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Spill Prevention Control and Countermeasures Plan



Ghent Generating Station
Kentucky Utilities Company
Ghent, Carroll County, Kentucky

August 2020
Technical Amendment June 2021
Technical Amendment December 2022

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SPILL PREVENTION CONTROL AND COUNTERMEASURES PLAN

SYNOPSIS

The Ghent Generating Station has a capacity to store more than 1,320 gallons of oil in storage/containers/equipment and is required by 40 CFR 112 to maintain a SPCC plan to prevent oil discharges to navigable waters including the Ohio River adjacent the plant. A Facility Response Plan is not required for the plant. The site documents periodic visual inspections of the facilities, storage tanks, containment, rainwater accumulations runoff and certified integrity inspections of tanks. Oil spill prevention employee training sessions are conducted annually; new oil-handling employees also receive similar training and the site SPCC plan is reviewed.

The facility is staffed and security-monitored 24 hours/day for 7 days/week.

Ghent Generating Station
9485 U.S. Hwy. 42E
Ghent, KY 41045
Phone: (502) 347-4126
Longitude: -85.034222
Latitude: 38.748778
Ohio River Milepoint: 538

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1.0 Introduction

1.1 Plan Purpose

This Spill Prevention, Control and Countermeasures (SPCC) Plan describes measures implemented to prevent oil discharges from occurring, and if a response were ever required, to prepare responders to be safe, effective, and timely to mitigate the impacts of a discharge. Specifically, the SPCC Plan is written to help prevent the occurrence of oil spills in harmful quantities from the Ghent Generating Station into the environment which may:

- Violate applicable water quality standards, or cause a film or sheen upon, or discoloration of, the surface of the water or adjoining shorelines, or
- Cause a sludge or emulsion to be deposited beneath the surface of the water or upon adjoining shorelines

This plan has been prepared in accordance with good engineering practices to meet the requirements of Title 40, Code of Federal Regulations, Part 112 (40 CFR Part 112), and supersedes any previous plan. Additionally, this SPCC Plan is:

- used as a reference for oil storage information and testing records;
- a tool to communicate practices on preventing and responding to discharges with employees;
- a guide to Station inspections;
- a resource during emergency responses.

The Ghent Generating Station must maintain and implement this SPCC plan in order to comply with the SPCC rule; this plan provides guidance to:

- Complete site inspections as outlined in the “Inspections, Tests and Records” section of this Plan.
- Perform preventive maintenance on equipment, secondary containment systems, and discharge prevention systems described in this Plan as needed to keep them in proper operating condition.
- Conduct annual employee training and discharge prevention briefings as outlined in the “Personnel, Training and Discharge Prevention Procedures” section of this Plan and incorporate that documentation into the Station’s personnel training file.
- If either of the following occur, submit the SPCC Plan to the EPA Region 4 Regional Administrator (RA) and the Kentucky Department of Environmental Protection (KDEP), within 60 days along with other information detailed in the Plan:

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  - The Station discharges more than 1,000-gallons of oil into or upon the navigable waters of the U.S. or adjoining shorelines in a single spill event; or
  - The Station discharges oil to navigable waters in quantity greater than 42-gallons in each of two spill events within any 12-month period.

- Amend the SPCC Plan within six (6) months whenever there is a change in Station design, construction, operation or maintenance that materially affects the Station's spill potential. The revised Plan must be recertified by a Professional Engineer (PE).
- Update the Plan to reflect any "administrative changes" that are applicable, such as names, contact information, name of spill response or cleanup contractors.
- Review the SPCC Plan at least once every five (5) years and evaluate new or more effective prevention and control technology. The Ghent Generating Station ***is not*** considered a Qualified Facility. Plan amendments, other than administrative changes, must be recertified by a PE as referenced in **Section 3** of this Plan.
- Identify spill prevention, control or countermeasures that are not fully operational at the time of the certification of this plan. Section 3.9 of this Plan identifies such elements and specifies an implementation schedule for these required compliance measures.

KU has determined that this Station does not pose a risk of substantial harm under 40 CFR part 112, as recorded in the "Substantial Harm Determination" included in **Appendix A** of this Plan.

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1.2 Regulatory Background

The SPCC Plan regulations, Part 112 of 40 CFR, were first published in the Federal Register (FR) on December 11, 1973. On July 17, 2002, the United States Environmental Protection Agency (USEPA) published a final rule that amended the SPCC regulations (67 FR 47042), which became effective on August 16, 2002. The final rule included compliance dates in §112.3 for preparing, amending and implementing SPCC Plans.

The EPA Administrator signed additional amendments and/or compliance deadline extensions to the SPCC rule in January 2003, April 2003, August 2004, April 2006, May 2007, November 2008, June 2009 and July 2010.

1.3 Definitions and Acronyms

In December 2013, EPA published updates to the "*SPCC Guidance for Regional Inspectors*." This document provides discussion, interpretation and examples for implementing SPCC requirements at several different type facilities. This guidance document has been used to provide insight into compliance with the provisions of the SPCC rule. The following SPCC Plan was prepared based on the following understandings and definitions:

Aboveground Storage Tank (AST) - A tank that is wholly aboveground or with any portion of the tank visible at the surface. Partially buried, bunkered, or mounded tanks are all considered to be aboveground tanks as are tanks in subterranean vaults.

Active Measures of Secondary Containment –Those measures that require deployment or other specific action by the owner or operator. The measures may be deployed either before an activity involving the handling of oil starts, or in reaction to a discharge so long as the active measure is designed to prevent an oil spill from reaching navigable water. The use of a spill kit is an example of an active measure of secondary containment. Also see the definition of *Passive Measures of Secondary Containment.*

American Petroleum Institute (API) – A trade association that established generally accepted practices for the inspection of various types of products. For example, API Standard 653 provides guidance on Tank Inspection, Repair, Alteration and Reconstruction.

Authorized Station Representative – A person with fiduciary responsibilities that has the authority to commit the necessary resources to implement the Plan.

Berm - Soil, concrete, or other constructed embankment that is commonly employed for secondary containment or drainage diversion at oil storage or related operations.

Brittle Fracture - Brittle fracture is a type of structural failure in larger field-constructed aboveground steel tanks characterized by rapid crack formation that can cause sudden tank

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failure. This, along with catastrophic failures such as those resulting from lightning strikes, seismic activity, or other such events, can cause the entire contents of a container to be discharged to the environment. A review of past failures due to brittle fracture shows that they typically occur (1) during an initial hydrotest, (2) on the first filling in cold weather, (3) after a change to lower temperature service, or (4) after a repair/modification. Storage tanks with a maximum shell thickness of one-half inch or less are not generally considered at risk for brittle fracture.

Bulk Storage Tank(s) / Container(s) – means any container used to store oil. These containers are used for the storage of oil prior to use, while being used, or prior to further distribution in commerce. Oil-filled electrical, operating, or manufacturing equipment is not a bulk storage container. **Note:** *SPCC rules apply to all containers with a capacity equal to or greater than 55-gallons. Bulk storage tank(s) / container(s) require specifically-sized secondary containment.*

Category 1 Tank – A bulk storage tank has specifically sized secondary containment incorporating a continuous release detection method.

Containment or Diversionary Structure - Structure or equipment that prevents oil discharges from reaching navigable water. Containment or diversionary structures include dikes, berms, retaining walls, curbing, culverting, weirs, booms, spill diversion ponds, retention ponds, sorbent materials and sumps.

Continuous Release Detection Method (CRDM) – A means of detecting a release of liquid through inherent design. CRDM is passive because it does not require sensors or power to operate. Liquid releases are visually detected by facility operators. The system shall be designed in accordance with good engineering practice. Several acceptable and commonly used CRDM systems are as follows: 1) A release prevention barrier (a containment barrier that is sufficiently impervious to the liquid being stored and is installed under the bulk storage container and will divert leaks toward the containment perimeter where they can be visually detected; and/or 2) double-walled tanks, double-bottom tanks; and/or 3) elevated bulk storage tanks within a specifically sized containment area.

Designated Person Accountable for Oil Spill Prevention – Person responsible for ensuring that Station staff has received initial and on-going training in spill prevention. This person is also responsible for maintaining records regarding staff training, tank inspection and release reports.

Discharge - Any spilling, leaking, pumping, pouring, emitting, emptying, or dumping.

Environmental Affairs (EA) – KU corporate staff that provide support to KU Station personnel.

Environmental Equivalence (EE) – A deviation from the specific requirements of the SPCC rule that incorporates the use of “alternative measures,” so long as those performance-based alternative measures provide equivalent environmental protection.

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Emergency Response Coordinator – The designated person that employees would contact in the event of a spill or release. This person has at least the minimum required training to implement the SPCC Plan. Implementation of the Plan may include internal response or contacting an external response company to address the release.

General Secondary Containment – Containment and/or a diversionary structure or equipment to prevent a discharge from entering navigable water. General secondary containment is required by paragraph 112.7(c) and can include, but is not limited to: dikes, berms, curbing, gutters, weirs, booms, spill diversion ponds, retention ponds and sorbent materials.

Inspection - Pursuant to Steel Tank Institute (STI) SP-001, the use of the word inspection in this Plan implies the recording of observations related to an inspected item. Inspection should not be confused with the terminology “testing”.

Level Gauges and Alarms - Any engineering control that indicates the level of liquid inside the tank and that is installed on tanks to prevent overfilling.

Loading Area – Any area of a facility where oil is transferred between bulk storage containers and tank trucks or railcars such as where a pipe stand connects to a tank car or tank truck via a flexible hose. These areas are subject to the general secondary containment requirements in 112.7(c).

Loading/Unloading Rack – Fixed structure (such as a platform or gangway) necessary for loading or unloading a tank truck or tank car, which is located at a facility subject to the requirements of 40 CFR Part 112. A loading/unloading rack includes a loading or unloading arm and may include any combination of the following: piping assemblages, valves, pumps, shut-off devices, overfill sensors, or personal safety devices.

Management Approval – Approval by a person in a supervisory role who has the ability to commit manpower and resources to implement the SPCC Plan.

Mobile/Portable Container – A drum, skid tank or tote that can be moved (i.e., not permanently fixed at one location).

Mobile Refueler – A vehicle, self-propelled or towed, which contains a bulk storage container that is designed or used solely to store and transport fuel for transfer into or from an aircraft, motor vehicle, locomotive, vessel, ground surface equipment, or other oil storage container. The 2008 regulation exempts mobile refuelers from sized secondary containment requirements. In the final SPCC rules, these vehicles are required to comply with the general (not specifically-sized) containment requirements.

Navigable Waters - The term navigable waters of the United States or adjoining shorelines stems from the Clean Water Act and is cited in the 40 CFR 112.1 SPCC applicability description but has been heavily politicized and litigated. The definition of navigable waters was revised in the “The Navigable Waters Protection Rule: Definition of “Waters of the United States”

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published April 21, 2020 (85 FR 22250). Refer to 40 CFR 120.2 and related court findings for current interpretations.

Oil - means oil of any kind or in any form, including, but not limited to: fats, oils, or greases of animal, fish, or marine mammal origin; vegetable oils, including oils from seeds, nuts, fruits, or kernels; and, other oils and greases, including petroleum, fuel oil, sludge, synthetic oils, mineral oils, oil refuse, or oil mixed with wastes other than dredged spoil.

Oil Filled Electrical Equipment – is a subset of Oil Filled Operational Equipment. Oil Filled Electrical Equipment includes, but is not limited to transformers, circuit breakers, and switches. Oil Filled Electrical Equipment requires *general* secondary containment for all non-qualified facilities.

Oil Filled Operational Equipment – means equipment that includes a reservoir in which the oil is present solely to support the function of the apparatus or the device. Oil-filled operational equipment is not considered bulk storage and does not include oil filled manufacturing equipment (flowthrough process). Examples of oil-filled operational equipment include, but are not limited to, hydraulic systems, lubricating systems (e.g., those for pumps, compressors and other rotating equipment, including pumpjack lubrication systems), gear boxes, machining coolant systems, heat transfer systems, transformers, circuit breakers, electrical switches, and other systems containing oil solely to enable the operation of the device. **Note:** *Oil-filled operational equipment requires general secondary containment for all non-qualified facilities.*

Passive Measures of Secondary Containment –Permanent installations that do not require deployment or action by the owner or operator. Containment dikes, berms, diversion ponds, etc. are examples of passive measures of secondary containment. *Also see Active Measures of Secondary Containment.*

Piping (buried and aboveground) – Requires *general* secondary containment. For aboveground piping, this can be provided by any of the methods discussed in the definition of *general* secondary containment by managing the release on the ground surface. The key to this is the ability for the facility staff to: 1) note that a release is or has occurred, and 2) to be able to respond within time to prevent a discharge to navigable water. For buried piping, it is difficult to comply with the *General secondary containment* requirements without some form of release notification (e.g., leak detection on buried piping or monitoring of interstitial space between primary and secondary piping.

A Tier I Facility has the option to prepare and self-certify an SPCC Plan (template provided by EPA) in lieu of a full PE-certified Plan.

A Tier II Facility has the option to prepare a self-certified Plan in accordance with all applicable requirements of 112.7 and subparts B and C of the SPCC Rule (not to be confused with the EPA template plan), in lieu of a PE-certified Plan.

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All Other Facilities are required to prepare a PE-certified Plan in accordance with all the applicable requirements of 112.7 and subparts B and C.

Qualified Oil Filled Equipment –*Oil Filled Operational Equipment* that has not had a release of 1,000-gallons or two releases of 42-gallons within 12 consecutive months in the previous 3 years.

Reservoir – Part of an apparatus where liquids (e.g., oil) are held. Many reservoirs appear to be bulk storage tanks but, because their contents are an integral part of the apparatus (e.g., lubricating oil), they are exempt from the more stringent bulk storage tank requirements. In accordance with the SPCC amendments, reservoirs require *general* secondary containment.

Sheen - An iridescent appearance on the surface of water.

***Specifically Sized* Secondary Containment** – Provides sufficiently impervious containment for the entire capacity of the largest single container with sufficient freeboard to contain precipitation. Refers to the specific volume required to protect bulk storage tanks, which includes 55-gallon drums, by paragraph 112.8(c) and *can* include, but is not limited to: dikes, berms, pits, oil/water separators, diversionary structures and holding ponds.

SPCC Regulated Facility – Facility that has the capacity to store more than 1,320-gallons of oil in vessels equal to or greater than 55-gallons. Regulated vessels include bulk storage tanks (e.g., 55-gallon drums, intermodal tanks, aboveground storage tanks) and operational equipment (e.g., transformers, oil filled equipment, etc.).

Station – Any asset (building, equipment, etc.) under the general operational authority of a single entity.

Steel Tank Institute (STI) – A trade association that established generally accepted practices for the inspection of various types of products. STI Standard Procedure (SP)-001, referenced in this plan, provides guidance on "Standard for the Inspection of Aboveground Storage Tanks."

Testing - Pursuant to STI SP-001, the use of the word testing in this Plan implies the performance of a destructive or non-destructive test on the shell of a tank, a leak test, or a test of the operation of some piece of equipment.

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2.0 Facility Information

2.1 Facility Name and Location

Ghent Generating Station

9485 U.S. Highway 42-East

Ghent, Carroll County, Kentucky 41045

Longitude: -85.034222

Latitude: 38.748778

Ohio River Milepoint 538

2.2 Facility Owner Name and Address

Kentucky Utilities Company

220 West Main Street

Louisville, Jefferson County, Kentucky 40202

2.3 Site Oil Storage Capacity

The facility has a total storage capacity of ~955,000 gallons including operating equipment and container sizes 55-gallons or larger. The types of oil include storage and equipment-use of fuel oil/diesel, gasoline, turbine oil, machine oils, dielectric mineral oil, motor oils, hydraulic oils, etc. Per 40 CFR 112.8, the facility **bulk** oil storage capacity is ~670,000 gallons.

2.4 SPCC General Applicability [40 CFR 112.1 and 112.3], SPCC Qualified Facility Applicability [112.3(g)(2)] and Facility Response Plan Applicability [40 CFR 112.20(f)]

Because the Ghent Generating Station has a total oil capacity greater than 1,320 gallons, it is required to prepare and maintain a SPCC plan. However, the total bulk oil storage capacity is less than 1 million gallons and KU has determined that this facility does not pose a risk of substantial harm under 40 CFR part 112, as recorded in the "Substantial Harm Determination" included in **Appendix A** of this Plan.

2.5 Station Description

The Ghent Generating Station is located approximately 1.5 miles northeast of Ghent, Kentucky on U.S. Highway 42. The Ghent Generating Station is located in primarily a mixed use – rural/industrial area. The site is comprised of several hundred acres of land and is bordered to the north, south, and east by rugged terrain and the Ohio River to the north and west.

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The North American Industrial Classification System (NAICS) code for the Ghent Generating Station is 221112 (Fossil Fuel Electrical Power Generation). The plant consists of four pulverized coal-fired generating units with 2,226 megawatts generator nameplate capacity (Units 1, 2, 3 and 4). The four coal-fired units began service in 1974, 1977, 1981, and 1984, respectively. Units 2 and 3 share a common stack of 581 feet. Units 1 and 4 have individual stacks of 662 feet each.

Plant pollution control devices include:

- Low-NOx burners on Units 1, 2, 3, and 4;
- Selective catalytic reduction (SCR) modules on Units 1, 3, and 4;
- Fly-ash electrostatic precipitators (ESPs) in Units 3, and 4;
- Flue gas desulfurization (FGD) modules in Units 1, 2, 3, and 4 ;
- Dry sorbent injection (hydrated lime for SO_3/H_2SO_4 mitigation) in Units 1, 2, 3, and 4; and
- Forced-draft cooling towers on Units 1, 2, 3, and 4.
- Pulsed Jet Fabric Filters (PJFFs) on all Units

Coal shipments are received by barge. The coal combustion residual (CCR) gypsum is produced, stored, and/or marketed and trucked off-site to wallboard manufacturers.

The Site Plan and Station Diagram are included in the **Figures Tab** of this Plan and show the location and layout of the Station. The Station Diagram shows the location of oil containers, buildings, loading/unloading and transfer areas, and critical spill control structures.

Oil Storage and Handling Activities

The Ghent Generating Station uses a variety of petroleum products. The Station stores fuel oil used for: start-up of the boilers which power the steam turbines for electricity generation; diesel fuel and gasoline for maintenance equipment; lubricating oil for the generating turbines; and, dielectric oil in transformers located on the site. The capacities of oil containers present at this Station are provided in **Appendix F**.

The Ghent Generating Station receives products by common carrier via tanker truck and smaller quantities of material (e.g., 55-gallon drums) by box truck.

No. 2 fuel oil for start-up is stored in 442,250 and 100,000-gallon tanks located mid-site; fuel is conveyed into these tanks through a centralized truck unloading transfer area. Pumps, piping, etc. in the transfer area are surrounded by concrete walls designed to provide general secondary containment during the transfer process. Trucks transferring oil are staged within an area that drains to the site oil/water separator. The 442,250-gallon tank is primarily used for long term fuel storage. The 100,000-gallon tank serves as the primary fuel management tank for start-up/stabilization to Units 1 & 2, and transfer to the 20,000-gallon tank which serves Units 3 & 4.

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Level indication and alarms for the 100,000 and 20,000-gallon tanks, as well as controls for related pumps, are located in the plant control rooms. The 442,250-gallon tank has local level indication.

At other on-site locations, gasoline and diesel fuel are stored in smaller portable tanks, and other petroleum products are stored either in tanks, totes, 55-gallon drums or smaller containers. Also, the facility refuels pickup trucks and heavy equipment (i.e., bull dozers, etc.) from portable tanks located at several spots across the facility.

The Ghent Generating Station does not own or operate a bulk tanker truck used to refuel containers located on the site. These containers are fueled by outside, independent contractors.

2.6 Distance to Navigable Waters and Adjoining Shorelines and Flow Paths

The purpose of this SPCC Plan is to prevent any release of oil from reaching navigable water (e.g., the Ohio River or its tributaries, Black Rock Creek, etc.) immediately adjacent to the Generating Station.

The main areas where oil is stored and used are located on relatively level terrain. Drainage generally flows northwest in the direction of the Ohio River. The main unit buildings and operations areas, including cooling towers and bulk storage areas, are located adjacent the Ohio River; US Hwy 42 bisects the site in a southwest-to-northeast direction and separates these main unit buildings/operations areas from CCR handling areas and the site's substation.

A stormwater management system (e.g., swales, ditches, catch basins, etc.) is present across much of the site. The main unit buildings/operations areas are generally served by two storm sewer systems that approximately cover the eastern and western halves of the plant and discharge through KPDES monitored Outfalls 002 and 003, respectively. Catch basins in these areas are painted either green or blue to indicate that they discharge to Outfall 002 or 003.

The US Hwy 42 was constructed with roadside drainage ditches which also receive runoff from a few plant perimeter areas such as roadways and employee parking lots. South of US Hwy 42, the CCR areas are surrounded by berms; at the northeast corner of plant property, drainage from these ponds is controlled and combined into KPDES monitoring point: Outfall 001.

The coal pile and limestone piles drainage is controlled: the coal pile runoff is directed into the West Coal Basin) which is pumped to the process channel and process pond; the limestone pile drainage is pumped into one of the limestone slurry storage tanks for use in the Unit FGDs.

