewed for conformity to API standards and for applicability to incorporate additional CP measures. The findings are as follow:
All the tank foundations are basically the same. Key features include steel reinforced concrete ringwall and sump foundation, 80 mil HDPE liners, 4" fiber reinforced concrete slab deck, cone down to sump, leak detection pipe and inspection well, and double wall sump.

Details for the subgrade foundation are not provided, however, since there is no indication of tank subsidence, it can be concluded that the foundation preparation was appropriate. The 80 mil liner was installed on a sand protection bed and details show proper connection to the preconstructed ringwall and sump foundation.

The 4" thick fibermesh concrete mat was placed on top of the HDPE Liner using 3,000 psi concrete. Fibermesh is a fiberglass reinforcement that is mixed into the concrete and provided tensile strength for the concrete that prevents (temperature and shrinkage) cracking. The entire tank footprint is separated from the subsoil by the liner, 4" deck and the Reinforced Ringwall and sump foundation. There is no path for water or electrical current to travel from the soil to the tank To prevent the introduction of water with possible soil particulates from entering the space between the impermeable

liner and the tank bottom and creating an internal cathodic reaction, the gap between the bottom plate and the concrete ringwall needs to be sealed. The impermeable sealant should be monitored and maintained.

Corrosion Protection –The continuous concrete cushion foundation provided on the Chemoil tanks is an effective cathodic protection system to protect the tank from soil side corrosion. The impermeable barrier disconnects the electrolysis process and prevents the transmission of electrons through a continuous electrolyte (water) thereby preventing the tank bottom from becoming an anode. Following the guidance of API 651, the foundation designs had no additional CP systems. Additionally, API 651 states that "*cathodic protection most likely will not help reduce any corrosion that might occur*", therefore, installation of post-construction retrofit CP systems are not practical for "Continuous Concrete Cushion" foundations.

Secondary Containment/Leak Detection –The tank foundations are designed to prevent the escape of product into the ground and provide indication of a leak in the primary floor of the tank. The secondary containment barrier is a combination of the concrete slab and impermeable liner. The concrete layer is designed to contain and direct a leak from the tank to the double bottomed sump. The concrete has grooves leading to the sump. From the sump, a leak detection pipe flows down to a monitoring well outside of the tank shell. The well can be monitored for liquid or vapors to determine the presence or absence of leaked product.

Present Tank Condition and Cathodic System Improvements

Present Tank Condition –Two of the tanks, 100006 and 50006 have had recent API 653 Open Tank Inspections performed. The findings of the reports by DJA Inspection indicate the corrosion of the tank bottoms after 17 years and 12 years of service. The results are useful for identifying maintenance shortcomings and successes.

Tank 100006 Findings and Results – The bottom of Tank 100006 had significant pitting and bottom side corrosion. Based on the foundation design, the corrosion was beyond expectations. Further investigation indicated that the Tank dike area was often used for stormwater containment thereby allowing water to rise above the tank ringwall/chime. This practice allowed muddy water to fill the gap between the concrete slab and the tank bottom resulting in limited electrolysis.
As prevention to this corrosion, the following policy changes are required.

- Install and maintain a flexible sealant between the tank chime and the concrete ringwall
- Do not allow storm water to exceed the height of the ringwall at any time.

Tank 50006 Findings and Results – The bottom of Tank 50006 had virtually no bottom side corrosion. Based on the foundation design, this was expected