Most site buildings, particularly those with oil storage tanks or containers/equipment, have floor drains directed to an oil/water separator which is pumped to the process channel and process pond. The runoff from some outdoor storage tanks, containers/equipment, or large transformers is directed to this same oil/water separator. Stormwater catch basins that are painted red/orange are identified as flowing into the oil/water separator. The oil/water separator accepts most of the bulk oil storage and outside oil operation equipment containment drains.

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Facility ponds help to manage stormwater. Ponds which receive drainage from primary process areas and are equipped with either a containment boom or utilize submerged pump suction which would pull water from the bottom of the basin and retain floating material, including oil, in the pond. In general, ponds in primary oil storage areas are discharged from one pond to the next; which provides a series of redundant levels of protection to mitigate an oil release from being discharged to the Ohio River.

Spill pathways are indicated on the Station diagram in the **Figure Tab**. In most cases, the spill route will follow the indicated "overland flow" or where surface water enters a stormwater management system (e.g., ditch), the direction and discharge point associated with that system.

Preparation for closure of CCR treatment basins resulted in changes to flow paths, the construction of process wastewater and stormwater ponds, and the addition of an CCR landfill at the site. Detailed drainage information is included for oil containers in **Appendix F** and associated stormwater drawings.

2.7 Oil Discharge History

A description of the Station's SPCC reportable oil discharge history, as applicable, for the SPCC planning period is provided in **Appendix B**

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3.0 Certifications, Amendments, Reviews and Approvals

3.1 P.E. Certification [112.3(d)]

The Professional Engineer certification statement is provided in **Appendix C**.

3.2 Location of SPCC Plan [40 CFR 112.3(e)]

In accordance with 40 CFR 112.3(e), a complete copy of this SPCC Plan is maintained in the 3rd Floor Records Room of the Administration Building at Ghent Generating Station. Additional copies can be found in the Production Manager's office, both control rooms, the Station laboratory, and the site Environmental Coordinator's office at the Ghent Generating Station. The plan is also stored on the company's electronic repository (eSTAR). The front office is attended during normal business hours, Monday through Friday. The Station Control Room is attended whenever the Station is operating (i.e., 24-hours per day, 365 day per year) and on-site personnel are able to assist with access to the Plan, if necessary, after normal business hours.

3.3 Spill Reporting Requirements Written Discharge Notification [40 CFR 112.4]

40 CFR 112.4 requires that information be submitted to the USEPA Regional Administrator and to the Kentucky Department of Environmental Protection in charge of oil pollution control activities whenever the facility discharges:

- More than 1,000-gallons to navigable water in a single event, or
- Two releases greater than 42-gallons to navigable water within a rolling 12 months.

KU's Environmental Affairs (EA) will coordinate to make sure the submission requirements are met and that the reports are submitted in a timely manner.

Note – For reportable releases, other than SPCC regulated releases to navigable water described here, the EA staff will coordinate and/or provide assistance in making the required notification to the applicable regulatory agencies.

3.4 Amendments [40 CFR 112.5(a and c)]

In accordance with 40 CFR 112.5(a), the Ghent Generating Station periodically reviews and evaluates this SPCC Plan for any changes in the Station design, construction, operation, or maintenance that materially affects the facility's potential for an oil discharge, including but not limited to:

- Commissioning of containers;

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- Reconstruction, replacement or installation of piping systems;
- Construction or demolition that might alter secondary containment structures; or
- Changes of product service, revisions to standard operation, modification of testing/inspection procedures, and use of new or modified industry standards or maintenance procedures.

Amendments to the Plan made to address changes of this nature are referred to as technical amendments and must be certified by a PE. Non-technical amendments can be performed (and must be documented) by the facility owner and/or operator. Non-technical amendments include the following:

- Change in the name or contact information (i.e., telephone numbers) of individuals responsible for the implementation of this Plan; or
- Change in the name or contact information of spill response or cleanup contractors.

Ghent Generating Station and EA must make the needed revisions to the SPCC Plan as soon as practicable, but no later than six months after the change occurs. The Plan must be implemented as soon as possible following any technical amendment, but no later than six months from the date of the amendment.

Technical and non-technical changes are to be documented in **Appendix D**.

3.5 Five-Year Plan Review [112.5(b)]

In accordance with 40 CFR 112.5(b), the Ghent Generating Station reviews this SPCC Plan at least once every five years. Revisions to the Plan, if needed, are made within six months. A registered Professional Engineer certifies any technical amendment to the Plan, as described in **Section 3.4.**

3.6 Qualified Facilities [112.6]

Since the Ghent Generation Station has more than 10,000-gallons of oil capacity, it ***is not*** considered a Qualified Facility.

3.7 Management Approval [112.7]

KU is committed to the prevention of discharges of oil to navigable waters and maintains oil spill prevention, control and countermeasures through reviews, updates and implementation of this SPCC Plan. This SPCC Plan has the full approval of KU and the Ghent Generating Station's management. KU and the Ghent Generating Station have committed the necessary resources to implement the measures described in the Plan.

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The person identified as having the authority to commit the necessary resources to implement this Plan is identified in **Appendix E**.

3.8 Plan Provisions Sequence or Cross-Reference with SPCC Requirements [112.7]

This SPCC Plan follows the order presented in 40 CFR Part 112 and, therefore, a cross-reference table is not required.

3.9 Facilities, Procedures, Methods, or Equipment Not Yet Fully Operational [40 CFR 112.7]

All facilities, procedures, methods and equipment related to oil containing systems are fully operational.

3.10 Plan Deviation and Environmental Equivalence [112.7(a)(2)]

3.10.1 Double-walled Tank

In general accordance with the EPA memorandum titled, “Use of Alternative Secondary Containment Measures at Facilities Regulated under the Oil Pollution prevention Regulations”, a copy of which is provided in **Appendix O** (Other Information), the facility meets the requirement for specifically sized secondary containment through use of double-walled tanks. These tanks provide intrinsic secondary containment for volumes exceeding the tank capacity. Since the secondary containment is not open to precipitation, this volume is sufficient to fully contain the product in the event of a leak from the primary container. The interstitial space between the primary and secondary containers is equipped with a float indicator or other measure to check for leakage from the primary container. These indicator(s) is/are checked as part of the monthly review to detect any leak of product from the primary container.

These container(s) is/are, unless otherwise stated, not equipped to prevent overfills as required by EPA policy in its memorandum on double-walled tanks. Therefore, general containment is required for potential tank overfills. This requirement is accomplished through using active spill containment equipment (absorbents) available during tank re-fueling and by constant monitoring during tank filling operations.

3.10.2 Liquid Level Alarms

The facility meets the requirements of 112.8(c)(8), based on acceptable engineering practices.

3.10.2.1 Bulk Truck to Small Shop Built Tanks

The bulk storage tanks are located over a concrete floor, which functions as a release prevention barrier. The tanks have specifically-sized secondary containment in accordance with

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112.8(c). The tanks are filled, using a service station type dispenser, through a fill port on top of the tank but within the containment dike.

Prior to fueling the bulk storage tank, the ullage of the tank is determined. The operator then begins fueling the tank, while continuously monitoring the fuel tank level. Generally, fuel transfer operations using a service station type dispenser do not exceed 30-gallons per minute (service station dispenser transferring fuel for vehicles, not heavy equipment, are limited to a maximum flow rate of 10-gallons per minute by EPA). The operator is prohibited from using any automatic shutoff device (e.g., dispenser latch, etc.) that may be available on the dispenser handle. The operator shall manually dispense the fuel during transfer, while monitoring the fluid level, to prevent an accidental overfill. Fuel will be transferred until the tank is approximately 90% full. In the event of an accidental overfill; the oil would be captured by the secondary containment system surrounding the bulk storage container.

This approach meets requirements of 112.8(c)(8)(iii) or 112.8(c)(8)(iv) for each vessel.

3.10.2.2 Transfers to Drums

In addition, drums filled on site (e.g., used oil) will not incorporate a level sensing device. Fluids are generally added to drums in very small transfer quantities that this activity can be performed without the aid of a level sensor.

Personnel involved in the handling and transfer of oil are trained in oil spill prevention and response as necessary in the event of an oil release. Facility personnel accompany outside contractors during oil transfers and are familiar with the site specific SPCC plan. Personnel will utilize the appropriate transfer procedure.

This approach meets the requirements of 112.8(c)(8)(iv).

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4.0 Discharge Prevention – General SPCC Provisions

4.1 Station Layout Diagram [112.7(a)(3)]

The Ghent Generating Station, operated by the KU Company, is located at 9485 U.S. Highway 42-East in Ghent, Kentucky. The Station includes several hundred acres between rural land and the Ohio River. The **Figure Tab** includes four figures that provide information on:

- a U.S. Geological Survey topographical map; and
- plant layout drawings with location of ASTs, oil filled equipment, transfer stations and above ground piping; and spill trajectories.

4.1.1 Type of Oil in Each Container and Storage Capacity [112.7(a)(3)(i)]

The type of oil stored at the Ghent Generating Station and the storage capacity of the bulk storage containers are provided in **Appendix F**. The site figure references the appendix for oil type and volume.

4.1.2 Specific Discharge Prevention Practices [112.7(a)(3)(ii)]

KU's corporate policy is to operate its facilities in an environmentally sound manner, maintain safety standards and use established procedures to protect employees, the general public, property and the environment. It is recognized that there are many pieces of equipment which utilize oil where a release has the potential to reach surface water. In order to minimize the possibility of such releases, the following general procedures are discussed to prevent or absorb oil released.

In order to minimize the release of oil during maintenance activities, the following procedures are considered before the activities begins:

1. Supervisor/employee job briefings are performed prior to performing the work. The job briefings emphasize individual responsibilities to:

    a) Anticipate spills prior to commencing work and make sure potential spill pathways (e.g., drains, catch basins, containment valves, etc.) are sealed.

    b) Use appropriate containers when work requires oil to be drained from equipment.

    c) Use a spill pan under and/or around potential couplings or ports that may leak or drip.

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d) Deploy absorbent material if it appears that a small oil spill may occur during work.

2. Obtain and use the appropriate containers according to chemical compatibility and temperature.

3. During tanker truck transfers, an individual will always be present and be capable of implementing Station fuel loading emergency procedures, as necessary.

4. Improper disposal of oil is strictly prohibited.

KU follows specific practices for the loading and unloading of bulk storage tanks. These practices are described in more detail in subsequent sections of this plan.

4.1.3 Discharge and Drainage Control [112.7(a)(3)(iii)]

The Ghent Station utilizes a combination of structures (e.g., lined berm, concrete containment dikes, building structures, oil/water separators, etc.), Station drainage and land based spill response (e.g., sorbents) to prevent oil from reaching navigable water and adjoining shorelines.

These controls are discussed in greater detail in the 6.0 and 15.0 sections of this Plan. The controls and general flow lines are identified on drawings/figures in the **Figure Tab**.

4.1.4 Discharge Discovery [112.7(a)(3)(iv)]

The Ghent Generation Station is attended 24-hours per day, 7 days per week. Areas where potential spills could occur are checked on a regular basis with discrepancies reported to the on-duty Supervisor. Any spill or leak constituting a hazard or reportable incident will, upon recognition, be stopped and contained as soon as it is safe to do so.

Oil storage and oil-in-use areas are identified on the Station drawings. The drawing legend includes specific symbols which include but is not limited to bulk oil storage, oil in-use (reservoirs and/or transformers), and the locations of dedicated portable storage.

This figure should be referenced during Station inspections to ensure that all areas of the Station are properly inspected.

4.1.5 Discharge Response [112.7(a)(3)(iv)]

KU has developed a corporate-wide procedure for responding to discharge discovery, response and clean up. These procedures are included in **Emergency Tab**. KU staff will take all actions which can be safely and practically performed to stop or contain a release.

In general, the following steps should be taken upon discovery of a release:

- Eliminate potential spark sources;

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- If possible and safe to do so, identify and shut down the sources of the discharge to stop the flow;
- Contact the Station Manager or designee;
- Contain the discharge with sorbents, berms, fences, trenches, sandbags, or other material (**Emergency Tab** contains additional information regarding Spill Mitigation Techniques); and
- Follow the procedures on LG&E-KU's GENERAL SPILL/RELEASE RESPONSE STEPS (in **Emergency Tab**).

A "minor" discharge is defined as one that poses no significant harm (or threat) to human health and safety or to the environment. Minor discharges are generally those where:

- The quantity of product discharged is small (e.g., less than the reportable quantity for oil, see RQ table in **Emergency Tab)**;
- Discharged material is easily stopped and controlled at the time of the discharge;
- Discharge is localized near the source;
- Discharge material is not likely to reach water;
- There is little risk to human health or safety; and
- There is little risk of fire or explosion.

Minor discharges can usually be cleaned up by the Ghent Generating Station personnel. The following guidelines apply:

- Stop leaks when discovered, where safely possible;
- Close valve, as applicable;
- Stop pump, as applicable;
- Immediately notify supervisor, designated site contact, or any Manager;
- Under the direction of local management, stop or contain the leak or spill with discharge response materials and equipment; and
- Place discharge debris in properly labeled material management containers.

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The Station Manager or designee will complete the General SPILL/RELEASE Reporting Form (provided in **Emergency Tab)** and will forward to the corporate EA Department or complete the online version of the form.

A minor discharge is addressed in the first two steps of LG&E-KU's GENERAL SPILL/RELEASE RESPONSE STEPS (in **Emergency Tab**).

A "major" discharge is defined as one that may not be safely controlled or cleaned up by Station personnel, such as when:

- The discharge is large enough to spread beyond the immediate discharge area;
- The discharge material enters water;
- The discharge requires special equipment and training to stop/clean up; or
- The discharged material poses a significant hazard to human health or safety.

In the event of a major discharge, the following guidelines apply:

- Workers in the immediate vicinity should be notified of the release and evacuated, as deemed necessary. Personnel should be directed to the designated staging area at a safe distance from the discharge.
- If the Station Manager is not present, the senior on-site person notifies the Station Manager of the discharge and has authority to initiate notification and response. If necessary, call the appropriate Trouble-Dispatch Centers identified on the spill response card (copy provided in **Emergency Tab**) and request assistance.
- Follow the procedures outlined on LG&E-KU's GENERAL SPILL/RELEASE RESPONSE STEPS.
- The KU personnel must call for medical assistance if workers are injured.
- The KU personnel must notify the Fire Department or Police Department.
- The Station Manager (or senior on-site person) must call the spill response and cleanup contractors listed in the Emergency Contacts list in **Emergency Tab**.
- The Station Manager (or senior on-site person) must record the call on LG&E-KU's General SPILL/RELEASE Reporting Form.
- A list of approved Emergency Response Contractors is provided in **Emergency Tab**.

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4.1.6 Method for Disposal of Recovered Material [112.7(a)(3)(v)]

The following is a general procedure that, at a minimum, should be followed for release response clean-up debris management. LG&E-KU's corporate environmental staff is available to assist with specific material management, as needed.

4.1.6.1 Liquids

Recovered/collected material from a minor release will be managed using absorbents and containerized in impervious bags, drums or buckets. The Station Manager or designee will characterize this material for proper disposal. Upon characterization, material disposal will be expeditiously managed and spill response materials replenished. If allowable, recovered liquids would be shipped off site for recycling. After appropriate characterization, solid material will be disposed of in a solid waste landfill.

4.1.6.2 Solids

Solid, oily debris will be placed in bulk containers for disposal. The Station Manager or designee will ensure that the material is properly characterized before disposal. For material streams that have been previously characterized and the current material is consistent with the previously tested materials, this may satisfy the disposal facility's requirements.

Upon characterization, material disposal will be expeditiously managed and spill response materials replenished. Material resulting from a major discharge response may be removed and disposed of by a cleanup contractor.

4.1.7 Discharge Reporting Format and Contact List and Phone Numbers [112.7(a)(3)(vi)]

Any spill of ***twenty-five-gallons or more*** or any spill into or upon the navigable waters of the United States or adjoining shorelines shall be immediately reported to the **Response Coordinator** or his designated alternate. The Station's Emergency Contact List and Phone Numbers are provided in **Emergency Tab**.

It will be the Station Manager's (or designee) responsibility to ensure that prompt notification is made to the appropriate regulatory agency, if necessary, and/or to personnel responsible for environmental compliance within KU. In the absence of either the Station Manager or designee, the report shall be made by any Supervisor. For all reportable spills, a *Spill / Release Reporting Form* (included in **Emergency Tab**) or an equivalent online version shall be submitted to EA. Reportable Quantities for Oil are included in **Emergency Tab.** The following information shall be provided to notified regulatory agencies or the KU environmental compliance contact:

1. Company name;

2. Name, address, and telephone number of person making the notification;

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3. Date and time of the release;
4. Exact location of the release;
5. Estimated quantity and name of material spilled;
6. Source of spill;
7. Cause of spill;
8. Name of body of water involved; and
9. Action taken for containment and cleanup and whether containment was achieved.

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5.0 Potential Spill Predictions, Volumes, Rates, and Control [112.7(b)]

The potential spill predictions, volume, rates and controls are discussed in various locations of this plan including:

- Facility Diagram(s) in the **Figures Tab** show spill prediction direction arrows for storage tanks, containers, and storage areas for portable containers;
- The Plant Material Inventory in **Appendix F** provides general information regarding secondary containment, flow paths and predicted spill volumes;
- The bulk storage Tank Information Sheets in **Appendix G** provide specific spill predictions-controls information;
- Various plan sections addressing general/specific containment for: different equipment and plant areas; oil unloading and transfer areas; environmental equivalences discussions; etc.

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6.0 Containment and Diversionary Structures [112.7(c)]

6.1 Bulk Storage Tanks (e.g., above ground storage tanks, 55-gallon drums, etc.)

Bulk storage tank(s)/container(s) require specifically-sized secondary containment. Containment structures for bulk storage tank(s)/container(s) are discussed in detail in **Section 15** and **Appendices F and G**.

6.2 Oil Filled Operational Equipment (e.g., Turbines, Compressors, etc.)

Oil-filled operational equipment requires *general* containment to prevent an oil release from reaching a navigable water.

The volume and locations of the various oil reservoirs associated with the oil filled operational equipment is provided in **Appendix F**. The oil filled operational equipment mainly consists of reservoirs that lubricate turbines, lube oil reservoirs for fans, gear boxes and pumps. Many of the reservoirs recirculate the oil through a cooling unit and therefore have piping associated with their operation.

Oil filled operational equipment is located mainly within the Steam Plant 1 and 2, FGD 1 and 2, Steam Plant 3 and 4, FGD 3 and 4 and the Limestone Slurry Preparation Building, centrally located on the property.

6.2.1 Steam Units 1 and 2

Steam Units 1 and 2 have regulated reservoirs identified as R-1 through R-15 and R-19 through R-31, with the largest reservoir, 11,500-gallons and the smallest, 165-gallons. The majority of these reservoirs are located within the building structure of Units 1 and 2. In the event of a release from a reservoir, initially the oil will pool in the immediate vicinity. The first response will be to contain the oil with absorbents and prevent it from leaving the building structure.

The building structure provides one layer of *general* containment to prevent a release from entering the Ohio River. In the event that a release from a reservoir were to occur, it would enter the Station floor drains, where they exist, and flow into the Station's oil/water separator, which provides additional containment. The Station's oil/water separator working volume is ~20,000-gallons.

This approach satisfies the general containment requirements.

In addition to the reservoirs inside Unit 1 and 2 Buildings, there are a couple of lube oil reservoirs located outside of the building structure. A concrete containment structure has been built surrounding these reservoirs and is equipped with a stormwater drain valve. The concrete

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containment system provides general containment for the likely volume of oil that may be released from these reservoirs.

This approach satisfies the containment requirements.

6.2.2 FGDs - Units 1 and 2

The FGDs for Units 1 and 2 have regulated reservoirs identified as R-16 through R-18 and R-32 through R-35, with the largest reservoir 165-gallons and the smallest 110-gallons. R-16 through R-18 and R-32 are located within the concrete containment system inside the building structure.

This approach satisfies the general containment requirements.

R-33 through R-35 are located inside of the Unit 2 FGD building. In the event of a release from a reservoir, initially the oil will pool in the immediate vicinity. The first response will be to contain the oil with absorbents and prevent it from leaving the building structure.

The building structure provides general containment to prevent a release from entering the Ohio River. In the event that a release from a reservoir would flow to the Station floor drains, it would flow to the building transfer sump. The large size of the sump and the low location of the pump intake in the sump (typically below the water level) provides an additional level of containment.

In the event that oil was transferred by the building sump, the liquids would be transferred into the Unit 3 absorber tower if the unit is on, or to the underflow tanks if Unit 3 is offline.

6.2.3 Steam Units 3 and 4

Steam Units 3 and 4 have regulated reservoirs identified as R-36 through R-49 and R-53 through R-66, with the largest reservoir 11,500-gallons and the smallest 165-gallons. The majority of these reservoirs are located within the building structure of Units 3 and 4. In the event of a release from a reservoir, initially the oil will pool in the immediate vicinity. The first response will be to contain the oil with absorbents within the building structure.

The building structure provides general containment to prevent a release from entering the Ohio River. In the event that a release from a reservoir were to occur, it would enter the Station floor drains and flow into the Station oil/water separator, which provides additional containment. The Station oil/water separator working volume is ~20,000-gallons.

This approach satisfies the containment requirements.

In addition to the reservoirs inside Unit 3&4 Buildings, there are small lube oil reservoirs located outside of the building structure. A concrete containment structure has been built surrounding these reservoirs and is equipped with a stormwater drain valve. The concrete containment system provides containment for the likely release scenarios for those reservoirs.

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6.2.4 FGDs - Units 3 and 4

The FGDs for Units 3 and 4 have regulated reservoirs identified as R-50 through R-52 and R-67 through R-69, with the largest reservoir 165-gallons and the smallest 110-gallons. A concrete containment structure has been built around these reservoirs to provide secondary containment.

This approach satisfies the containment requirements.

6.2.5 Limestone Slurry Preparation Building

Several lubricating oil reservoirs are located within the Limestone Slurry Preparation Building (reservoirs R-70 to R-72).

In the event of a release from a reservoir, initially the oil will pool in the immediate vicinity. The first response will be to contain the oil with absorbents and prevent it from leaving the building structure.

The building structure provides general containment to prevent release migration. In the event that a release from a reservoir would enter the Station floor drains, it would flow into the building transfer sump. The large size of the sump and the location of the pump intake in the sump (typically below the water level) provides additional containment.

In the event that oil was transferred by the building sump, the liquids would be transferred into the limestone slurry tanks where the release would be contained.

6.2.6 Coal Unloader Equipment

The coal barge unloader includes a sprocket reservoir (R-73) and is located at the end of the unloader/intake pier at the river.

A spill pan was installed beneath the sprocket reservoir to contain any leaks or releases; this pan has a valved drain and is specifically sized for the full reservoir volume and additional rainfall accumulation. Initially the oil will pool in the pan; however, because this pan is inspected daily, such oil leaks would be drained/recovered and absorbents and prevent it from leaving the spill pan.

Additionally, the stacker reclaimer hydraulic reservoir (R-78) is located in the coal yard. In the event that it failed, and oil migrated from the immediate area, the flow would travel to the west coal basin. This basin is pumped to the process knockout chambers (process knockout boxes) and process channel. This approach satisfies general containment requirements.

6.2.7 CCR Transport-Material Handling Area Equipment

R-74, the Apron Belt Hydraulic Unit, is inside and the concrete floor drains to a sump. R-75 through R-77, Remote Submerged Chain Conveyor Hydraulic Valves Reservoirs, are located

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inside with concrete berming around each and the concrete floor drains to the Ash Dewatering Building Sump.

6.3 Oil Filled Electrical Equipment (e.g., transformers, etc.)

A large number of transformers are owned, operated and maintained by the Ghent Generation Station. The Station transformers contain NON-PCB mineral oil dielectric fluid. The oil inventory for these plant transformers is included in **Appendix F.** There is other miscellaneous oil in use equipment located on the site; however, ***the substation located on the property is covered by a separate SPCC Plan prepared for the Transmission Division***. In the event a leak occurred at the substation, the Transmission Division would be informer immediately. This SPCC Plan focuses only on equipment owned, operated and maintained by the facility.

Two transformers have been permanently closed at the facility. They are the former Unit 1 Aux 1C, UAT 1C and Unit 1 Reserve Aux 1C, RAT 1C. The units are drained, plugged, disconnected from service, and marked as “Permanently Closed”.

The type of containment provided for individual transformers is indicated in **Appendix F**. The following are examples of the types of general containment in use at the Station for oil-filled equipment.

6.3.1 Dedicated Concrete Containment Systems

Several of the large transformers located at the Station are located within dedicated concrete containment dikes. For example, a large spare GSU transformer is located on the west side of the property. A concrete containment system was built for this transformer to provide general secondary containment.

6.3.2 Dedicated Concrete Containment Systems Draining to Oil/Water Separator

Concrete dikes surround most of the transformers on-site. The containment dikes are equipped with a floor drain that conveys collected stormwater, or an oil release, to the facility oil/water separator. The specifications for the oil/water separator are provided in **Appendix O**.

6.3.3 Diversion System

Several transformers are located near the Unit 1 Cooling Towers and just north of the Coal Pile that are not located within a concrete containment system. In these areas, the surface water drainage systems flow into the West Coal Pile Runoff Pond. Therefore, these transformers use both absorbents and the surface water diversion system to provide general secondary containment.

Since these transformers are energized, in the event of an oil release, the transformer would eventually overheat, resulting in the internal breaker to trip. This loss of the transformer would

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affect the processes that it supports and would “self-advertise” that a problem was present. The Station staff investigating the issue would first attempt to contain any released oil.

In the event that the oil entered the nearby stormwater conveyance structure, the responding personnel would attempt to capture it before and within the west coal basin. Contents from this pond are transferred into the process knockout chambers (process knockout boxes) and then flow to the process channel and process pond, which incorporates a floating boom to contain oil prior to discharge out Outfall 001.

6.3.4 Land Based Response Capabilities

Land Based Response Capabilities include absorbents, as well as, heavy equipment that can be deployed to build a temporary dike to mitigate a large release from migrating toward navigable water. Even when containment structure exists, absorbents are often used. One type of material that can be used is a reactive polymer (available in several different forms, including granular, pellets, booms, etc.) that can be used to immobilize an oil release. If an oil release is present in a containment dike, floating on water in a diversion system, etc., the material can also be applied over the release and almost immediately after contact, binds the oil up into a solid, rubber-like material.

Other release response materials include absorbents, sands, etc. These materials are included in spill kits located in close proximity to the oil filled operational equipment, for rapid deployment should a spill occur. The spill kits are checked by the Operations personnel, at least monthly, and consumed materials replaced as soon as practicable.

6.4 Oil-Water Separator

The Station oil/water separator is used to provide specifically sized secondary containment for several bulk tanks. These tanks are located in areas where either the building structure or containment dike discharges into a conveyance system that transfers the liquid to the oil/water separator. The oil/water separator was designed to handle at least a ~20,000 gallon oil release. The separator is pumped to the process channel and process pond which is equipped with skimmer booms and provides redundant containment if a release episode were to overwhelm the oil/water separator.

Therefore, this approach satisfies the specifically sized secondary containment requirements

6.5 Transfer Areas

There are several fuel transfer areas at the Ghent Station. These consist of:

- Bulk tank truck to fuel transfer pumps into large ASTs
- Local transfer between
    - Tank 1 to/from Tank 2

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- Remote transfer between
    - Tank 2 to Tank 4, and
    - Tank 4 to Tanks 12 and Tank 13.
- Tanks 2 and 4 transfer fuel directly into the coal fired boilers
- Bulk tank truck into smaller ASTs
- Transfer from bulk tanks to mobile sources

Appendix H contains an example fuel loading procedure checklist (also applicable for handling other oils).

Potential spill events associated with transfer areas are evaluated on the back of the Tank Information Sheets in **Appendix G**. A general risk evaluation for each individual transfer area was performed and an estimates maximum release potential calculated. A form of ***general secondary containment*** was selected, based on the potential release volume, to prevent the release from entering navigable water.

Personnel involved in the handling and transfer of oil are trained in oil spill prevention and response steps necessary in the event of an oil release. Facility personnel accompanying outside contractors during oil transfers are familiar with the site specific SPCC plan.

6.5.1 Transfer from Bulk Tank Truck, Using External Transfer Pumps, into Large ASTs

The largest transfer area is the local fill system for Tank 1 (442,250-gallon) and Tank 2 (100,000-gallon). The bulk fuel truck connects to fuel loading pumps located inside a containment dike adjacent to Tank 2. During the transfers the pumps are engaged, and the fuel is pumped into either tank. The operator maintains visual contact with the tank level gage to ensure that the receiving tank is not over filled.

This system does not meet the definition of a loading rack. This transfer area was built so that, in the event of a release during the loading or unloading of Tank 1 or Tank 2, the release would be diverted into the oil/water separator.

This diversion system satisfied the general secondary containment requirements.

6.5.2 Remote Transfer Between Tanks

Start-up #2 fuel oil is stored in the 442,250 and 100,000-gallon (Tank 1 and 2, respectively) tanks located mid-site; the 20,000-gallon tank (Tank 4) is refilled from primarily the Tank 2 unless manual piping changes are made to transfer from Tank 1.

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Remote transfer from Tank 2 to Tank 4 is controlled by the Unit 3 - 4 control room. This occurs by sending an operator to Tank 4 to open the manual valve before the control room energizes the fuel product transfer pumps, monitor the tank level indication (also overfill alarm), and de-energize the transfer pumps when transfer is complete. The same operator closes the manual valve after transfer is complete. The control room and operator communicate throughout the process using 2-way radio.

Tank 4 provides start-up/stabilization fuel oil for Units 3 and 4 and also transfers fuel oil to the Unit 3 and 4 emergency generators day tanks. These tanks are maintained in near full status to assure operational reliability. Fuel levels are controlled by a float/solenoid valve system.

6.5.3 Transfer from Bulk Tank Truck, Using the Internal Bulk Truck Transfer Pump, into Small ASTs

There are a number of transfer locations (e.g., standpipe fill points for a tank, transfer into the top of a tank with a handheld fuel dispenser, etc.) that utilize the bulk tank truck internal transfer pump across the Station. These transfer areas mainly consist of the transfers of small quantities of oil from a bulk tanker truck into shop built tanks. The transfer rate for this type of operation is generally low, similar to the fueling of an automobile (x < 20 gal./min). The bulk truck is required by Department of Transportation regulations to carry a spill kit to address small releases. The bulk trucks also carry drip pans to deploy beneath hose and coupling connections. In addition to these materials, KU has spill kits strategically located around the Station.

Appendix H contains a checklist for truck to tank, loading transfers.

6.5.4 Transfer from Bulk Tanks to Mobile Sources

These transfer areas mainly consist of the transfers of small quantities of oil from a bulk tank truck into mobile equipment. The transfer rate for this type of operation is generally low, similar to the fueling of an automobile (x < 20 gal./min). Transfers are attended and monitored, and spill kits are available at these areas.

6.6 Demonstration of Impracticability [112.7(d)]

Secondary containment appears to be practicable at this Station.

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7.0 Inspections, Tests and Records [40 CFR 112.7(e)]

This section describes the inspection, tests and records required to be performed and maintained at the Ghent Generating Station. SPCC regulations require inspections of:

- bulk oil storage equipment;
- oil-filled operating and electrical equipment;
- oil-handling/loading equipment and piping;
- oil-transport vehicles (i.e., for leaks);
- the site property and facility discharges for conditions which might affect or indicate containment of potential spills.

SPCC regulations are designed to minimize future leak risks from oil storage tanks by requiring the combination of:

- **VISUAL INSPECTIONS** for leaks and (current) physical condition of **ALL** storage-operating equipment containers and secondary containment provisions;
- With **INTEGRITY TESTING** of certain bulk storage tanks, in order to monitor their useful service life and avoid potential leaks in the future.

SPCC regulations require that inspections and testing be performed according to industry standards appropriate for the type of equipment. At the Ghent Station, such industry standards primarily apply to bulk storage tanks and piping. As further described below (and later in this SPCC plan **Section 15)**, KU has chosen the following industry inspection standards:

For both ***Visual*** Inspections of ALL (Shop-built & Field-Fabricated) Tanks:
- the Steel Tank Institute (STI) *Standard for the Inspection of Aboveground Storage Tanks*, SP-001

For ***Integrity*** Testing-Inspections of Shop-Built Tanks:
- the Steel Tank Institute (STI) *Standard for the Inspection of Aboveground Storage Tanks*, SP-001

For ***Integrity*** Testing-Inspections of Field-Fabricated Tanks:
- the Steel Tank Institute (STI) *Standard for the Inspection of Aboveground Storage Tanks*, SP-001 Appendix B as applicable; or
- the American Petroleum Institute (API) API 653, *Tank Inspection, Repair, Alteration, and Reconstruction Standard*

Specifically, KU complies with the SPCC rule by performing facility wide and bulk storage tank inspection in accordance with the schedule provided in **Appendix I**. The schedule includes one table that is associated with facility related required inspection (e.g., inspection frequency of oil-water separators, site security, etc.) and the second table focuses on the inspection of bulk

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storage tanks [the inspection frequency (e.g., monthly, annually) and whether the tank requires inspection by a certified inspector and the general inspection frequency (e.g., external inspection every 5 years).

Generally, the table below summarizes the inspections performed on-site site (separately described later in this section):

	Inspection	*Inspection Personnel*
1	General Facility Security, Site Conditions & Plant Effluent Discharges - Monthly Site - Visual	*Plant Staff, Contract Site-Security Rounds & Equipment Sensors*
2	Bulk Storage Tank Inspections, Secondary Containment & Accumulated Stormwater Effluent Discharges	TANKS
	a. Monthly AST- Visual *Includes* Stormwater (& *additional drain events*)	*a. Plant Staff & Plant (stormwater drainage for transformers only)*
	b. Weekly Stormwater (& additional drainage events)	*b. Plant Staff*
	c. Annual AST	*c. Plant Staff (Maximo work orders)*
	d. AST-Periodic Integrity Testing	*d. Certified Contractors (if needed)*
3	Underground Storage Tanks (USTs)	*No USTs located at this site*
4	Oil-Filled Operational and Electrical Equipment and Secondary Containment	Monthly Site Visual *Plant Staff*
5	Oil-Filled Operational and Electrical Equipment stormwater drainage	Weekly Site Visual *Plant Staff*
6	Diversionary Structures and Oil-Water Separators	Monthly Site Visual *Plant Staff*
7	Oil Transfer-Unloading Areas *a.* Emergency Generators Fill Ports	Monthly Site Visual *Plant Staff*
8	Oil Pipelines & Secured Connections	Monthly Site Visual *Plant Staff*
9	Oil Spill Response Equipment	Monthly Site Visual Plant Staff
10	Tank Trucks Drain Valves-Outlets	Upon Entry/Departure *Plant Staff*

7.1 General Facility Security and Site Conditions Inspections

Site-security, access and area conditions are controlled and monitored using a combination of electronic surveillance sensors and contracted security personnel. Security guards patrol daily 2pm to 6am.

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Plant staff observe site security and plant effluent discharge conditions when performing the monthly site inspection. A copy of an example *Monthly Site Inspection Checklist*, used to document site inspections, is included in **Appendix J.** The facility may choose to use another checklist or electronic version, but the equivalent information (as on example checklist) must be obtained.

Plant staff and the contracted site security staff patrol duties (as discussed in Plan **Section 9**) inspect for:

- fencing breaches;
- lighting is adequately maintained in areas requiring detection of these security issues and for the discovery of potential oil leaks/discharges from storage tanks or equipment;
- security of oil storage tanks master flow and drain valves;
- unauthorized access to oil pumps starter controls and solenoid valves (*also secured by the plant DCS control and access restrictions*); and
- other potential indications of potential trespass or vandalism.

The contracted site security personnel document completion of their security patrols.

7.2 Bulk Storage Tank Inspections, Associated Secondary Containment and Accumulated Stormwater Discharges Inspections

The plant uses the Steel Tank Institute (STI) *Standard for the Inspection of Aboveground Storage Tanks*, SP-001 and American Petroleum Industry (API) API-653 for visually inspecting all bulk storage tanks and their associated secondary containment. Generally, as KU applies this industry inspection standard, it requires:

1. Tank Information Sheets – (tank age, construction details, info-updates, etc.);
2. Monthly visual inspections of bulk storage tanks;
3. Annual visual inspections of bulk storage tanks;
4. Integrity testing of shop-fabricated tanks by ‘formal’ inspections (SP-001 certified inspectors) including material repairs;
5. Integrity testing of Field-Fabricated tanks ‘formal’ inspections (SP-001 Appendix B as allowed or API-653 with certified inspectors) including material repairs;
6. Stormwater accumulations drained from secondary containments must be documented.

Periodic integrity testing should not be confused with monthly tank inspections. All tanks require monthly inspection by KU employees to spot and identify concerns before they result in a potential release into the environment.

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7.2.1 Tank Information Sheets

Tank Information Sheets (TIS) are located in **Appendix G**; these provide the background information upon which the (STI) SP-001 inspection decisions are based - particularly for integrity testing-inspections (e.g., type, frequencies, scheduling, etc.). These TIS's also serve as quick-info sheets for tank age, recent inspections (for convenience reminders to schedule future inspections), etc. The TIS's also serve as a logical place to document material repairs and any associated 'repair-confirmation' tests (e.g., hydrostatic testing, leak checks, etc.) performed on the tanks. SPCC regulations require that:

> *'Records of inspections and tests (and following material repairs) kept under usual and customary business practices satisfy (the) recordkeeping requirements'.*

The Ghent Station has numerous tanks which are relatively small double-wall shop-built tanks which, under the STI SP-001 tank inspection standard protocol, do not require certified inspections.

7.2.2 Monthly Visual Inspections of All Tanks and Associated Secondary Containment Structures

The (STI) SP-001 inspection protocol requires monthly visual inspections for:

- Oil leaks or signs of deterioration of tank physical condition;
- Tank containment deterioration;
- Accumulated rainwater within tank containment – inspection and drainage.

These inspections are conducted by plant staff to observe if oil is leaking from bolts, gaskets, rivets, seams, piping, or any other part of a tank system. Packing glands on valves are inspected and maintained at regular intervals. Any visible oil leaks are recorded on the inspection form and reported to the person in charge of spill prevention. Any spill or leak constituting a hazard or reportable incident will be stopped upon recognition and contained (if safely possible) and appropriate parties notified. Records of inspections (operating logs) are on file at the Ghent Station. Written inspection records are maintained by the Station.

The monthly inspections also include the secondary containment for these tanks and addresses containment physical conditions such as cracks, corrosion, structural stability, obstructive debris, or other conditions which could defeat or otherwise cause problems for the containment function.

Stormwater accumulations in tank containment must be inspected for the presence of oil, cleaned of oil if present, drained and documented. According to SPCC regulations, inspectors may use stormwater drainage records as a demonstration that the tank secondary containment integrity is maintained. During high rainfall months additional stormwater accumulation drainage events may be required. Efforts to drain accumulated water from containments is documented.

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A copy of the *Monthly Tank Inspection Example Checklist*, which includes procedures used to conduct site inspections is included in **Appendix J.** The plant may utilize an electronic recordkeeping system which automates the performing, certifying and documentation of the inspection. A substitute checklist can be used in lieu of the example provided; **however**, the substituted checklist must cover the criteria identified in the referenced Standard.

7.2.3 Annual Visual Inspections of All Tanks and Associated Secondary Containment Structures

The annual visual inspections required by (STI) SP-001 inspection protocol are more extensive and time-consuming to perform than the monthly inspections. This inspection addresses items that pose less short-term imminent risk than those of the monthly inspection, but includes more focus on long-term risk items that threaten reliable future service life such as:

- Tank/containment infrastructure conditions;
- Foundation & drainage issues;
- Corrosion-protection;
- Tank structural components & vents condition;
- Instrumentation & electrical systems.

Unless otherwise stated, this inspection can be performed by a non-certified plant employee using the checklist provided in the referenced Standard. An example of the requirements for that checklist is provided in **Appendix J**.

Written annual inspection records are signed and maintained at the facility for a period of three years.

7.2.4 Integrity Testing-Inspections of Shop-Built Bulk Storage Tanks Including Material Repairs

In addition to the above monthly and annual inspections by facility personnel, certain tanks are periodically evaluated by an outside certified tank inspector following the Steel Tank Institute (STI) *Standard for the Inspection of Aboveground Storage Tanks*, SP-001 (*latest version*). Shop-built tanks are tanks that have been constructed at a manufacturing facility, tested before shipment and then tested again as part of the tank installation. These tanks will generally carry the UL142 designation on the tank name plate. While some tanks at Ghent do not have name plates, it is assumed, based on their tank category (Category #1), that the STI SP-001 can be used for tank inspection (API 653, a more thorough assessment, can be used as a substitute to STI SP-001; however, if API 653 is specified, STI SP-001 cannot be used as a substitute for API 653),

As discussed in **Appendix I**, a Category 1 Shop Built Tank less than 5,001 gallons does **not** require a formal inspection by a certified tank inspector. Category 1 Shop Built Tank 5,001

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gallons and larger do require inspection based on the scheduled developed by the P.E. in **Appendix I**. The tank inspection schedule may change as dictated by the results of inspections performed on the tank.

Material repairs include any maintenance activities such as cutting, welding or modifying a storage tank and attached piping where such activities may change the integrity of the storage tank/system. For example, if replacement of a piping flange attached to a tank is required, the tank/piping should be hydrostatically/pressure-tested to confirm the repair and tank integrity. Such integrity tests can be performed by plant maintenance staff (adequately skilled to perform such repairs) and test records kept with all other tank integrity testing documentation.

7.2.5 Integrity Testing-Inspections of Field-Fabricated Bulk Storage Tanks Including Material Repairs

Tanks #1 and #2 at the facility are considered field-fabricated tanks. Inspection of these large tanks is performed according to the American Petroleum Industry (API) API-653 standard. Tanks #19 - #22 are small field-erected tanks. Inspection of these tanks may be performed by either STI SP-001 or API-653. **Appendix I** provides the inspection schedule developed for these tanks. The inspection schedule is not static and may change over time, based on the results of previous inspections.

As with the shop-built tanks, material repairs include any maintenance activities such as cutting, welding or modifying a storage tank and attached piping where such activities may change the integrity of the storage tank/system. For example, if replacement of a piping flange attached to a tank is required, the tank/piping should be hydrostatically/pressure-tested to confirm the repair and tank integrity. Such integrity tests can be performed by plant maintenance staff (adequately skilled to perform such repairs) and test records kept with all other tank integrity testing documentation. A discussion of tank integrity testing performed is included in **Appendix N**. Additionally, information regarding the modification of Tank 1 is included in **Appendix O**.