Engineer's Summary and Conclusion

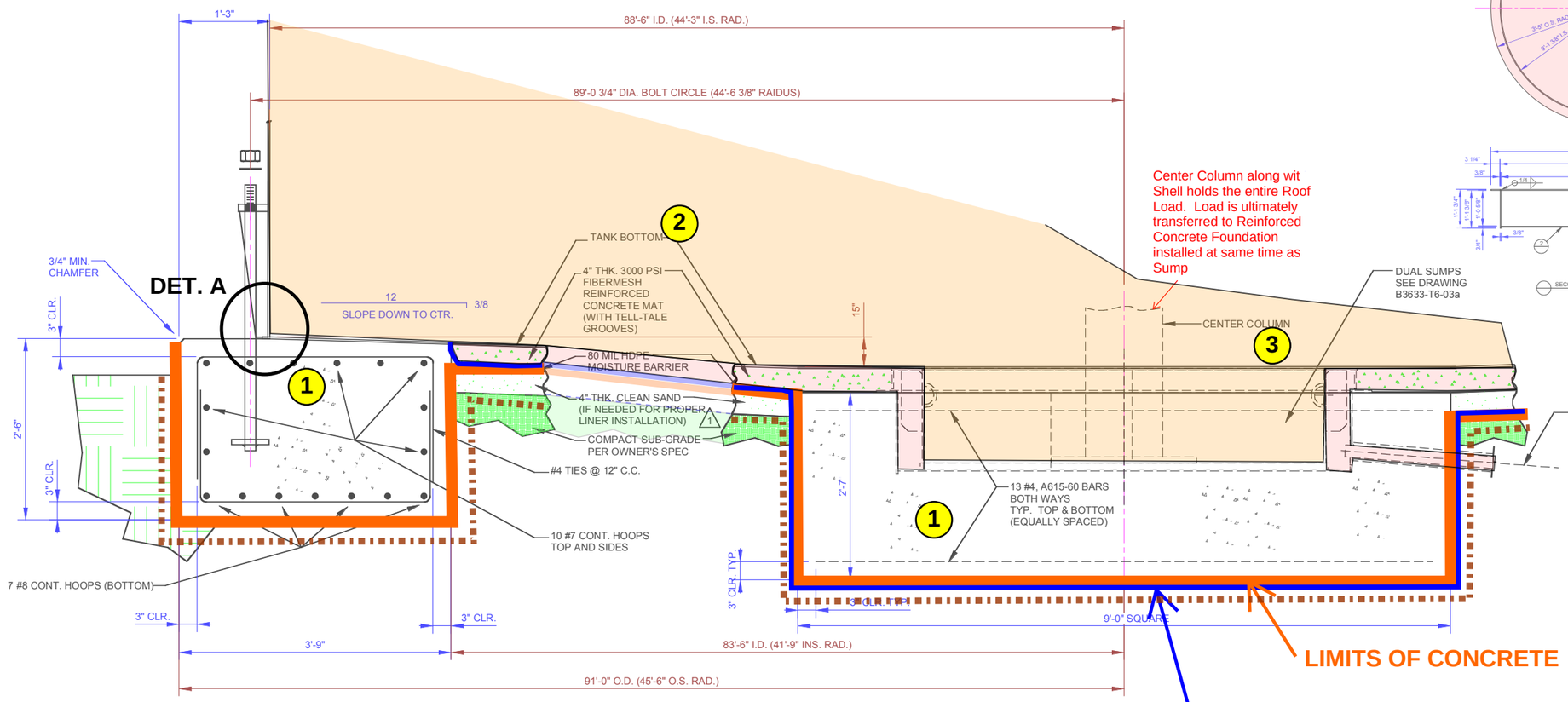
Based on review of the Tank design and construction documents along with the guidelines/requirements of the applicable API Standards, the tanks were built to acceptable standards and industry practices. The foundation designs were in excess of the basic requirements, and the use of the secondary containment/continuous concrete slab were a proactive measure to limit deterioration of the tank bottoms and prevent releases. The claim that Chemoil failed to provide an effective cathodic protection (CP) system to protect the soil side of the tank floor *(for the nine (9) breakout tanks)* in accordance with 49CFR195.595 is not valid for continuous concrete foundation tanks with properly designed features. Installation of retrofitted CP systems are not necessary and would be ineffective. It is recommended that Chemoil adheres closely with the requirements of API 653 and provide the recommended maintenance policies to prevent future flooding of the tank dike areas and proper maintenance of the ring wall and seal.