7.2.6 Stormwater Accumulations Drained from Secondary Containments Must Be Documented

SPCC regulations use stormwater drainage records to demonstrate the integrity of secondary containments for bulk storage tanks.

7.3 Underground Storage Tanks (UST)

There are no underground storage tanks located at this site.

7.4 Oil-Filled Operational Equipment and Secondary Containment Inspection

Monthly inspections include visual observations of oil-filled **operating** equipment reservoirs and piping systems located at the Station, with particular focus on outside equipment (i.e., not

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located within containment buildings). The SPCC inspector should walk around each of the equipment/systems and note any oil releases. Reservoirs should have a thorough inspection performed once every calendar year and/or when maintenance is performed on the equipment in accordance with the preventative maintenance program.

Written annual inspection records are signed and maintained at the Station.

7.5 Oil-Filled *Electrical* Equipment and Secondary Containment Inspection

Monthly inspections also include visual observations of oil-filled **electrical** equipment located at the Station, where nearly all transformers and oil-filled circuit-breakers are located outside. Most transformers and oil-filled circuit-breakers have 100% secondary containment, some of which drains to oil-water separators. Similar to the operational equipment inspections, the SPCC inspector should walk around the transformers/electrical equipment and note any oil releases.

Due to the function of the oil in the transformer (heat dissipation), any release of oil is generally detected by maintenance staff either directly (through inspection; transformers are regularly inspected by maintenance staff) or indirectly through the loss of performance or reported elevated temperature readings. Reservoir tanks should have a thorough inspection performed once every calendar year and/or when maintenance is performed on the equipment in accordance with the preventative maintenance program.

Written annual inspection records are signed and maintained at the Station for a period of three years.

Where oil-filled electrical equipment is located in restricted-access transmission substations, such equipment will be inspected by transmission personnel because these transformers are addressed in SPCC plans specifically prepared for those areas.

7.6 Oil Tank Trucks Drain Valves-Outlets Upon Entry/Departure

Plant operators attending oil tanker truck unloading operations are instructed to inspect tanker truck for leaks upon entry and departure from the property. SPCC regulations specifically require that:

> *'Prior to filling and departure of any tank car or tank truck, closely inspect for discharges the lowermost drain and all outlets of such vehicles, and if necessary, ensure that they are tightened, adjusted, or replaced to prevent liquid discharge while in transit.'*

Generally, tanker trucks deliver small quantities of oil to the plant site and therefore probably depart partially-full. Consequently, plant operators are required to visually check that oil delivery trucks enter/depart without leaks and, if such leaks occur, they respond as necessary to stop and mitigate the oil leaks/spills.

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8.0 Personnel, Training, and Discharge Prevention Procedures [112.7(f)]

8.1 Discharge Prevention Training [112.7(f)(1)]

Personnel involved in the handling of oil are trained in the proper operation and maintenance of oil storage tanks or containers; oil filled operating equipment and oil-filled electrical equipment. Training includes:

- Proper maintenance to prevent oil discharges;
- Discharge procedure protocols (Spill Card);
- Applicable pollution control laws, rules, and regulations (e.g. 40 CFR Part 112, 40 CFR 302, KRS 224-400, etc.);
- General facility operations; and
- The contents of the SPCC Plan.

New hires for positions that require oil use or involve oil operations are required to have spill prevention training, which includes a review of the SPCC Plan.

8.2 Designated Person [112.7(f)(2)]

The Ghent Generation Station Designated Person will be the person accountable for discharge prevention. This individual will also be responsible for conducting required inspections, follow-up of deficiencies noted in inspections, arranging testing, annual training, documentation and record maintenance. The designated person's contact information is provided in **Appendix E**.

8.3 Discharge Prevention Briefings [112.7(f)(3)]

KU staff conduct Discharge Prevention Briefings annually to ensure adequate understanding and effective implementation of the SPCC Plan. These briefings highlight and describe known spill events or failures, malfunctioning components, and recently developed precautionary measures.

The scheduled annual training includes a review of KU's policies and procedures related to spill prevention, control, cleanup, and reporting; procedures for routine handling of products (e.g., loading, unloading, transfers); SPCC inspections and spill prevention procedures; spill reporting procedures, spill response; and spill recovery, disposal and treatment of spill materials.

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9.0 Security [112.7(g)]

9.1 Fencing

The Station is fenced along most land accessible routes. A guard is stationed at the site access gate located on the main access road. In addition to fencing, other methods of site access control are utilized at the facility. In some cases, discrete oil storage areas are fenced or housed within secure buildings. The facility is staffed on a 24-hour per day 7- day per week basis, and personnel routinely inspect areas where oil storage occurs. Some areas are monitored by security staff using cameras. The main unfenced area of potential access to the site is along the Ohio River. The river itself serves as an obstacle to site access; however, it is possible that someone could enter the site via this route. Personnel are aware of this potential and monitor this area accordingly. In the event that an unauthorized person is observed on plant property, Station personnel will contact the security guard for assistance.

9.2 Master Flow and Drain Valves

Master flow and drain valves are valves installed on the tank to allow for: the draining of a tank, removal of water, collection of fluid samples, etc. These valves pose a risk in that, if opened by accident or through vandalism, they can drain the contents of the tank. In order to minimize the chance of an accidental or vandal related release, these valves should be secured when not in use.

Site security measures (fencing, security patrols, lighting, etc.) discourage unauthorized access to tank master flow and drain valves; however, refer to **Appendix G** Tank Information Sheets for individual tank equipment detail.

During the assessment of each tank, it was noted whether the tank was equipped with a master flow and drain valve and whether that valve was secured. There are several ways that a valve can be secure, to include, but not limited to placing a lock on the valve, inserting a threaded plug in the valve opening, blind flanging the valve opening, etc.

In most cases, these valves were secured during the site visit. However, due to on-going maintenance and tank activity, KU needs to be vigilant in ensuring that the tank master flow and drain valves are secured when not attended.

This is also the case with oil in use in equipment reservoirs and electrical equipment. While the location of a reservoir inside a building provides a level of security, these valves should continue to be inspected and secured.

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9.3 Starter Controls

Starter Controls refer to the controls that operate a pump associated with a bulk storage tank. The concern associated with the security of starter controls is that a pump could be accidentally engaged or through an act of vandalism and result in the undesired transfer of oil. In some instances, activation of a starter control could result in the contents of the tank being discharged into the environment. Therefore, starter control security is a prevention requirement.

Site security measures (fencing, security patrols, etc.) prevent unauthorized access to pump starter controls. Types of security measures for specific starter controls vary as described subsequently.

The starter controls for the transfer pumps associated with Tanks #1, #2 and #4 are located inside the building. The controls are part of the unit operations and are monitored and managed by the various unit operators.

The remaining starter controls are associated with service station type pumps and are all located within the fenced perimeter of the site. Different types of service station pumps were observed in use at the Station. These included hand crank pumps, pumps that require mobile power supply to operate, locked dispensers or permanently wired dispensers switched from nearby buildings.

Similar to master flow valves, these pumps may frequently in use and their security status can change depending on the operator. It is imperative that KU vigilantly instruct contractors and employees on the security requirements for starter controls and inspect this item on a monthly basis.

9.4 Pipeline Connections

The SPCC requirement for pipeline connections to be secured is to prevent the accidental or unauthorized release of oil to the environment. Pipeline connections pose the greatest risks at bulk tanks, where large volumes of oil are delivered to the Station.

For the Ghent Generating Station, there are very few non-dedicated pipelines that could result in a release of oil into the environment. Tank fill connections are secured with a camlock end cap when not in use.

9.5 Station Lighting

The Ghent Generating Station is a large complex that runs continuously, day and night. Facility lighting is designed, installed, and operated to facilitate these operations with lighting in most of the areas. The purpose of including lighting in the SPCC regulations is as a means to ensure that, in the event of an oil release, the release would be observed during periods of darkness. Therefore, lighting at the Ghent Generating Station is adequate for observation of a release (or conditions that indicate threat of release) by operators or inspectors during nighttime operations.

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Routine inspections conducted during nighttime hours are also aided by use of portable lighting as well to aid in observation of actual or threatened releases. The general visual assessment of the areas with oil containing vessels should be stressed to all employees, contractors and security personnel as part of the SPCC Briefings and Training.

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10.0 Station Tank Car and Tank Truck Loading/Unloading Rack [112.7(h)]

A load rack, by definition, is not present at the Ghent Generating Station.

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11.0 Field-Constructed Aboveground Containers [112.7(i)]

The identified field-constructed tanks at the Station are Tanks #1, #2, and #19 - #22.

The remaining tanks on the property appear to be shop built tanks.

In the event that these tanks undergo a repair, alteration, reconstruction, or change in service that might affect the risk of a discharge or failure, the container will be evaluated for risk of discharge or failure, following API-653 or an equivalent approach, and correction action will be taken as necessary.

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12.0 Conformance with Other Applicable Rules [112.7(j)]

This SPCC Plan was written to conform with 40 CFR part 112 requirements. The Station thereby conforms to the general requirements for oil pollution facilities in Kentucky. Discharge notifications are made in compliance with local, state and federal requirements.

In accordance with 401 KAR 5:037, a Groundwater Protection Plan (GPP) has been prepared for this site. The GPP is intended to develop plans and procedures to prevent and/or respond to a release of hazardous materials to groundwater.

In addition, the Ghent Generating Station has developed and implemented Best Management Practices (BMP) to protect surface water drainage in accordance with the KPDES Permit. The BMP Plan employs structural and non-structural controls to protect receiving bodies of water from degradation that could be caused by surface water drainage. Treated stormwater runoff is discharged to the Ohio River through KPDES permitted outfalls.

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13.0 Qualified Oil-filled Operational Equipment [112.7(k)]

For facilities where no single release in excess of 1,000 gallons or multiple releases exceeding 42 gallons have occurred in the preceding 3 years, the owner/operator can choose to use an alternative requirement to implementing general secondary containment. This alternative must include:

- Establishing and document the facility procedure for inspections or a monitoring program to detect equipment failure and/or a discharge;
- Preparation of a 109 Oil Spill Contingency Plan, including a written commitment of manpower, equipment and materials required to expeditiously respond and control an oil release.

The Ghent Generation Station has not selected this approach to satisfy the general secondary containment requirements. General secondary containment (e.g., adequately designed concrete dikes, drainage to the oil/water separator, facility drainage, etc.) has been provided for oil-filled operation equipment to satisfy the regulatory requirement.

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SPILL PREVENTION CONTROL AND COUNTERMEASURES PLAN

14.0 Storage Containment-Area Drainage - Specific Requirements [112.8(b)]

If you are the owner or operator of an onshore facility (excluding a production facility) you must meet the general containment requirements discussed in 40 CFR Part 112.7- and the specifically sized secondary containment requirements of 40 CFR Part 112.8.

14.1 Station Diked Storage Area Drainage, Valves Used and Inspection of Retained Stormwater [112.8(b)(1-2)]

The bulk storage tanks have several forms of specifically-sized containment, including a clay lined floor and concrete containment walls, concrete walls and floors, steel containment boxes and doubled-walled tanks. Some double-walled tanks are present at the site and some of these, in accordance with the rules, are not located within a containment dike.

The bulk storage containment system dikes are typically equipped with a manually-operated gate or ball valve. The valve is normally secured closed, except when draining the secondary containment structure. The contents of the secondary containment dike is inspected by Station personnel prior to draining to ensure that only oil-free water is allowed to enter the Station stormwater drainage system. The bypass valve is opened and secured closed under direct personnel supervision. Drainage events are recorded using a form similar to the example log included in **Appendix K** to this SPCC Plan. Station personnel can use an equivalent stormwater drainage form but, as a minimum, it must include:

- Tank # or identification
- Date
- Presence/absence of oil sheen
- Drainage start and stop time
- Signature of person performing the work.

14.2 Area Specific Drainage From Storage Area Containers Into Secondary Containment [112.8(b)(3)]

Area specific drainage into secondary containment occurs when the surrounding areas has been graded or designed such that an oil release would ultimately flow into a secondary containment system. The Station uses area specific drainage to comply, in most cases as a backup, with some of the **general secondary** containment requirements.

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As previously discussed, drainage at the site is segregated into non-potential oil containing and potential oil containing. The non-potentially oil containing drainage are those areas of the Station where equipment of oil is not stored or in use that doesn't otherwise have secondary containment provided. Storm water from these areas is managed through a system of swales and ditches and is discharged into either the Ohio River, the unnamed ditch along US HWY 42, or other stormwater outfalls.

Storm water collected from areas where oil is stored, in use, at transfer locations or near oil transfer piping is typically managed by a series on on-site controls (e.g., oil/water separator, coal pile runoff pond, process channel and ponds, etc.). This water may be collected through catch basins or sheet flow into drainage swales and conveyed to on-site ponds or other controls. These ponds may be equipped with skimmer booms which generally would contain oil before being transferred to the next pond or out the respective KPDES outfall.

This use of area specific drainage controls provides a backup to many of the primary general containment approaches used for most of the oil reservoirs, electrical equipment and loading of bulk tanks. Detailed information regarding area drainage from containers at the site is provided in **Appendix F**, **Figures**, and in the BMP Plan.

14.3 Station Diversion System [112.8(b)(4)]

Similar to area specific drainage, a Station diversion system is a system designed to receive an oil release in the event of a tank failure.

The Ghent Generating Station is using a Station Diversion System to comply with the specifically sized secondary containment requirements for several large new and used oil tanks located inside the Generation Station Buildings. In this case (currently), an oil release from any of these tanks is diverted to the Station's oil/water separator for specifically sized secondary containment. This containment approach is discussed in greater detail in Section 15 of this Plan.

In addition, the Ghent Generating Station uses a diversionary system as a backup for some of the **general secondary** containment requirements.

Most areas where stormwater could potentially convey an oil release are ultimately discharged into the process pond. The process pond is equipped with a floating boom to retain floating material, including oil, prior to discharge from KPDES Outfall 001. The combination of area specific drainage and Station diversion systems helps the Ghent Generating Station provide a comprehensive level of protection to prevent an oil release from entering navigable water.

14.4 Station Treatment Unit Pumps [112.8(b)(5)]

This section of the regulations requires redundancy in the equipment (e.g., lift station pumps) that would be used in managing an oil release in case there is an equipment failure or human error. The only control device that meets this criteria at the facility is the oil/water separator, whose effluent ultimately discharges into the process pond. The oil/water separator is equipped with a primary and backup pump, as required by this section of the regulations.

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15.0 Bulk Storage Containers [112.8(c)]

Bulk storage tanks and containers require *specifically-sized* secondary containment**. Appendix F** provides additional information regarding the Bulk Storage Tanks**.**

15.1 Compatibility [112.8(c)(1)]

The steel bulk storage tanks are compatible for the storage of fuel oil. The oil storage tanks are not pressurized and operate at approximately atmospheric temperature.

15.2 Specifically-Sized Secondary Containment Techniques [112.8(c)(2)]

Bulk Storage tanks require specifically-sized secondary containment. Containment information for each tank is provided in **Appendix F** and in Tank Information Sheets in **Appendix G**.

15.2.1 Concrete Containment Dike

Most of the exterior bulk oil tanks are located inside a concrete containment system. For the tanks exposed to precipitation, the containment volume was calculated and compared against the largest tank inside the structure, an additional 10% for free board and the rainfall corresponding to a 25-year, 24-hour storm event for this region of Kentucky (Rainfall data obtained from the National Oceanic and Atmospheric Association website).

The floor and walls of the containment dike are visually inspected during the monthly Station inspection to detect any holes, cracks, signs or deterioration, or other structural damage that could affect the ability of the dike to contain oil. Any damage is promptly corrected to prevent migration of oil unto the ground or out of the dike.

The containment information for each tank are provided in **Appendix F** and **Appendix G**.

15.2.2 Area Diversion with Oil/Water Separator Backup

The separator is designed with an approximate oil working volume of ~20,000-gallons, which is much larger than the size of most bulk storage containers. The separator is pumped to the process channel and process pond which is equipped with a skimmer boom which provides redundant containment in the event of a failure within the oil/water separator.

15.2.3 Double-walled Tanks

There are numerous tanks at the site that are of double-walled construction. The double-walled construction provides intrinsic secondary containment for the tank capacity. Since the secondary containment is not open to precipitation, this volume is sufficient to fully contain the product in the event of a leak from the primary container. The interstitial space between the

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primary and secondary containers is inspected on a monthly basis to detect any leak of product from the primary container.

In accordance with EPA's Letter on double-walled tanks, double-walled tanks are considered to provide an environmental equivalence for secondary containment.

15.2.4 Building Containment and Building Diversionary Structure

Some of the bulk storage tanks are located inside building structures. The building structure has been evaluated for the ability to retain an oil release. Structures were evaluated for the presence of unprotected floor drains, pipe penetrations, and containment structures near door thresholds. At the Ghent Generating Station, where building containment was identified as the primary means of providing specifically sized secondary containment, the containment system was considered competent to contain any sized release inside the structure, except for the Unit 1-2 and Unit 3-4 Clean/Dirty Turbine Oil Tanks.

Unit 1-2 Clean/Dirty Turbine Oil Tanks are located inside containment rooms with raised thresholds that provide ~ 75% containment and the Unit 3-4 Clean/Dirty Oil Tanks ~ 90% containment of the largest tank volume. These containment rooms are equipped with elevated/overflow floor drains that would convey a maximum residual from a release to the Station's oil/water separator. The separator is designed with an approximate oil working volume of ~20,000-gallons, which is much larger than the size of these bulk storage containers. The separator is pumped to the process channel and process pond which is equipped with a skimmer boom which provides redundant containment in the event of a failure within the oil/water separator.

Therefore, this approach satisfies the specifically-sized secondary containment requirements.

15.2.5 Oil/water Separator

The Station oil/water separator is used to provide specifically-sized secondary containment for several bulk tanks. These tanks are located in areas where either the building structure or containment dike discharges into a conveyance system that transfers the liquid to the oil/water separator. The oil/water separator was designed to handle at least a 20,000-gallon oil release. The separator is pumped to the process channel and process pond which is equipped with a skimmer boom. The process pond provides redundant containment in the event of a failure within the oil/water separator. The specifications for the oil/water separator are included in **Appendix O**.

Therefore, this approach satisfies the specifically-sized secondary containment requirements.

15.2.6 Drainage of Water from Tank Berms [112.8 (c)(3)]

As discussed in previous sections, water will be inspected for the presence of oil prior to discharge from a berm or dike containment system. The person draining the system will follow an approved stormwater drainage procedure, including documenting the information. At a

Business Use

minimum, the drainage procedure will include keeping the bypass valve sealed closed, inspecting the retained water to ensure its presence will not cause a discharge of oil, open the bypass valve, and reseal it following drainage under responsible supervision, and keep adequate records of such events.

15.2.7 Buried Metallic Storage Tanks [112.8(c)(4)]

The Ghent Generating Station does not have any buried metallic ***oil*** storage tank(s).

15.3 Partially Buried or Bunkered Metallic Tanks [112.8(c)(5)]

The Ghent Generating Station does not have any partially buried or bunkered metallic storage tanks.

15.4 Testing and inspection of bulk storage tanks [112.8(c)(6)]

15.4.1 Visual Observation

Visual observations of the Ghent Generating Station tanks are performed by Station personnel during operating hours. Formal (e.g., documented) inspections are conducted monthly to examine the exterior of the above-ground tanks and the containment areas for the following:

- Leaks,
- Shell distortions, signs of settlement,
- Corrosion,
- Condition of foundation and supports,
- Paint coatings,
- Insulations systems, and
- Appurtenances.

15.4.2 Testing

Integrity testing follows industry standards described below.

15.4.3 API 653 Tanks

Field constructed tanks shall be inspected in accordance with API 653 or as allowed by STI SP-001 Appendix B..

Appendix I provides the inspection schedule developed for these tanks. The inspection schedule is not static and may change over time, based on the results of previous inspections.

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Periodic integrity testing should not be confused with monthly tank inspections. All tanks require monthly inspection by KU employees to identify and remedy concerns before they result in a potential release into the environment.

15.4.4 STI SP-001 Tanks

The testing program, schedule and requirements are provided in **Appendix I**.

15.5 Internal Heating Coils [112.8(c)(7)]

This section relates to the potential for a release from internal heat transfer equipment in a process (e.g., heating coils, heat exchangers, etc.) where oil is used in the heat transfer process. In the event that a piece of equipment failed, this oil could enter process water and subsequently be discharged into navigable water. This type of equipment was not in use at the Ghent Generating Station during the preparation of this Plan.

15.6 Fail-Safe Engineering [112.8(c)(8)]

This section of the regulations requires that bulk storage tanks be equipped with at least one of the following:

- High-level alarm with audible or visual signal;
- High-level pump cutoff device;
- Direct audible or code signal communication between container gauge and pumping station;
- Fast response system for determining the liquid level, such as digital computer, telepulse, or direct vision gauge, provided that someone is present to monitor gauges and the overall filling operation; or
- Regular tests of liquid level sensing devices to ensure proper operation.

In some instances, where it has been deemed acceptable, the tank may use a procedure (instead of a monitoring or shut-off device) to satisfy this requirement. This procedure has to provide an environmental equivalent level of protection.

It is understood that totes and drums, and some smaller shop built tanks, may use an environmental equivalence.

Appendix L identifies how each tank satisfies this requirement.

15.7 Observation of Effluent Treatment Facilities [112.8(c)(9)]

The Station KPDES Outfalls are monitored in accordance with the permit requirements. Outfalls that discharge water collected from areas where oil is handled or stored, where such equipment is not otherwise contained, typically have a containment boom to mitigate the release of floating materials, including oil, before discharge. Lab personnel conduct routine inspections in addition to monthly drive around documented inspections that are conducted by facility personnel.

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15.8 Visible Discharge Correction [112.8(c)(10)]

Visible discharges from any container or appurtenance – including seams, gaskets, piping, pumps, valves, rivets and bolts – are to be corrected upon discovery. Accumulated oil in dikes is to be removed promptly and the container is to be inspected to determine the source of the oil. The SPCC regulation requires that releases of oil be stopped and repaired even when they are less than reportable quantities.

15.9 Mobile or Portable Oil Storage Containers [112.8(c)(11)]

A variety of mobile and portable containers (e.g., 55-gallon drums, skid tanks, totes) are present at the Ghent Generating Station. Mobile and/or portable oil storage containers with 55-gallon capacity or more require specifically sized secondary containment. Details of drainage and secondary containment for each mobile and/or portable storage area are provided in the material inventory (**Appendix F)** and the **Figures**. The following forms of specifically sized containment were observed during the SPCC site reconnaissance.

15.9.1 Building Structure

Several portable container storage areas have been designated within building structures at the site. These storage areas have been designed to provide specifically sized secondary containment or rely upon the building drainage systems. Several storage areas have drains which flow to the oil/water separator. Some buildings have drains which flow to sumps and pump into process vessels. Due to the nature of plant operations, containers may be placed outside of designated storage locations for brief periods of time. In such cases, these containers will be held in locations that drain to the oil/water separator or other containment.

15.9.2 Indoor Spill Platforms/Pallets

When drums and tanks are not stored in a designated container storage area and are not located where the building and/or building drainage systems provides specifically-sized secondary containment, the drums are to be stored on a spill pallet.

15.9.3 Outdoor Spill Pallets

The recommended storage method for exterior containers is specially-designed outdoor spill containment pallets. These pallets keep precipitation from accumulating inside the containment system thereby reduce concerns regarding the discharge of containment water. In addition, these systems help reduce environmental and chemical attacks on the primary shell that can weaken the container strength.

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16.0 Station Transfer Operations, Pumping, and Station Process [112.8(d)]

The Ghent Generating Station has the following oil transfer activities:

- Bulk tank truck to fuel transfer pumps into large ASTs
- Local transfer between
  - Tank 1 to/from Tank 2
- Remote transfer between
  - Tank 2 to Tank 4, and
  - Tank 4 to Tanks 12 and Tank 13.
- Tanks 1, 2 and 4 transfer fuel directly into the coal fired boilers
- Bulk tank truck into smaller ASTs
- Transfer from bulk tanks to mobile sources

Potential spill events associated with transfer areas are evaluated on the back of the Tank Information Sheets in **Appendix G**. A general risk evaluation for each individual transfer area was performed and an estimates maximum release potential calculated. A form of ***general secondary containment*** was selected, based on the potential release volume, to mitigate the release from entering navigable water. Those approaches are further discussed below.

16.1 Buried Piping [112.8(d)(1)]

Buried piping is a concern for SPCC regulated facilities in that 1) direct contact with soil can create an environment for pipe degradation and failure and 2) it is difficult to detect when a buried pipe has a release.

Currently, there is no piping at the facility in direct contact with soil.

The SPCC rules require when a buried section of the piping is exposed, it will be carefully examined for deterioration. If corrosion damage is found, additional examination and corrective action will be taken as deemed appropriate. If buried piping is placed into service at the facility, KU will undertake a program to conduct integrity and leak tests on the buried piping at the time of installation, modification, construction, relocation, or replacement. Buried piping that is installed or replaced on or after August 16, 2002 must have protective wrapping and coating and cathodic protection, or otherwise satisfy the corrosion protection provisions for piping in 40 CFR part 280 or a State program approved under 40 CFR part 281.

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16.2 Terminal Connections [112.8(d)(2)]

Terminal connections at transfer points (e.g., camlock fittings, fill ports, etc.) that are not in service or are on standby for an extended period are to be capped. Internal transfer piping that conveys material from one location to another (e.g., such as piping that transfers liquid from a bulk tank to a remote stand pipe), should be blank-flanged and marked as to their origin when not in use. The latter type of transfer equipment was not observed at the Ghent Generating Station.

16.3 Pipe Supports [112.8(d)(3)]

The pipe conveyance structure between the loading station and Tank 1 is located in a concrete containment vault. The containment vault is covered with a metal grate that allows for easy pipe inspection.

In addition, overhead conveyance structures were built that provide a level of secondary containment. The overhead conveyance structure has the piping located within a metal rectangular sleeve. The sleeve is constructed in a manner such that a leak from a pipe would be contained inside the sleeve and flow back toward the tank/transfer containment system.

The pipe support systems at the Ghent Generating Station are designed to minimize abrasion and corrosion and allow for expansion and contraction.

16.4 Inspections [112.8(d)(4)]

Aboveground piping and valves are examined monthly to assess their condition. Inspection includes aboveground valves, piping, appurtenances, expansion joints, valve glands and bodies, catch pans, piping supports, locking of valves, and metal surfaces. Observations are noted on the monthly inspection checklist or equivalent provided in **Appendix J**.

16.5 Vehicle Warning [112.8(d)(5)]

Aboveground piping is present at the site. The areas where above ground piping is located have a warning sign.

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17.0 Additional Information

17.1 General Procedure Information Sheets

A number of general procedure information sheets are provided that can be utilized to help maintain compliance with the SPCC regulations. These Procedure Sheets are designed to be posted in areas where an activity may take place and remind the Station personnel, in general, of the spill prevention, control and countermeasures requirements.

The Information Sheets are included in **Appendix M.**

17.2 Copies of Previous Tank Testing Documentation

Appendix N states that tank testing documentation and results must be maintained on file for the life of the tank.

17.3 Other Information

Appendix O contains other relevant information.

Business Use

Emergency Information

Line of Business Spill Card

Revised July 2022

Spill Release Reporting

***Call** Corporate Environmental 24 Hours*

502-627-2341

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Land/Water Release Reporting

Spills/Releases/Upsets to Land or Water may require:

- **Oil spill reporting:** spills or sheens in streams, sewers, or ≥ 25 gal.
- **KPDES upset reporting:** regulated pollutants not managed as per permit
- **PCB reporting:** spills ≥ 50 ppm or unknown to water/sewer/pasture/crops, or 1 # PCBs, or ≥ 500 ppm
- **Hazardous chemicals reporting:** spills ≥ RQ (Reportable Quantity)

Air Release Reporting

Plant air pollution control equipment failures may require:

- **CERCLA-EPCRA Air Release Reporting; *and***
- **Startup/Shutdown/Malfunction Reports** *(separate reporting & submittal)*

RQs for potential reporting scenarios (for 24-hour time period):

- **SCR failures:** NOx RQ ≥ 1,000 lbs.; ammonia (EHS) RQ ≥ 100 lbs.
- **Baghouse failures:** Stack particulates (RQs: arsenic ≥ 1 lb.; selenium ≥ 10 lbs.)
- **FGD failures:** SO_2 RQ ≥ 500 lbs.; SO_3 RQ ≥ 1,000 lbs.
- **Misc. substances:** ***Chlorine (EHS) RQ ≥ 10 lbs.; Asbestos RQ ≥ 1 lb.***

lge-ku.com/spills-releases

15-minute steps for effective response

1. Identify emission or spilled substance, source, affected area. Call Supervisor.
2. Stop — Contain the release if trained or qualified to do so.
3. Notify **local** emergency response contacts. **Call 911** (or alternate #) if release exceeds spill RQ (Reportable Quantity). Supervisors or dispatch should make call within **15 minutes**.
4. Call Corporate Environmental: **502-627-2341**.

   If contacted within **15 minutes**, Corporate Environmental will make additional required notifications. Otherwise, site personnel must make notifications. (See QR code on front.)

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GENERAL SPILL/RELEASE RESPONSE STEPS

Facility & Field Operations (rev date.8/2022)

Recommended spill/release response steps are summarized below. Phone contacts and further information may be found in the Environmental Affairs (EA) ***wallet spill-release reporting cards*** and EA website which includes:

- the corporate Environmental Procedures Manual
- the site-specific Environmental Compliance Operating Manual (where applicable);
- the current EA Training Manual.

This information covers: spill-release reporting criteria; company & regulatory contacts & phone numbers; PCBs procedures; and spill-release scenarios requirements. Review procedures annually, update site-specific manuals promptly, and maintain reference information readily accessible to those involved with spills-releases and/or spill-release reporting.

Step 1: ***Identify Spilled-Released Substance, Call Supervisors-Trouble/Dispatch*** ***(as appropriate)***

The employee discovering a hazardous material/oil spill-release or evidence of there having been one, shall immediately notify their supervisor, designated site-contact, or any Manager. Identify the nature-cause-amount of the spill-release, location, any injuries or damages, and sensitive areas that might be contaminated by the spill-release.

Step 2: ***Safely Stop Or Minimize A Spill-Release***

Attempt to contain the leak or spill-release, if reasonably safe and practical actions can be taken (*e.g., close valve, dig gravel/absorbent dikes-ditches, etc.*). Otherwise, the employee should move to a safe area and wait for trained emergency response personnel to arrive and then assist them as needed. If necessary, barricade the area to reduce traffic and protect employees/the public.

Step 3: ***Notify Local Emergency Response Agency & Accompany Responders On-Site***

Notify 911 immediately if an Emergency Response is needed; if not needed, within 15 minutes of discovering the spill-release exceeds the reportable quantity notify EA. On-site personnel are responsible for notifying a local emergency response agency first. It is better to report a spill-release, even if some details are unknown (*to be corrected in follow-up calls*), instead of risking criminal-legal actions (i.e., intentionally not reporting a spill-release). Information should include:

1. your name, date, & time-of-spill-release
2. material spilled-released (e.g. oil, PCBs, chemical, etc.)
3. estimated spill-release size/quantity released
4. spill-release area description
5. spill-release: location, source, cause
6. corrective action taken

Any responding agencies shall be met at the facility entrance by a person designated by Management. They shall be prepared to provide the responder(s) with a copy of the Safety Data Sheet (SDS) for the substances(s) involved.

Step 4: ***Notify Corporate Environmental Affairs Personnel On-call or Environmental Regulatory Agencies***

Corporate Environmental Affairs personnel on-call will make the remaining required notifications (except *911* calls, etc.) if they are contacted promptly; otherwise, facility/field personnel are responsible for making all appropriate calls. The **wallet spill-release cards** and **spill-release scenario tables** list the calls required by the type & quantity of material spilled-released, if a waterway/vegetable garden/pastureland is involved, etc. Document all calls made on standard spill-release report forms. If 911 and/or emergency response agencies are called, please also contact Corporate Communications and Risk Management (if significant damage or injury.)

Step 5: ***Provide Information Updates Promptly***

If circumstances change, or if new information is discovered, notify the Corporate Environmental Affairs personnel on-call and the environmental regulatory agencies as appropriate of those changes as soon as possible.

Step 6: ***Complete Spill-Release Reports, Copy & Involve EA Dept. When Follow-up Reports Are Required***

Facility personnel or line-crew supervisors shall complete the spill-release form, retain an original to be filed, and forward a copy to the EA Department. Any written follow up reports required by a local regulatory agency shall be prepared by the facility or field personnel. Prior to submittal, reports (*to external parties*) should be reviewed by the EA Department.

Step 7: ***Spill-Release Clean-up & Confirmatory Sampling (if required)***

Spill-release areas should be cleaned up as soon as possible and restored to the previous condition. Any waste disposal should be coordinated through the Environmental Coordinator and/or EA staff. Soil sampling may also be required depending on the nature of the spill-release. Waste can be treated by:

- Absorbing onto inert materials (for most organic and inorganic liquids except acids)
- Neutralizing (for acids, using sodium bicarbonate)
- Diluting with water (for most water-soluble materials, including neutralizing acids)
- Covering with foam blanket (for volatile flammables like acetone, methanol, toluene, and mineral spirits)

In spill-release response, good communication between the facility/field personnel, EA Department, analytical laboratories, local emergency response agencies and environmental regulatory agencies is imperative. Being prepared beforehand and familiar with spill-release response steps and having clear and accessible reference materials can make a stressful situation run more smoothly.

Spill Scenario	No Call Required	Local Agency (911)*	CORP. Envir. Affairs	KDEP	KDEM	NRC	EPA
PETROLEUM PRODUCTS							
Oil - *Unknown Amount* - Sheen on river or stream		X	X	X		X	
Oil - < 25 gal – On the ground	X						
Oil - ≥ 25 gal – On the ground (other than Louiville/Jeff. Co.)		X	X	X			
Oil - ≥ 25 gal **AND** < 56 gal – On the ground (Louisville/Jefferson Co. only)			X	X			
Oil - ≥ 56 gal – On the ground (Louisville/Jefferson Co. only)		X	X	X			
Oil – *Any Quantity* - In river or stream		X	X	X		X	
Oil - < 25 gal - In sewer		X	X				
Oil - ≥ 25 gal - In sewer		X	X	X			
Diesel/Fuel Oil - < 56 gal - On the ground	X						
Diesel/Fuel Oil – 56 to 74 gal – On the ground (Louisville/Jefferson Co. only)		X	X				
Diesel/Fuel Oil – 56 to 74 gal – On the ground (other than Louiville/Jefferson Co.)			X				
Diesel/Fuel Oil - ≥ 75 gal - On the ground		X	X	X			
Diesel/Fuel Oil - *Any Quantity* – In river or stream		X	X	X		X	
Diesel/Fuel Oil - *Any Quantity* – In sewer		X	X				
Gasoline - < RQ (17 gal) - On the ground	X						
Gasoline – *Any Quantity* - In river or stream		X	X	X		X	
Gasoline - < RQ (17 gal) - In sewer		X	X				
Gasoline - ≥ RQ (17 gal) - On the ground		X	X	X		X	
Gasoline - ≥ RQ (17 gal) - In sewer		X	X	X		X	
MISCELLANEOUS PRODUCTS							
Any Product - *Unknown Amount* – Sheen on river or stream		X	X	X		X	
HS (Hazardous Substance) < RQ - On the ground	X						
HS – *Any Quantity* - In river or stream		X	X	X	X (EHS)	X	
HS - < RQ - In sewer		X	X				
HS - ≥ RQ - On the ground		X	X	X	X (EHS)	X	
HS - ≥ RQ - In sewer		X	X	X	X (EHS)	X	
NON-HS - *Any Quantity* - On the ground	X						
NON-HS - *Any Quantity* which violates water quality standards (i.e. a fish kill) - In river or stream (no sheen)		X	X	X			
NON-HS - *Any Quantity* - In sewer			X				
NON-HS Characteristic Hazardous Waste ≥ 100 lbs.		X	X	X	X (EHS)	X	

***In Lexington/Fayette County Local Notification = 311 or (859) 425-2255**

SPILL/RELEASE INCIDENT REPORTING: PCBs

(Revised 7/12/2021)

Spill Scenario	No Call Required	Local Agency (911)	CORP. Envir. Affairs	KDEP	KDEM	NRC	EPA Regional Office
PCBs (In addition to other reporting/notifications)							
> 50 ppm known or assumed PCB concentration - any amount which directly contaminates surface waters, sewers and treatment plants, public drinking water sources, animal grazing lands/pastures, vegetable gardens/crop lands			**X**			**X (water impacts)**	**X**
> 50 ppm known or assumed PCB concentration (≥1# PCBs) released any location			**X**			**X**	
> 50 ppm known or assumed PCB concentration (>10# PCBs) released any location			**X**			**X**	**X**
≥ 500 ppm PCB equipment - any release due to heat, pressure or fire		**X**	**X**	**X**	**X**	**X**	

Note: If PCB content is unknown, manage as PCB-contaminated.

EOP-800-REF- Spill Response Contractors

Company	Contact	Phone Number
Chu Con Inc. 2024 State Hwy 190 Pineville, KY 40977	Chuck Sharp Chris Sharp Jon Sharp	**606-269-1605 – Mobile** 606-269-1670 - Mobile 606-269-1515 - Mobile 606-248-8356 - Office
Clean Harbors * (Navigable Waterway Spills) 4879 Spring Grove Avenue Cincinnati, OH 45232	Emergency Dispatch	**800-645-8265 – 24 hr.** 800-444-4244 – Customer Svc.
Early Environmental Contracting * 857 Kentucky St. Shelbyville, KY 40065	Allen Early	**502-647-3223 – 24-hour** 502-220-2339 - Mobile
HEPACO, LLC * (Navigable Waterway Spills) 7012 Trade Port Dr., Louisville, KY 40258 1000 1st Street, Shelbyville, KY 40065 5700 Prospect Dr., Newburgh, IN 47630 2627 Grandview Ave, Nashville, TN 37211 1925 Rosewood Rd., Knoxville, TN 37924 2220 State Rt. 3, Cattletsburg, KY 41129	 Michael Easter Casey Adams Matthew Weisheit Garry Yarbro Joe Baarlaer Rick Carlisle	**800-888-7689 – 24 hr.** 502-649-9165 502-633-3939 812-585-3151 615-332-2593 865-219-0840 606-929-5446
PECCO Environmental * (Navigable Waterway Spills) 250 Etter Drive Nicholasville, KY 40356	Scottie Perdue	**859-887-5508 – 24 hr.**
Reed Utilities (non-emergency oil spills only) 4674 Ironworks Road Georgetown, KY 40324	Jeff Reed	**859-227-5314**
TPM, Inc. (Navigable Waterway Spills) 2040 Old Louisville Road Bowling Green, KY 42101	 Eddie Hanks Jimmy Gardner	**800-876-4378 – 24 hr.** 270-791-0610 - Mobile 270-791-0616 - Mobile

*Only authorized companies to perform sulfuric acid, fuel oil or hydrated lime spills.

Last updated 8/3/2022 by MaryAnn Smith

Spill/Release Reportable Quantities (RQ) Table

For Spills/Releases greater than the Reportable Quantities listed below:

- *Notify "***911***"* ***And*** ***Environmental Affairs*** *- EA will make required notifications if contacted within 15 minutes, otherwise the following* **CALLS MUST BE MADE:**
- *Notify* **KYDEP** *(Kentucky Department for Environmental Protection)*
- ***And*** *Notify the* **NRC** *(National Response Center) if hazardous materials but* ***NOT*** *for oils unless spilled into waterways/sewers/etc.*
- ***And*** *Notify* **KYDEM** *(Kentucky Division of Emergency Management) if material is an Extremely Hazardous Substance (EHS)*

Hazardous Materials / Chemicals	lbs	Gallons	EHS
Alum (aluminum sulfate)	5,000		
Ammonia, anhydrous	100		X
Ammonia, aqua (ammonium hydroxide)	1,000	130	
Arsenic Trioxide (*in flyash*)	1		X
Asbestos (friable)	1		
Benzene	10		
Bleach-sodium hypochlorite (12.5%)	800	75	
Caustic (50% sodium hydroxide)	2,000	150	
DiBasic Acid	100	11.5	
Diesel (fuel oil #2)		75	
Ethylene glycol	5,000	530	
Fuel Oil #2 (diesel)		75	
Ferric Chloride (45% Iron Trichloride)	1,000	190	
Flocculants (containing petroleum)		25	
Gasoline	100	17	
Hydrazine (35%)	3	0.3	X
Hydrochloric Acid (liquid)	5,000	500	
Hydrogen Chloride (gas)	5,000		
Hydrogen Fluoride (gas)	100		X
Kerosene	100	17	
Mercury (*gas or liquid*)	1	1 oz	
Methanol	5,000	760	
Mineral spirits-thinner	100	15	
Nitrogen Oxides	1,000		X
Odorant-Mercaptan	100		
Oil (hydraulic-trans. misc.)		25	
Organosulfide (1% Sodium Hydroxide)	1,000	8,929	
Parts washer fluid (solvent)		25	
Phosphonic Acid (HEDP)	100	8	
Selenium Dioxide (*in flyash*)	10		
Sulfuric Acid (*gas or liquid*)	1,000	65	X
Sulfur Dioxide	500		X
Transformer Oil (any)		25	
1# PCB @ 50 ppm = 2380gal			
1# PCB @ 500 ppm = 238gal			
Vanadium Pentoxide (dust)	1,000		X
Hazardous-by-Characteristic Waste (not otherwise designated):			
pH < 2.0 or > 12.5 (ex. MerControl 8034 Plus)	100		
Ignitable-flashpoint < 140 F	100		

Note: *Reporting of Solutions listed according to Reportable Quantity and % Dilution*

Process Water System Chemical RQs

Product Name	Hazardous Ingredient and Percentage	Lbs.	Gallons	EHS
Ferric Chloride (45% Iron Trichloride)		1,000	190	
	Iron Trichloride (ferric chloride 31-45%),	1,000	190	
	Hydrogen chloride 0.0-1.0%,	5,000	42,800	
	Ferrous Chloride 0.0-0.7%	100	1,223	
Flocculants (GE AE1703, NALCLEAR 7766 Plus, NALCLEAR 7768)	Petroleum		25	
Hydrochloric Acid	Hydrochloric Acid	5,000	500	
Organosulfide NALMET 1689	Sodium Hydroxide 0.1-1%	1,000	8,929	

Spill Mitigation Techniques

WARNING: Spilled fuel constitutes a hazard of fire and explosion with the threat to human life and destruction of property. Petroleum vapors are also hazardous to personnel due to anesthetic and toxic concentrations below explosive levels. Volatile fuel may cause skin irritation if allowed to remain on the skin (e.g., soaked gloves and/or clothing). Personnel safety and protection of life and limb take precedence over environmental protection. If there is a threat to personnel safety, the fire department should be the first official agency notified.