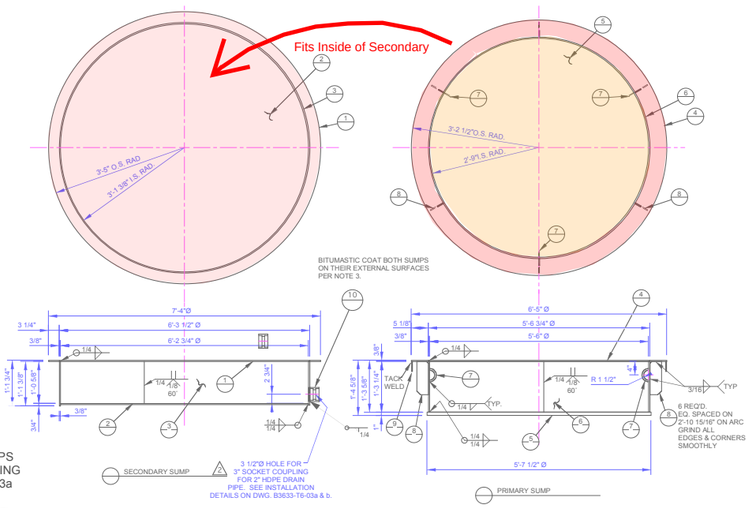
Engineer's Signature **Date** 7/24/20

About the Engineer

William Johns is a practicing Engineer in the State of California. He has over 40 years of experience in design, construction, and management of Civil projects with an emphasis on petroleum pipelines, tankage, and transportation systems. Mr. Johns holds a Bachelor of Science degree from the University of California, Berkeley, and is a licensed Civil Engineer in California. Mr. Johns has managed tank construction and repair projects for several oil companies throughout the southwest United States. Projects include double bottoms, drain-dry sumps, earthquake (elephant footing) repairs, and construction of 21 new tanks at the (KMEP) GATX Terminal. Additional related coursework and certification includes:

- API 650 Course
- API 653 Course and updates
- TEAM (Formerly Tank Consultants, Inc.) Tank Design and Inspection
- Numerous ILTA (Independent Liquid Terminals Association) Training Courses





SUMP CONSTRUCTION

CONSTRUCTION PHASING

1. COMPLETED SUMP (INSIDE AND SECONDARY SHELLS) ARE CAST INPLACE AFTER COMPLETION OF SOIL PREPARATION. RING WALL IS CONSTRUCTED AT SAME TIME.

2. AFTER COMPLETION OF SUMP AND RINGWALL, THE HDPE LINER IS INSTALLED ON SAND BED. CONSTRUCTION OF 4" FIBER REINFORCED PAD IS THEN PLACED

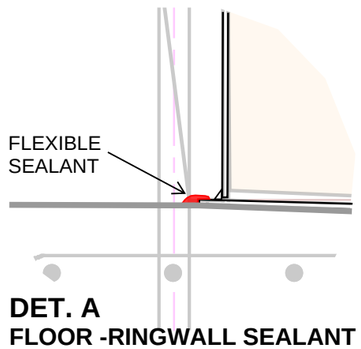
3. TANK BOTTOM AND CENTER COLUMN IS CONSTRUCTED ON FINISHED SLAB FOUNDATION

PRODUCT ZONE

SECONDARY CONTAINED ZONE

CONCRETE

SOIL - FOUNDATION INTERFACE (SOIL ISOLATED BY HDPE AND CONCRETE)



DET. A
FLOOR -RINGWALL SEALANT

CHEMOIL
CHEMOIL CARSON TERMINAL

TANK FOUNDATION EVALUATION

UTILICOOR
UTILITY COORDINATING, INC.

SCALE _____ DATE 7/6/20
DR. _____ CH. WRJ DR. APP WRJ

SCALE	DRAWING No.	SHT.	REV.
	SK-01		

Report Addendum 1

Subsequent to the completion of the Engineer's Opinion Report titled **Foundation - Cathodic Protection Design Conformance of Breakout Tanks** dated July 24, 2020, three additional API 653 Inspection Reports were performed on the subject Breakout Tanks along with one additional (non-breakout) tank at the Chemoil Carson Facility. The Open Tank inspections had full MFE (Magnetic Flux Exclusion) surveys performed on each tank bottom to determine metal loss.

In addition to the API 653 inspections of Tanks **100006** and **50006** cited in the Engineer's Opinion Report, the following tanks were inspected in accordance with API 653.

- Tank **20003**, July 2020
- Tank **20002**, August 2020
- Tank **100005**, September 2020
- Tank **50005**, October 2020

DJA Inspection performed the tank inspections and prepared the reports. The bottoms of Tanks 100005, 50005, 50006, 20003, and 20002 were found to have virtually no bottom side corrosion. Each DJA Inspection reports stated *"The MFE scan found no indications of soil side corrosion"*. The results of these additional inspections confirm that the concrete base with an impermeable liner underneath resists underside corrosion and no additional cathodic protection is required.

W. R. J.

Engineer's Signature

Date October 22, 2020

10-22-20

CHEMOIL

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UTILITY COORDINATING, INC