General Spill Mitigation Actions

The following table and sections provide information on general spill mitigation techniques that can be employed to retard or stop a spill, either on dry land or a water course.

Guide to Clean-up Operations on Water Courses

Water Course	Large Amounts of Oil/Chemicals And First Stage of Operations	Small Amounts of Oil or Chemicals and Second Stage of Operations
Ditches	Improvised Impoundment/Dam Reservoirs	Straw Bale Dam
Streams Shallow, small flow	Underflow Dam	Straw Bale Dam Absorbent
Streams Shallow, large flow	Overflow Dam and Fixed Dam	Overflow Dam and Fixed Boom and Absorbent, or Straw Bale Dam and Absorbent
Pond	Boom plus Sweep Boom	Boom and Absorbent

1. Containment Dams and Barriers

Several approaches to oil spill control are suggested in this section including various dams and barriers.

1.1. Improvised Impoundment/Dams

Construction of a reservoir (dry land) impoundment will buy time to allow removal of the spill material. Complications such as heavy rain washing over the structure, or floating oil over the dam may occur. These hazards must be considered in the initial phases of response and precautions taken.

An earth fill dam, in one form or another, is commonly used for spill containment. Dams of this type may range from simple, manually constructed fills to more elaborate, controlled-flow structures designed to trap oil on water. Ideally, a spill should be caught in its earliest stage

close to the source, thus permitting the simplest means of containment and recovery, and with minimal damage to the surrounding environment.

Spills which occur on dry land, remote from water, generally provide better prospects for effective containment with an earth fill barrier forming a temporary reservoir. A dry ditch or ravine can be blocked with minimum effort. A shallow holding pond can be formed by trenching and terracing. The options will vary with terrain, spill volume, soil conditions, lead time, manpower, equipment availability, etc. Lead time is the most critical factor in an event and dictates where and how containment efforts must proceed.

Dams should be constructed and compacted by whatever means possible. If a track vehicle is available, a width of 6-8 feet is needed at the top. The usual fall angle of the earth will suffice for sloping. The top of the dam should be 3-4 feet higher than the level to which the oil-water layers are expected to rise.

If surface water drainage is anticipated, preparations should be made to pump or siphon off the water to the downgrade side. Valved pipes of adequate size extended through the dam during construction may offer an alternate solution. If valves are not available, set the intake at an upstream low point (well below oil level) and the discharge at the desired surface level.

This water bypass arrangement is also useful in cases where the spill has already reached a flowing stream or creek. Practical limits depend on flow rate of the stream and being able to provide sufficient water bypass capability. Necessary pipe size for low rates above 30 cu. ft./sec. is in the range of 24 to 30 inches diameter. Multiple pipes can be used; however, it may be more practical to consider some other type of underflow dam.

1.2. Underflow Dam

Since it may be impossible to quickly construct a dam capable of containing a release plus precipitation OR when a release has entered a moving body of water, an underflow dam may be desired. Underflow dams are applicable to retard the migration of materials that have a specific gravity less 1 (oils and some chemicals). This floating layer is often referred to as a light non-aqueous phase liquid (LNAPL).

The dam can be constructed in a fashion similar to the improvised impoundment/dam previously discussed or by using a floating boom containment system.

As constructed as an impoundment/dam, large diameter pipes are inserted below the expected water level to allow for the continuous flow of fluids with a specific gravity greater than the released material. Underflow dams are often constructed on small streams, when responding to an oil spill, where short sections of pipes can be placed parallel to the direction of the river flow and held in place by sand bags or other materials. The dam is then constructed around and on top of the pipes to a height greater than the normal pool elevation. The floating product will pool behind the dam structure while the moving water will continue to flow through the submersed pipes, which gives this type of dam its name, an underflow dam.

It is crucial to monitor the height of the flowing water and thickness of product behind the dam during the emergency to ensure that oil is not carried over through the underflow piping. Absorbents and/or a vacuum truck can removed the pooled material from behind the dam. If

the level of flow water drops below the inlet of the underflow piping; sand bags can be used to temporarily stop the flow of water through the pipes.

1.3. Overflow Dam

An overflow dam is generally used in a small stream for a spill where the specific gravity of the released material is greater than 1 (chemicals such as dry cleaner solvent). These materials are often referred to as dense non-aqueous phase liquids (DNAPLs). Since a DNAPL is heavier than water, this material will tend to sink to the lower level of the stream and pool in low areas or behind obstructions. For this type of release, an overflow dam allows the flowing water to continue, while containing the denser materials behind the dam structure. Removal of DNAPLs from behind a dam structure is not easy and will require specialized equipment.

2. Straw Barriers

Straw barriers have proven effective not only as an absorbent medium, but as an underflow type containment dam capable of backing up an oil film several inches in thickness. This type of containment can be rapidly constructed from materials commonly available in most areas and is a major advantage where a more elaborate or patented boom may not be available. Wire fencing (hog wire or chain link) and preferably steel posts form the backup for the straw. Steel posts can generally be driven into the stream bottom. These should be placed 8 to 10 feet apart depending on stream conditions, current flow, etc. Wire fencing is then tied to the posts and anchored adequately at each bank. The straw is then broken out of bails and spread across the full width of the structure and for a distance upstream of 10-15 feet. The depth of the straw should be maintained at a minimum of 6 inches.

In cases where posts cannot be used, the fencing can be strung or suspended on cable. The fence must be adequately anchored at the bottom to avoid dumping saturated straw as the load or current increases.

3. Absorbent and Containment Booms

Booms come in many different varieties with different purposes. Containment booms use floats to provide buoyancy to a plastic or rubber skirt that usually extends a minimum of 12 inches below and 6 inches above the water table. This skirt effective traps floating LNAPL behind the boom and allows for the material to accumulate for recovery. Therefore, containment booms provide a physical barrier to the movement of the material.

Absorbent booms are not as effective as containment booms in the mitigation of an oil release. Absorbent booms generally float on the water surface and do not provide as much protection to under and overflow as that provided by containment booms. However, absorbent booms do remove contaminants from the water. These are sometimes employed with containment booms or by themselves.

4. Sorbent Materials

Commercially supplied sorbent materials may be used if they are available and have the physical characteristics to perform adequately. A boom or barrier must be continuously maintained. At the completion of an emergency, material added to a stream must be removed and disposed of properly.

Placement of a barrier is critical with respect to water velocity. Chances of spill recovery diminish rapidly in water moving faster than 1-1/2 to 2 feet per second. The more quiescent pools of the stream should be selected for containment operations. At least two barriers, and preferably three or more, should be placed in series along the stream leaving work space between barriers for small boats, skimming devices and other necessary equipment. The spill material should be removed before significant seepage occurs. Additional barriers can be constructed downstream as conditions dictate.

Appendix A

Certification and the Applicability of the Substantial Harm Criteria

Certification of Substantial Harm Determination

Facility Name: **Ghent Generating Station**
Facility Address: **9485 U.S. Highway 42-East**
Carroll County
Ghent, KY 41045

1. Does the facility transfer oil over water to or from vessels and does the facility have a total oil storage capacity greater than or equal to 42,000 gallons?

   Yes ☐ No ■

2. Does the facility have a total oil storage capacity greater than or equal to 1 million gallons and does the facility lack secondary containment that is sufficiently large to contain the capacity of the largest aboveground oil storage tank plus sufficient freeboard to allow for precipitation within any aboveground storage tank area?

   Yes ☐ No ■

3. Does the facility have a total oil storage capacity greater than or equal to 1 million gallons and is the facility located at a distance (as calculated using the appropriate formula) such that a discharge from the facility could cause injury to fish and wildlife and sensitive environments?

   Yes ☐ No ■

4. Does the facility have a total oil storage capacity greater than or equal to 1 million gallons and is the facility located at a distance (as calculated using the appropriate formula) such that a discharge from the facility would shut down a public drinking water intake?

   Yes ☐ No ■

5. Does the facility have a total oil storage capacity greater than or equal to 1 million gallons and has the facility experienced a reportable oil spill in an amount greater than or equal to 10,000 gallons within the last 5 years?

   Yes ☐ No ■

Certification

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document, and that based on my inquiry of those individuals responsible for obtaining this information, I believe that the submitted information is true, accurate, and complete.

Signature

Gary H. Revlett — 7-21-2020

Gary H. Revlett
Director Environmental Affairs

Date

Certification of Substantial Harm Determination

Facility Name: **Ghent Generating Station**
Facility Address: **9485 U.S. Highway 42-East**
Carroll County
Ghent, KY 41045

1. Does the facility transfer oil over water to or from vessels and does the facility have a total oil storage capacity greater than or equal to 42,000 gallons?

   Yes ☐ No ■

2. Does the facility have a total oil storage capacity greater than or equal to 1 million gallons and does the facility lack secondary containment that is sufficiently large to contain the capacity of the largest aboveground oil storage tank plus sufficient freeboard to allow for precipitation within any aboveground storage tank area?

   Yes ☐ No ■

3. Does the facility have a total oil storage capacity greater than or equal to 1 million gallons and is the facility located at a distance (as calculated using the appropriate formula) such that a discharge from the facility could cause injury to fish and wildlife and sensitive environments?

   Yes ☐ No ■

4. Does the facility have a total oil storage capacity greater than or equal to 1 million gallons and is the facility located at a distance (as calculated using the appropriate formula) such that a discharge from the facility would shut down a public drinking water intake?

   Yes ☐ No ■

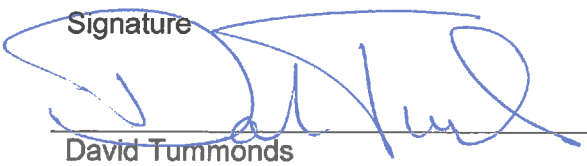
5. Does the facility have a total oil storage capacity greater than or equal to 1 million gallons and has the facility experienced a reportable oil spill in an amount greater than or equal to 10,000 gallons within the last 5 years?

   Yes ☐ No ■

Certification

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document, and that based on my inquiry of those individuals responsible for obtaining this information, I believe that the submitted information is true, accurate, and complete.

Signature



David Tummonds
General Manager – Ghent

6/9/2021
Date

Certification of Substantial Harm Determination

Facility Name: **Ghent Generating Station**
Facility Address: **9485 U.S. Highway 42-East**
Carroll County
Ghent, KY 41045

1. Does the facility transfer oil over water to or from vessels and does the facility have a total oil storage capacity greater than or equal to 42,000 gallons?

   Yes ☐ No ■

2. Does the facility have a total oil storage capacity greater than or equal to 1 million gallons and does the facility lack secondary containment that is sufficiently large to contain the capacity of the largest aboveground oil storage tank plus sufficient freeboard to allow for precipitation within any aboveground storage tank area?

   Yes ☐ No ■

3. Does the facility have a total oil storage capacity greater than or equal to 1 million gallons and is the facility located at a distance (as calculated using the appropriate formula) such that a discharge from the facility could cause injury to fish and wildlife and sensitive environments?

   Yes ☐ No ■

4. Does the facility have a total oil storage capacity greater than or equal to 1 million gallons and is the facility located at a distance (as calculated using the appropriate formula) such that a discharge from the facility would shut down a public drinking water intake?

   Yes ☐ No ■

5. Does the facility have a total oil storage capacity greater than or equal to 1 million gallons and has the facility experienced a reportable oil spill in an amount greater than or equal to 10,000 gallons within the last 5 years?

   Yes ☐ No ■

Certification
I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document, and that based on my inquiry of those individuals responsible for obtaining this information, I believe that the submitted information is true, accurate, and complete.

Signature

Phil Rabe
General Manager

12/22/2022
Date

Business Use

Appendix B

Reportable Oil Discharge History Log for Previous 12 Months

Oil Discharge History Log

The Oil Discharge History Log summarizes oil discharges from the recent history of the facility which have resulted in a release to water of 1,000 gallons or two episodes of 42 gallon or more in a rolling twelve month period. Other release of oil that are not necessarily SPCC Reportable Discharges may also be included so that they can be used as examples for training or process improvement.

Description of Discharge	Corrective Action Taken	Plan for Preventing Recurrence

Appendix C

Professional Engineer Certification

Professional Engineer Certification

Facility

Ghent Generating Station
9485 U.S. Highway 42-East
Carroll County
Ghent, KY 41045

The undersigned registered PE is familiar with the requirements of 40 CFR Part 112 and has visited and examined the facility, or has supervised examination of the facility by appropriately qualified personnel. The undersigned attests that this SPCC plan been prepared in accordance with good engineering practice, including consideration of applicable industry standards and the requirements of 40 CFR Part 112; that procedures for required inspections and testing have been established; and that this plan is adequate for the facility.

The terms "certify" and "certification," as used in this document, mean "to render a professional opinion." The terms do not mean and should not be construed as a guarantee or warranty that certain conditions exist. The owner/operator is in no way relieved of his/her duty to prepare and fully implement this SPCC plan in accordance with the requirements of 40 CFR Part 112. This plan is valid only to the extent that the facility owner or operator maintains, tests, and inspects equipment, containment, and other devices as prescribed in this plan.

Seal



Engineer: Patricia A. Mason

Registration Number: 18332

State: Kentucky

Signature: Patricia A Mason Date: August 14, 2020

Professional Engineer Certification

Facility

Ghent Generating Station
9485 U.S. Highway 42-East
Carroll County
Ghent, KY 41045

The undersigned registered PE is familiar with the requirements of 40 CFR Part 112 and has visited and examined the facility, or has supervised examination of the facility by appropriately qualified personnel. The undersigned attests that this SPCC plan been prepared in accordance with good engineering practice, including consideration of applicable industry standards and the requirements of 40 CFR Part 112; that procedures for required inspections and testing have been established; and that this plan is adequate for the facility.

The terms "certify" and "certification," as used in this document, mean "to render a professional opinion." The terms do not mean and should not be construed as a guarantee or warranty that certain conditions exist. The owner/operator is in no way relieved of his/her duty to prepare and fully implement this SPCC plan in accordance with the requirements of 40 CFR Part 112. This plan is valid only to the extent that the facility owner or operator maintains, tests, and inspects equipment, containment, and other devices as prescribed in this plan.

Seal



Engineer: Patricia A. Mason

Registration Number: 18332

State: Kentucky

Signature: Patricia A Mason Date: June 8, 2021

Professional Engineer Certification

Facility

Ghent Generating Station
9485 U.S. Highway 42-East
Carroll County
Ghent, KY 41045

The undersigned registered PE is familiar with the requirements of 40 CFR Part 112 and has visited and examined the facility, or has supervised examination of the facility by appropriately qualified personnel. The undersigned attests that this SPCC plan been prepared in accordance with good engineering practice, including consideration of applicable industry standards and the requirements of 40 CFR Part 112; that procedures for required inspections and testing have been established; and that this plan is adequate for the facility.

The terms "certify" and "certification," as used in this document, mean "to render a professional opinion." The terms do not mean and should not be construed as a guarantee or warranty that certain conditions exist. The owner/operator is in no way relieved of his/her duty to prepare and fully implement this SPCC plan in accordance with the requirements of 40 CFR Part 112. This plan is valid only to the extent that the facility owner or operator maintains, tests, and inspects equipment, containment, and other devices as prescribed in this plan.

Seal

Engineer: Patricia A. Mason

Registration Number: 18332

State: Kentucky



Signature: _____ Date: _____

Appendix D

Amendment Log

Amendment Log

The following log documents technical and non-technical amendments to the SPCC Plan. Technical amendments to the Plan must be reviewed and certified by a Professional Engineer. Non-technical amendments can be performed by the facility owner and/or operator. An explanation of what constitutes a technical and non-technical amendment is provided in the Plan.

By	Date	Activity Technical/Non-technical	PE Certification Required	Comments
P. Mason, D. Glacken, M. Smith	6-8-2021	Technical Update	YES	Minor updates to text, material inventory, tank details, inspection program updates.
P. Mason, D. Glacken	12-20-2022	Technical Update	YES	Updates to cover, material inventory updates, emergency response information, figures, inspection program and facility management.

Note:
The following statement must be completed when reviewing the SPCC plan:

I have competed review and evaluation of the SPCC Plan for the facility <<Insert Date>> and will amend the plan as a result.

Appendix E

Facility Personnel Responsible for SPCC compliance

Facility Personnel Responsible for SPCC Compliance

Ghent Generating Station (Excludes substation)

The implementation and oversight of the SPCC Plan is the responsibility of the following:

Name	Title	SPCC Role	Telephone
Phil Rabe	General Manager – Ghent	General Manager (GM)	(502) 347-3924 (502) 552-8824
Dave Smith	P.P. Environmental Supervisor	SPCC Identified Designated Person, Primary Emergency Response Coordinator	(502) 347-4145 (502) 640-4326
Danielle Glacken	P.P. Environmental Coordinator III	Alternate Emergency Response Coordinator	(502) 347-4151 (502) 525-4994

Appendix F

Plant Material Inventory
Bulk Oil Storage, Reservoirs & Equipment

Ghent - Power Generation - Ghent

	Quantity	Units
Total Oil Capacity On-site *(Containers ≥ 55-gallon capacity)= (Includes Bulk Storage & Reservoirs/Electrical but Excludes Substation(s))*	960,071	Gallons
Total Bulk Oil Storage Capacity On-Site =	675,994	Gallons
Oil/Petroleum Products – Storage or Oil-Filled Equipment		
Oil Storage Tanks (T) (55 gallons or larger)	648,274	Gallons
Oils in Portable Containers Storage Areas (PA) -Drums or Totes (55 gallons or larger)	27,720	Gallons
Equipment Reservoirs/Oil-in-Use (R) and Equipment -Oil other than electrical equipment (55 gallons or larger)	69,085	Gallons
Electrical Equipment Reservoirs/Oil-in-Use – Dielectric Mineral Oil-Filled (E) (55 gallons or larger)	214,992	Gallons

Notes:
1. Refer to electronic version for updates
2. Total amounts of oil in Portable Container Storage Areas are included, but specific oil types in each area may vary.

Bulk Material Inventory Summary

Ghent - Power Generation - Ghent

Bulk Inventory Summary by Material (as defined in 401 KAR 5:002 Section 1(21))	Quantity	Units
Fuel- Diesel (#2 Fuel Oil Off Road)	565,224	Gallons
Fuel- Diesel (#2 Fuel Oil On Road)	14,550	Gallons
Fuel-#1 Fuel Oil (Kerosene)	2,500	Gallons
Fuel-Gasoline	1,000	Gallons
Oil- EH Fluid (Includes Fyrquel)	2,445	Gallons
Oil- Gear Compound	11,560	Gallons
Oil- Hydraulic	3,330	Gallons
Oil- Lubrication all grades	5,260	Gallons
Oil- Mineral Electrical	214,992	Gallons
Oil- Misc. other	7,480	Gallons
Oil- Turbine	120,090	Gallons
Oil- Used for Recycling	11,310	Gallons
Solvents -Oil	330	Gallons

Material Inventory Detail

Facility	Item ID	Comments-Name/Item Description	Material	Building List or outside, outside covered	Location Group/Site Area	Capacity	Individual Container Capacity	Capacity Unit of Measure	Qty of Containers	Container Type	Item Type	Comments-Location-Relative reference to location/Floor Number	Vessel Secondary Containment	Spill Sub-Drainage Area ID	Op. Status	Comments-General Comments
Ghent - Power Generation - Ghent	T-001	Main Fuel Oil Storage Tank	Fuel- Diesel (#2 Fuel Oil Off Road)	Outside-Not Covered	Oil Storage Tanks, Emergency Generators/Equipment, and Portable Containers Areas	442,250	442,250	Gallons	1	AST - Single Walled - Steel	Tanks - Oil	east-Unit 1	Concrete Berm	GH-01.n	Active	Valved area drains to oil/water separator. Tank piping modified to reduce capacity from nameplate specification.
Ghent - Power Generation - Ghent	T-002	Units 1-2 Fuel Oil Tank	Fuel- Diesel (#2 Fuel Oil Off Road)	Outside-Not Covered	Oil Storage Tanks, Emergency Generators/Equipment, and Portable Containers Areas	100,000	100,000	Gallons	1	AST - Single Walled - Steel	Tanks - Oil	east-Unit 1	Concrete Berm	GH-01.n	Active	valved area drain to oil/water separator
Ghent - Power Generation - Ghent	T-003	Unloading Transfer Pumps Priming Tank	Fuel- Diesel (#2 Fuel Oil Off Road)	Outside-Not Covered	Oil Storage Tanks, Emergency Generators/Equipment, and Portable Containers Areas	300	300	Gallons	1	AST - Double Walled - Steel	Tanks - Oil	in unloading pumps & 100k tank berm area	Double Walled Tank	GH-01.n	Active	in unloading pumps & 100k tank berm area
Ghent - Power Generation - Ghent	T-004	Units 3-4 Fuel Oil Tank	Fuel- Diesel (#2 Fuel Oil Off Road)	Outside-Not Covered	Unit 3 Boiler-Turbine, Auxiliary Systems, ESP, PJFF and FGD Areas	20,000	20,000	Gallons	1	AST - Single Walled - Steel	Tanks - Oil	east Unit 3 ESP & west of Unit 2 FGD	Concrete Berm	GH-01.n	Active	valved area drain to oil/water separator
Ghent - Power Generation - Ghent	T-005	Coalyard Mobile Equipment Fuel Tank	Fuel- Diesel (#2 Fuel Oil On Road)	Outside-Not Covered	Coal Pile, Maintenance, Storage Buildings and Coal Barge Unloader	12,000	12,000	Gallons	1	AST - Double Walled - Steel	Tanks - Oil	In coal yard near Reclaim hopper #2	Double Walled Tank	GH-01.h	Active	drains to coal yard and coal pile runoff basin
Ghent - Power Generation - Ghent	T-006	Coalyard Warehouse Kerosene Tank	Fuel-#1 Fuel Oil (Kerosene)	Outside-Not Covered	Coal Pile, Maintenance, Storage Buildings and Coal Barge Unloader	500	500	Gallons	1	AST - Double Walled - Steel	Tanks - Oil	near the Coalyard Warehouse	Double Walled Tank	GH-01.i	Active	
Ghent - Power Generation - Ghent	T-007	Vehicle Refueling -- Gasoline	Fuel-Gasoline	Outside-Not Covered	Oil Storage Tanks, Emergency Generators/Equipment, and Portable Containers Areas	1,000	1,000	Gallons	1	AST - Double Walled - Steel	Tanks - Oil	south of U1-2 fuel oil tank containment	Double Walled Tank	GH-01.n	Active	area drains to Oil/Water separator
Ghent - Power Generation - Ghent	T-008	Vehicle Refueling -- Diesel Fuel	Fuel- Diesel (#2 Fuel Oil On Road)	Outside-Not Covered	Oil Storage Tanks, Emergency Generators/Equipment, and Portable Containers Areas	1,000	1,000	Gallons	1	AST - Double Walled - Steel	Tanks - Oil	south of U1-2 fuel oil tank containment	Double Walled Tank	GH-01.n	Active	area drains to Oil/Water separator
Ghent - Power Generation - Ghent	T-012	Unit 3 Emergency Generator Fuel Tank	Fuel- Diesel (#2 Fuel Oil Off Road)	GH U3 Boiler Turbine Bldg	Unit 3 Boiler-Turbine, Auxiliary Systems, ESP, PJFF and FGD Areas	150	150	Gallons	1	AST - Single Walled - Steel	Tanks - Oil	unit 3 & 4 emergency generators & fire pump fuel tanks	Concrete Berm	GH-01.n	Active	area drains to Oil/Water separator
Ghent - Power Generation - Ghent	T-013	Unit 4 Emergency Generator Fuel Tank	Fuel- Diesel (#2 Fuel Oil Off Road)	GH U3 Boiler Turbine Bldg	Unit 4 Boiler-Turbine, Auxiliary Systems, ESP, PJFF and FGD Areas	150	150	Gallons	1	AST - Single Walled - Steel	Tanks - Oil	unit 3 & 4 emergency generators & fire pump fuel tanks	Concrete Berm	GH-01.n	Active	area drains to Oil/Water separator
Ghent - Power Generation - Ghent	T-017	Portable-Skid Air Compressor	Fuel- Diesel (#2 Fuel Oil Off Road)	GH Equipment Storage Building West Plant Area	West Plant Area (Spare Transformers & Outage Work)	190	190	Gallons	1	AST - Single Walled - Steel	Tanks - Oil	Mobile-Parked in west Equipment Barn or Unit Basements (as needed)	Impermeable Liner	GH-15.a	Active	Inside Equipment Storage Building. Portable plastic containment berm.
Ghent - Power Generation - Ghent	T-018	Portable Emergency Generator	Fuel- Diesel (#2 Fuel Oil Off Road)	GH Warehouse-Coal yard	Coal Pile, Maintenance, Storage Buildings and Coal Barge Unloader	106	106	Gallons	1	AST - Double Walled - Steel	Tanks - Oil	parked in coalyard warehouse	Double Walled Tank	GH-01.i	Active	drainage or to sumps 1.g
Ghent - Power Generation - Ghent	T-019	Unit 1&2 Clean Oil Tank	Oil- Turbine	GH U1 Boiler Turbine Bldg	Unit 1 Boiler-Turbine, Auxiliary Systems, PJFF and FGD Areas	15,000	15,000	Gallons	1	AST - Single Walled - Steel	Tanks - Oil	Units 1&2 Turbine Oil Storage Room	Concrete Berm	GH-01.n	Active	Bermed room floor drains to O/W separator
Ghent - Power Generation - Ghent	T-020	Unit 1&2 Dirty Oil Tank	Oil- Turbine	GH U1 Boiler Turbine Bldg	Unit 1 Boiler-Turbine, Auxiliary Systems, PJFF and FGD Areas	15,000	15,000	Gallons	1	AST - Single Walled - Steel	Tanks - Oil	Units 1&2 Turbine Oil Storage Room	Concrete Berm	GH-01.n	Active	Bermed room floor drains to O/W separator
Ghent - Power Generation - Ghent	T-021	Unit 3&4 Clean Oil Tank	Oil- Turbine	GH U3 Boiler Turbine Bldg	Unit 3 Boiler-Turbine, Auxiliary Systems, ESP, PJFF and FGD Areas	15,000	15,000	Gallons	1	AST - Single Walled - Steel	Tanks - Oil	Unit 3&4 Turbine oil storage room	Concrete Berm	GH-01.n	Active	Bermed room floor drains to O/W separator
Ghent - Power Generation - Ghent	T-022	Unit 3&4 Dirty Oil Tank	Oil- Turbine	GH U3 Boiler Turbine Bldg	Unit 3 Boiler-Turbine, Auxiliary Systems, ESP, PJFF and FGD Areas	15,000	15,000	Gallons	1	AST - Single Walled - Steel	Tanks - Oil	Unit 3&4 Turbine oil storage room	Concrete Berm	GH-01.n	Active	Bermed room floor drains to O/W separator
Ghent - Power Generation - Ghent	T-023	Transmission Oil (30W)	Oil- Lubrication all grades	GH Coal Yard Tractor Garage	Coal Pile, Maintenance, Storage Buildings and Coal Barge Unloader	400	400	Gallons	1	AST - Double Walled - Steel	Tanks - Oil	Coalyard Oil Storage Room - Lube Reservoirs	Metal Berm	GH-01.i	Active	drains to Coal Yard Settling Basin #1 (west)
Ghent - Power Generation - Ghent	T-024	Hydraulic Oil	Oil- Lubrication all grades	GH Coal Yard Tractor Garage	Coal Pile, Maintenance, Storage Buildings and Coal Barge Unloader	400	400	Gallons	1	AST - Double Walled - Steel	Tanks - Oil	Coalyard Oil Storage Room - Lube Reservoirs	Metal Berm	GH-01.i	Active	drains to Coal Yard Settling Basin #1 (west)

Material Inventory Detail

Facility	Item ID	Comments-Name/Item Description	Material	Building List or outside, outside covered	Location Group/Site Area	Capacity	Individual Container Capacity	Capacity Unit of Measure	Qty of Containers	Container Type	Item Type	Comments-Location-Relative reference to location/Floor Number	Vessel Secondary Containment	Spill Sub-Drainage Area ID	Op. Status	Comments-General Comments
Ghent - Power Generation - Ghent	T-025	Gear Compound	Oil- Lubrication all grades	GH Coal Yard Tractor Garage	Coal Pile, Maintenance, Storage Buildings and Coal Barge Unloader	300	300	Gallons	1	AST - Double Walled - Steel	Tanks - Oil	Coalyard Oil Storage Room - Lube Reservoirs	Metal Berm	GH-01.i	Active	drains to Coal Yard Settling Basin #1 (west)
Ghent - Power Generation - Ghent	T-026	Motor Oil (15W40)	Oil- Lubrication all grades	GH Coal Yard Tractor Garage	Coal Pile, Maintenance, Storage Buildings and Coal Barge Unloader	400	400	Gallons	1	AST - Double Walled - Steel	Tanks - Oil	Coalyard Oil Storage Room - Lube Reservoirs	Metal Berm	GH-01.i	Active	drains to Coal Yard Settling Basin #1 (west)
Ghent - Power Generation - Ghent	T-081	Seasonal Coalyard Kerosene Tank	Fuel-#1 Fuel Oil (Kerosene)	Outside-Not Covered	Coal Pile, Maintenance, Storage Buildings and Coal Barge Unloader	500	500	Gallons	1	AST - Single Walled - Steel	Tanks - Oil	near the Coalyard Warehouse	Metal Berm	GH-01.i	Active	seasonal
Ghent - Power Generation - Ghent	T-089	Coalyard Miscellaneous Equipment Kerosene Tank	Fuel-#1 Fuel Oil (Kerosene)	GH Warehouse-Coal yard	Coal Pile, Maintenance, Storage Buildings and Coal Barge Unloader	500	500	Gallons	1	AST - Double Walled - Steel	Tanks - Oil		Double Walled Tank	GH-01.i	Active	Tank repurposed from Diesel fire pump to Kerosene in 2020
Ghent - Power Generation - Ghent	T-090	Unit 1 Emergency Generator Fuel Tank	Fuel- Diesel (#2 Fuel Oil Off Road)	Outside-Not Covered	Unit 1 Boiler-Turbine, Auxiliary Systems, PJFF and FGD Areas	1,039	1,039	Gallons	1	AST - Double Walled - Steel	Tanks - Oil	North of U2 and U2 ID Fan VFD	Double Walled Tank	GH-02.a	Active	concrete berm, valved drain to runoff
Ghent - Power Generation - Ghent	T-091	Unit 2 Emergency Generator Fuel Tank	Fuel- Diesel (#2 Fuel Oil Off Road)	Outside-Not Covered	Unit 2 Boiler-Turbine, Auxiliary Systems, PJFF and FGD Areas	1,039	1,039	Gallons	1	AST - Double Walled - Steel	Tanks - Oil	North of U2 and U2 ID Fan VFD	Double Walled Tank	GH-02.a	Active	concrete berm, valved drain to runoff
Ghent - Power Generation - Ghent	T-092	Unit 1 Boiler Room, Used Oil	Oil- Used for Recycling	GH U1 Boiler Turbine Bldg	Unit 1 Boiler-Turbine, Auxiliary Systems, PJFF and FGD Areas	1,000	1,000	Gallons	1	AST - Double Walled - Poly	Tanks - Oil	near Trona Mill Building	Double Walled Tank	GH-01.n	Active	drains to oil/water separator
Ghent - Power Generation - Ghent	T-093	Unit 1 Boiler Room, Used Oil	Oil- Used for Recycling	GH U1 Boiler Turbine Bldg	Unit 1 Boiler-Turbine, Auxiliary Systems, PJFF and FGD Areas	1,000	1,000	Gallons	1	AST - Double Walled - Poly	Tanks - Oil	near Trona Mill Building	Double Walled Tank	GH-01.n	Active	drains to oil/water separator
Ghent - Power Generation - Ghent	T-094	Unit 1 FGD Used Oil	Oil- Used for Recycling	GH U1 FGD	Unit 1 Boiler-Turbine, Auxiliary Systems, PJFF and FGD Areas	300	300	Gallons	1	AST - Double Walled - Steel	Tanks - Oil	inside Unit 1 FGD	Double Walled Tank	NA	Active	concrete floor drains to trench to FGD sump Tank owned by Early Environmental
Ghent - Power Generation - Ghent	T-095	Unit 4 FGD Used Oil	Oil- Used for Recycling	GH U4 FGD	Unit 4 Boiler-Turbine, Auxiliary Systems, ESP, PJFF and FGD Areas	300	300	Gallons	1	AST - Double Walled - Steel	Tanks - Oil	inside Unit 4 FGD	Double Walled Tank	NA	Active	concrete floor drains to trench to FGD sump Tank owned by Early Environmental
Ghent - Power Generation - Ghent	T-096	Coalyard Used Oil	Oil- Used for Recycling	Outside-Not Covered	Coal Pile, Maintenance, Storage Buildings and Coal Barge Unloader	300	300	Gallons	1	AST - Double Walled - Steel	Tanks - Oil	Recycle Oil Contractor Pickup Area - Tanks	Double Walled Tank	GH-01.h	Active	area drains to Coal Yard Settling Basin #1 (west) Tanks owned by Early Environmental
Ghent - Power Generation - Ghent	T-097	Coalyard Used Oil	Oil- Used for Recycling	Outside-Not Covered	Coal Pile, Maintenance, Storage Buildings and Coal Barge Unloader	300	300	Gallons	1	AST - Double Walled - Steel	Tanks - Oil	Recycle Oil Contractor Pickup Area - Tanks	Double Walled Tank	GH-01.h	Active	area drains to Coal Yard Settling Basin #1 (west) Tanks owned by Early Environmental
Ghent - Power Generation - Ghent	T-098	Coalyard Used Oil	Oil- Used for Recycling	Outside-Not Covered	Coal Pile, Maintenance, Storage Buildings and Coal Barge Unloader	300	300	Gallons	1	AST - Double Walled - Steel	Tanks - Oil	Recycle Oil Contractor Pickup Area - Tanks	Double Walled Tank	GH-01.h	Active	area drains to Coal Yard Settling Basin #1 (west) Tanks owned by Early Environmental
Ghent - Power Generation - Ghent	T-101	CCR Material Handling Area Diesel Tank	Fuel- Diesel (#2 Fuel Oil On Road)	Outside-Not Covered	CCRT-FA/BA/Gypsum-Transport/Dewatering Area	1,000	1,000	Gallons	1	AST - Double Walled - Steel	Tanks - Oil	located on flat area draining to adjacent west CCR area pond	Double Walled Tank	GH-01.m	Active	
Ghent - Power Generation - Ghent	T-102	CCR Material Handling Area Kerosene Tank	Fuel-#1 Fuel Oil (Kerosene)	Outside-Not Covered	CCRT-FA/BA/Gypsum-Transport/Dewatering Area	500	500	Gallons	1	AST - Double Walled - Steel	Tanks - Oil	South of Gypsum Processing Building	Double Walled Tank	GH-01.m	Active	
Ghent - Power Generation - Ghent	T-103	Equipment Refueling - Kerosene	Fuel-#1 Fuel Oil (Kerosene)	Outside-Not Covered	Oil Storage Tanks, Emergency Generators/Equipment, and Portable Containers Areas	500	500	Gallons	1	AST - Double Walled - Steel	Tanks - Oil	South of U1-2 Fuel Oil Tank Containment	Double Walled Tank	GH-01.n	Active	area drains to Oil/Water separator
Ghent - Power Generation - Ghent	T-105	West Mobile Equipment Fuel Tank	Fuel- Diesel (#2 Fuel Oil On Road)	Outside-Not Covered	West Plant Area (Spare Transformers & Outage Work)	550	550	Gallons	1	AST - Double Walled - Steel	Tanks - Oil	Outside of West Equipment Storage Building	Double Walled Tank	GH-15.a	Active	This tank replaced T-100 so kept the same name due to exact location.
Ghent - Power Generation - Ghent	PA-001	U1&2 Turbine Oil Storage Room	Oil- Turbine	GH U1 Boiler Turbine Bldg	Unit 1 Boiler-Turbine, Auxiliary Systems, PJFF and FGD Areas	330	55	Gallons	6	Drums - Steel	Container Storage Area - Oil	Units 1&2 Turbine Oil Storage Room	Concrete Berm	GH-01.n	Active	Quantities of individual types of oil may vary.
Ghent - Power Generation - Ghent	PA-002	U1&2 Oil Storage Room	Oil- Gear Compound	GH U1 Boiler Turbine Bldg	Unit 1 Boiler-Turbine, Auxiliary Systems, PJFF and FGD Areas	330	55	Gallons	6	Drums - Steel	Container Storage Area - Oil	Units 1&2 Turbine Oil Storage Room	Sumps and/or collection system	GH-01.n	Active	Quantities of individual types of oil may vary.
Ghent - Power Generation - Ghent	PA-002	U1&2 Oil Storage Room	Oil- Lubrication all grades	GH U1 Boiler Turbine Bldg	Unit 1 Boiler-Turbine, Auxiliary Systems, PJFF and FGD Areas	220	55	Gallons	4	Drums - Steel	Container Storage Area - Oil	Units 1&2 Turbine Oil Storage Room	Sumps and/or collection system	GH-01.n	Active	Quantities of individual types of oil may vary.
Ghent - Power Generation - Ghent	PA-002	U1&2 Oil Storage Room	Oil- Turbine	GH U1 Boiler Turbine Bldg	Unit 1 Boiler-Turbine, Auxiliary Systems, PJFF and FGD Areas	220	55	Gallons	4	Drums - Steel	Container Storage Area - Oil	Units 1&2 Turbine Oil Storage Room	Sumps and/or collection system	GH-01.n	Active	Quantities of individual types of oil may vary.
Ghent - Power Generation - Ghent	PA-002	U1&2 Oil Storage Room	Oil- Used for Recycling	GH U1 Boiler Turbine Bldg	Unit 1 Boiler-Turbine, Auxiliary Systems, PJFF and FGD Areas	220	55	Gallons	4	Drums - Steel	Container Storage Area - Oil	Units 1&2 Turbine Oil Storage Room	Sumps and/or collection system	GH-01.n	Active	Quantities of individual types of oil may vary.

Material Inventory Detail

Facility	Item ID	Comments-Name/Item Description	Material	Building List or outside, outside covered	Location Group/Site Area	Capacity	Individual Container Capacity	Capacity Unit of Measure	Qty of Containers	Container Type	Item Type	Comments-Location-Relative reference to location/Floor Number	Vessel Secondary Containment	Spill Sub-Drainage Area ID	Op. Status	Comments-General Comments
Ghent - Power Generation - Ghent	PA-003	Unit 2 FGD Oil Storage room	Oil- Lubrication all grades	GH U2 FGD	Unit 2 Boiler-Turbine, Auxiliary Systems, PJFF and FGD Areas	110	55	Gallons	2	Drums - Steel	Container Storage Area - Oil	Unit 2 FGD Oil Storage room	Sumps and/or collection system	NA	Active	Quantities of individual types of oil may vary.
Ghent - Power Generation - Ghent	PA-003	Unit 2 FGD Oil Storage room	Oil- Used for Recycling	GH U2 FGD	Unit 2 Boiler-Turbine, Auxiliary Systems, PJFF and FGD Areas	110	55	Gallons	2	Drums - Steel	Container Storage Area - Oil	Unit 2 FGD Oil Storage room	Sumps and/or collection system	NA	Active	Quantities of individual types of oil may vary.
Ghent - Power Generation - Ghent	PA-005	Unit 3&4 Oil Storage Room	Oil- Gear Compound	GH U3 Boiler Turbine Bldg	Unit 3 Boiler-Turbine, Auxiliary Systems, ESP, PJFF and FGD Areas	1,650	55	Gallons	30	Drums - Steel	Container Storage Area - Oil	Unit 3&4 Oil Supply Room	Sumps and/or collection system	GH-01.n	Active	Quantities of individual types of oil may vary.
Ghent - Power Generation - Ghent	PA-005	Unit 3&4 Oil Storage Room	Oil- Hydraulic	GH U3 Boiler Turbine Bldg	Unit 3 Boiler-Turbine, Auxiliary Systems, ESP, PJFF and FGD Areas	550	55	Gallons	10	Drums - Steel	Container Storage Area - Oil	Unit 3&4 Oil Supply Room	Sumps and/or collection system	GH-01.n	Active	Quantities of individual types of oil may vary.
Ghent - Power Generation - Ghent	PA-005	Unit 3&4 Oil Storage Room	Oil- Lubrication all grades	GH U3 Boiler Turbine Bldg	Unit 3 Boiler-Turbine, Auxiliary Systems, ESP, PJFF and FGD Areas	275	55	Gallons	5	Drums - Steel	Container Storage Area - Oil	Unit 3&4 Oil Supply Room	Sumps and/or collection system	GH-01.n	Active	Quantities of individual types of oil may vary.
Ghent - Power Generation - Ghent	PA-005	Unit 3&4 Oil Storage Room	Oil- Turbine	GH U3 Boiler Turbine Bldg	Unit 3 Boiler-Turbine, Auxiliary Systems, ESP, PJFF and FGD Areas	825	55	Gallons	15	Drums - Steel	Container Storage Area - Oil	Unit 3&4 Oil Supply Room	Sumps and/or collection system	GH-01.n	Active	Quantities of individual types of oil may vary.
Ghent - Power Generation - Ghent	PA-005	Unit 3&4 Oil Storage Room	Oil- Used for Recycling	GH U3 Boiler Turbine Bldg	Unit 3 Boiler-Turbine, Auxiliary Systems, ESP, PJFF and FGD Areas	110	55	Gallons	2	Drums - Steel	Container Storage Area - Oil	Unit 3&4 Oil Supply Room	Sumps and/or collection system	GH-01.n	Active	Quantities of individual types of oil may vary.
Ghent - Power Generation - Ghent	PA-005	Unit 3&4 Oil Storage Room	Solvents -Oil	GH U3 Boiler Turbine Bldg	Unit 3 Boiler-Turbine, Auxiliary Systems, ESP, PJFF and FGD Areas	165	55	Gallons	3	Drums - Steel	Container Storage Area - Oil	Mineral Spirits: Unit 3&4 Oil Supply Room	Sumps and/or collection system	GH-01.n	Active	Quantities of individual types of oil may vary.
Ghent - Power Generation - Ghent	PA-006	U4 FGD Oil Storage Building	Oil- Gear Compound	GH U4 FGD Oil Storage Bldg	Unit 4 Boiler-Turbine, Auxiliary Systems, ESP, PJFF and FGD Areas	1,100	55	Gallons	20	Drums - Steel	Container Storage Area - Oil	Unit 4 FGD Oil Storage Bldg	Concrete Berm	NA	Active	Quantities of individual types of oil may vary. Concrete berm building, pump out if leak.
Ghent - Power Generation - Ghent	PA-006	U4 FGD Oil Storage Building	Oil- Hydraulic	GH U4 FGD Oil Storage Bldg	Unit 4 Boiler-Turbine, Auxiliary Systems, ESP, PJFF and FGD Areas	825	55	Gallons	15	Drums - Steel	Container Storage Area - Oil	Unit 4 FGD Oil Storage Bldg	Concrete Berm	NA	Active	Quantities of individual types of oil may vary. Concrete berm building, pump out if leak.
Ghent - Power Generation - Ghent	PA-006	U4 FGD Oil Storage Building	Oil- Turbine	GH U4 FGD Oil Storage Bldg	Unit 4 Boiler-Turbine, Auxiliary Systems, ESP, PJFF and FGD Areas	1,100	55	Gallons	20	Drums - Steel	Container Storage Area - Oil	Unit 4 FGD Oil Storage Bldg	Concrete Berm	NA	Active	Quantities of individual types of oil may vary. Concrete berm building, pump out if leak.
Ghent - Power Generation - Ghent	PA-006	U4 FGD Oil Storage Building	Oil- Used for Recycling	GH U4 FGD Oil Storage Bldg	Unit 4 Boiler-Turbine, Auxiliary Systems, ESP, PJFF and FGD Areas	1,100	55	Gallons	20	Drums - Steel	Container Storage Area - Oil	Unit 4 FGD Oil Storage Bldg	Concrete Berm	NA	Active	Quantities of individual types of oil may vary. Concrete berm building, pump out if leak.
Ghent - Power Generation - Ghent	PA-007	Limestone Slurry Preparation Building Oil Storage Area	Oil- Gear Compound	GH Limestone Slurry Prep./Ball Mill	Limestone Pile, Slurry Preparation, Storage Buildings and Limestone Barge Unloader	660	55	Gallons	12	Drums - Steel	Container Storage Area - Oil	Limestone Slurry Preparation Building-Grease/Lube Oil Drums	Sumps and/or collection system	NA	Active	concrete floors-trenches to building sump & pumped into limestone slurry storage tanks. Quantities of individual types of oil may vary.
Ghent - Power Generation - Ghent	PA-007	Limestone Slurry Preparation Building Oil Storage Area	Oil- Lubrication all grades	GH Limestone Slurry Prep./Ball Mill	Limestone Pile, Slurry Preparation, Storage Buildings and Limestone Barge Unloader	550	55	Gallons	10	Drums - Steel	Container Storage Area - Oil	Limestone Slurry Preparation Building-Grease/Lube Oil Drums	Sumps and/or collection system	NA	Active	concrete floors-trenches to building sump & pumped into limestone slurry storage tanks. Quantities of individual types of oil may vary.
Ghent - Power Generation - Ghent	PA-007	Limestone Slurry Preparation Building Oil Storage Area	Oil- Used for Recycling	GH Limestone Slurry Prep./Ball Mill	Limestone Pile, Slurry Preparation, Storage Buildings and Limestone Barge Unloader	1,650	55	Gallons	30	Drums - Steel	Container Storage Area - Oil	Limestone Slurry Preparation Building-Grease/Lube Oil Drums	Sumps and/or collection system	NA	Active	concrete floors-trenches to building sump & pumped into limestone slurry storage tanks. Quantities of individual types of oil may vary.
Ghent - Power Generation - Ghent	PA-007	Zep Dyna 143 -- Parts Degreaser	Solvents -Oil	GH Limestone Slurry Prep./Ball Mill	Limestone Pile, Slurry Preparation, Storage Buildings and Limestone Barge Unloader	165	55	Gallons	3	Drums - Steel	Container Storage Area - Oil	Stored on north side of 0-1 ball mill ground floor	Sumps and/or collection system	NA	Active	concrete floors-trenches to building sump & pumped into limestone slurry storage tanks. Quantities of individual types of oil may vary.
Ghent - Power Generation - Ghent	PA-008	Coalyard Maintenance Garage Bay Oil Storage Area	Oil- Used for Recycling	GH Coal Yard Tractor Garage	Coal Pile, Maintenance, Storage Buildings and Coal Barge Unloader	550	55	Gallons	10	Drums - Steel	Container Storage Area - Oil	Coalyard Maintenance Garage Bay Area	Sumps and/or collection system	GH-01.i	Active	concrete floors drain to Coal Yard Settling Basin #1 (west). Quantities of individual types of oil may vary.
Ghent - Power Generation - Ghent	PA-009	Recycle Oil Contractor Pickup Area		Outside-Not Covered	Coal Pile, Maintenance, Storage Buildings and Coal Barge Unloader	0	0	--	0		Container Storage Area - Oil	Recycle Oil Contractor Pickup Area	Sumps and/or collection system	GH-01.h	Perm Closed/ Retired Onsite	Concrete floors drain to Coal Yard Settling Basin #1 (west). Quantities of individual types of oil may vary.

Material Inventory Detail

Facility	Item ID	Comments-Name/Item Description	Material	Building List or outside, outside covered	Location Group/Site Area	Capacity	Individual Container Capacity	Capacity Unit of Measure	Qty of Containers	Container Type	Item Type	Comments-Location-Relative reference to location/Floor Number	Vessel Secondary Containment	Spill Sub-Drainage Area ID	Op. Status	Comments-General Comments
Ghent - Power Generation - Ghent	PA-010	Bottom Ash Dewatering Building Oil Storage Area	Oil- Lubrication all grades	GH CCRT Bottom Ash Dewatering Bldg	CCRT-FA/BA/Gypsum-Transport/Dewatering Area	825	55	Gallons	15	Drums - Steel	Container Storage Area - Oil	Bottom Ash Dewatering Building	Sumps and/or collection system	GH-01.d	Active	Quantities of individual types of oil may vary.
Ghent - Power Generation - Ghent	PA-010	Bottom Ash Dewatering Building Oil Storage Area	Oil- Used for Recycling	GH CCRT Bottom Ash Dewatering Bldg	CCRT-FA/BA/Gypsum-Transport/Dewatering Area	165	55	Gallons	3	Drums - Steel	Container Storage Area - Oil	Bottom Ash Dewatering Building	Sumps and/or collection system	GH-01.d	Active	Quantities of individual types of oil may vary.
Ghent - Power Generation - Ghent	PA-011	Unit 1 Boiler Room near Unit 1&2 Oil Storage Room	Oil- Lubrication all grades	GH U1 Boiler Turbine Bldg	Unit 1 Boiler-Turbine, Auxiliary Systems, PJFF and FGD Areas	55	55	Gallons	1	Drums - Steel	Container Storage Area - Oil	Unit 1 Boiler Room near Unit 1&2 Oil Storage Room	Spill Pallets	GH-01.n	Active	Quantities of individual types of oil may vary.
Ghent - Power Generation - Ghent	PA-011	Unit 1 Boiler Room near Unit 1&2 Oil Storage Room	Oil- Used for Recycling	GH U1 Boiler Turbine Bldg	Unit 1 Boiler-Turbine, Auxiliary Systems, PJFF and FGD Areas	550	55	Gallons	10	Drums - Steel	Container Storage Area - Oil	Unit 1 Boiler Room near Unit 1&2 Oil Storage Room	Spill Pallets	GH-01.n	Active	Quantities of individual types of oil may vary.
Ghent - Power Generation - Ghent	PA-012	U1 Boiler Room Used Oil Storage Area	Oil- Used for Recycling	GH U1 Boiler Turbine Bldg	Unit 1 Boiler-Turbine, Auxiliary Systems, PJFF and FGD Areas	2,750	55	Gallons	50	Drums - Steel	Container Storage Area - Oil	Unit 1 Boiler Room	Sumps and/or collection system	GH-01.n	Active	Quantities of individual types of oil may vary.
Ghent - Power Generation - Ghent	PA-013	Unit 2 Electro-Hydraulic Fluid Area	Oil- EH Fluid (Includes Fyrquel)	GH U2 Boiler Turbine Bldg	Unit 2 Boiler-Turbine, Auxiliary Systems, PJFF and FGD Areas	330	55	Gallons	6	Drums - Steel	Container Storage Area - Oil	Unit 2 Electro-Hydraulic Fluid Area	Sumps and/or collection system	GH-01.n	Active	Quantities of individual types of oil may vary.
Ghent - Power Generation - Ghent	PA-014	Unit 3 Boiler Room Oil Storage Area	Oil- Used for Recycling	GH U3 Boiler Turbine Bldg	Unit 3 Boiler-Turbine, Auxiliary Systems, ESP, PJFF and FGD Areas	440	55	Gallons	8	Drums - Steel	Container Storage Area - Oil	Unit 3 Boiler Room near U3&4 Oil Storage Room	Sumps and/or collection system	GH-01.n	Active	Quantities of individual types of oil may vary.
Ghent - Power Generation - Ghent	PA-015	Unit 3 Electro-Hydraulic Fluid Area	Oil- EH Fluid (Includes Fyrquel)	GH U3 Boiler Turbine Bldg	Unit 3 Boiler-Turbine, Auxiliary Systems, ESP, PJFF and FGD Areas	825	55	Gallons	15	Drums - Steel	Container Storage Area - Oil	Unit 3 Electro-Hydraulic Fluid Area	Sumps and/or collection system	GH-01.n	Active	Quantities of individual types of oil may vary.
Ghent - Power Generation - Ghent	PA-016	Unit 1/2 Fly Ash Transport Blower Building Oil Storage Area	Oil- Lubrication all grades	GH U1-2 Fly Ash Transport-Blower Bldg	Unit 1 Boiler-Turbine, Auxiliary Systems, PJFF and FGD Areas	220	55	Gallons	4	Drums - Steel	Container Storage Area - Oil	Unit 1/2 Fly Ash Transport Blower Building	Sumps and/or collection system	NA	Active	Quantities of individual types of oil may vary. Building sump to absorber sump then back into process
Ghent - Power Generation - Ghent	PA-017	Unit 3/4 Fly Ash Transport Blower Bldg oil Storage Area	Oil- Lubrication all grades	GH U3-4 Fly Ash Transport-Blower Bldg	Unit 3 Boiler-Turbine, Auxiliary Systems, ESP, PJFF and FGD Areas	220	55	Gallons	4	Drums - Steel	Container Storage Area - Oil	Unit 3/4 Fly Ash Transport Blower	Sumps and/or collection system	NA	Active	Quantities of individual types of oil may vary. Building sump to absorber sump then back into process
Ghent - Power Generation - Ghent	PA-018	Coalyard Warehouse Oil Storage Area	Oil- Hydraulic	GH Warehouse-Coal yard	Coal Pile, Maintenance, Storage Buildings and Coal Barge Unloader	385	55	Gallons	7	Drums - Steel	Container Storage Area - Oil	Coalyard Warehouse 1	Spill Pallets	GH-01.i	Active	Quantities of individual types of oil may vary.
Ghent - Power Generation - Ghent	PA-018	Coalyard Warehouse Oil Storage Area	Oil- Lubrication all grades	GH Warehouse-Coal yard	Coal Pile, Maintenance, Storage Buildings and Coal Barge Unloader	385	55	Gallons	7	Drums - Steel	Container Storage Area - Oil	Coalyard Warehouse 1	Spill Pallets	GH-01.i	Active	Quantities of individual types of oil may vary.
Ghent - Power Generation - Ghent	PA-019	Limestone Rock Barge Unloader Storage Area	Oil- Hydraulic	Outside-Not Covered	Limestone Pile, Slurry Preparation, Storage Buildings and Limestone Barge Unloader	110	55	Gallons	2	Drums - Steel	Container Storage Area - Oil	Limestone Rock Barge Unloader	Spill Pallets	SW-OR	Active	Quantities of individual types of oil may vary.
Ghent - Power Generation - Ghent	PA-019	Limestone Rock Barge Unloader Storage Area	Oil- Used for Recycling	Outside-Not Covered	Limestone Pile, Slurry Preparation, Storage Buildings and Limestone Barge Unloader	110	55	Gallons	2	Drums - Steel	Container Storage Area - Oil	Limestone Rock Barge Unloader	Spill Pallets	SW-OR	Active	Quantities of individual types of oil may vary.
Ghent - Power Generation - Ghent	PA-020	PWT Oil Storage Area	Oil- Misc. other	GH Process Water System (PWS) Treatment Bldg	PWS Area	330	55	Gallons	6	Drums - Steel	Container Storage Area - Oil	PWT Warehouse Room	Spill Pallets	NA	Active	Quantities of individual types of oil may vary.
Ghent - Power Generation - Ghent	PA-021	Unit 3/4 Maintenance Shop Storage Area	Oil- Used for Recycling	GH Plant U- 3/4 Maintenance Shop	Unit 4 Boiler-Turbine, Auxiliary Systems, ESP, PJFF and FGD Areas	55	55	Gallons	1	Drums - Steel	Container Storage Area - Oil	Unit 3/4 Maintenance Shop	Sumps and/or collection system	NA	Active	Quantities of individual types of oil may vary.
Ghent - Power Generation - Ghent	PA-022	Unit 2 Basement South Elevator Storage Area	Oil- Misc. other	U2 Boiler Turbine Bldg	Unit 2 Boiler-Turbine, Auxiliary Systems, PJFF and FGD Areas	1,650	55	Gallons	30	Drums - Steel	Container Storage Area - Oil	Unit 2 basement south side of the U2 elevator	Sumps and/or collection system	GH-01.n	Active	Quantities of individual types of oil may vary.
Ghent - Power Generation - Ghent	PA-023	Unit 1 Second Floor East Storage Area	Oil- Misc. other	U1 Boiler Turbine Bldg	Unit 1 Boiler-Turbine, Auxiliary Systems, PJFF and FGD Areas	2,750	55	Gallons	50	Drums - Steel	Container Storage Area - Oil	Second floor of Unit 1, east wall	Spill Pallets	GH-01.n	Active	Quantities of individual types of oil may vary.
Ghent - Power Generation - Ghent	PA-024	Unit 4 FGD Storage Area	Oil- Misc. other	U4 FGD	Unit 4 Boiler-Turbine, Auxiliary Systems, ESP, PJFF and FGD Areas	2,750	55	Gallons	50	Drums - Steel	Container Storage Area - Oil	1st floor of U4 FGD	Sumps and/or collection system	NA	Active	Quantities of individual types of oil may vary.
Ghent - Power Generation - Ghent	R-001	Unit 1 Main Turbine Oil Reservoir	Oil- Turbine	GH U1 Boiler Turbine Bldg	Unit 1 Boiler-Turbine, Auxiliary Systems, PJFF and FGD Areas	11,500	11,500	Gallons	1	Steel Reservoir	Reservoirs - Oil	Unit 1	Sumps and/or collection system	GH-01.n	Active	Floor drains to O/W separator

Material Inventory Detail

Facility	Item ID	Comments-Name/Item Description	Material	Building List or outside, outside covered	Location Group/Site Area	Capacity	Individual Container Capacity	Capacity Unit of Measure	Qty of Containers	Container Type	Item Type	Comments-Location-Relative reference to location/Floor Number	Vessel Secondary Containment	Spill Sub-Drainage Area ID	Op. Status	Comments-General Comments
Ghent - Power Generation - Ghent	R-002	Unit 1 Boiler Feed Pump Turbine Oil Reservoir	Oil- Turbine	GH U1 Boiler Turbine Bldg	Unit 1 Boiler-Turbine, Auxiliary Systems, PJFF and FGD Areas	900	900	Gallons	1	Steel Reservoir	Reservoirs - Oil	Unit 1	Sumps and/or collection system	GH-01.n	Active	Floor drains to O/W separator
Ghent - Power Generation - Ghent	R-003	Unit 1 Boiler Feed Pump Turbine Oil Reservoir	Oil- Turbine	GH U1 Boiler Turbine Bldg	Unit 1 Boiler-Turbine, Auxiliary Systems, PJFF and FGD Areas	900	900	Gallons	1	Steel Reservoir	Reservoirs - Oil	Unit 1	Sumps and/or collection system	GH-01.n	Active	Floor drains to O/W separator
Ghent - Power Generation - Ghent	R-004	Unit 1 Hydrogen Seal Oil Reservoir	Oil- Turbine	GH U1 Boiler Turbine Bldg	Unit 1 Boiler-Turbine, Auxiliary Systems, PJFF and FGD Areas	350	350	Gallons	1	Steel Reservoir	Reservoirs - Oil	Unit 1	Sumps and/or collection system	GH-01.n	Active	Floor drains to O/W separator
Ghent - Power Generation - Ghent	R-005	Unit 1 Electro-Hydraulic Control System Reservoir	Oil- EH Fluid (Includes Fyrquel)	GH U1 Boiler Turbine Bldg	Unit 1 Boiler-Turbine, Auxiliary Systems, PJFF and FGD Areas	165	165	Gallons	1	Steel Reservoir	Reservoirs - Oil	Unit 1	Sumps and/or collection system	GH-01.n	Active	Floor drains to O/W separator
Ghent - Power Generation - Ghent	R-006	Unit 1 Coal Mill Gear Box 1-1	Oil- Gear Compound	GH U1 Boiler Turbine Bldg	Unit 1 Boiler-Turbine, Auxiliary Systems, PJFF and FGD Areas	375	375	Gallons	1	Steel Reservoir	Reservoirs - Oil	Unit 1	Sumps and/or collection system	GH-01.n	Active	Floor drains to O/W separator
Ghent - Power Generation - Ghent	R-007	Unit 1 Coal Mill Gear Box 1-2	Oil- Gear Compound	GH U1 Boiler Turbine Bldg	Unit 1 Boiler-Turbine, Auxiliary Systems, PJFF and FGD Areas	375	375	Gallons	1	Steel Reservoir	Reservoirs - Oil	Unit 1	Sumps and/or collection system	GH-01.n	Active	Floor drains to O/W separator
Ghent - Power Generation - Ghent	R-008	Unit 1 Coal Mill Gear Box 1-3	Oil- Gear Compound	GH U1 Boiler Turbine Bldg	Unit 1 Boiler-Turbine, Auxiliary Systems, PJFF and FGD Areas	375	375	Gallons	1	Steel Reservoir	Reservoirs - Oil	Unit 1	Sumps and/or collection system	GH-01.n	Active	Floor drains to O/W separator
Ghent - Power Generation - Ghent	R-009	Unit 1 Coal Mill Gear Box 1-4	Oil- Gear Compound	GH U1 Boiler Turbine Bldg	Unit 1 Boiler-Turbine, Auxiliary Systems, PJFF and FGD Areas	375	375	Gallons	1	Steel Reservoir	Reservoirs - Oil	Unit 1	Sumps and/or collection system	GH-01.n	Active	Floor drains to O/W separator
Ghent - Power Generation - Ghent	R-010	Unit 1 Coal Mill Gear Box 1-5	Oil- Gear Compound	GH U1 Boiler Turbine Bldg	Unit 1 Boiler-Turbine, Auxiliary Systems, PJFF and FGD Areas	375	375	Gallons	1	Steel Reservoir	Reservoirs - Oil	Unit 1	Sumps and/or collection system	GH-01.n	Active	Floor drains to O/W separator
Ghent - Power Generation - Ghent	R-011	Unit 1 Coal Mill Gear Box 1-6	Oil- Gear Compound	GH U1 Boiler Turbine Bldg	Unit 1 Boiler-Turbine, Auxiliary Systems, PJFF and FGD Areas	375	375	Gallons	1	Steel Reservoir	Reservoirs - Oil	Unit 1	Sumps and/or collection system	GH-01.n	Active	Floor drains to O/W separator
Ghent - Power Generation - Ghent	R-012	Unit 1 ID Fan Lube Oil Reservoirs (1-1A)	Oil- Turbine	Outside-Not Covered	Unit 1 Boiler-Turbine, Auxiliary Systems, PJFF and FGD Areas	275	275	Gallons	1	Steel Reservoir	Reservoirs - Oil	Unit 1	Concrete Berm	GH-02.a	Active	concrete berm with valved drain
Ghent - Power Generation - Ghent	R-013	Unit 1 ID Fan Lube Oil Reservoirs (1-1B)	Oil- Turbine	Outside-Not Covered	Unit 1 Boiler-Turbine, Auxiliary Systems, PJFF and FGD Areas	275	275	Gallons	1	Steel Reservoir	Reservoirs - Oil	Unit 1	Concrete Berm	GH-02.a	Active	concrete berm with valved drain
Ghent - Power Generation - Ghent	R-014	Unit 1 ID Fan Lube Oil Reservoirs (1-2A)	Oil- Turbine	Outside-Not Covered	Unit 1 Boiler-Turbine, Auxiliary Systems, PJFF and FGD Areas	275	275	Gallons	1	Steel Reservoir	Reservoirs - Oil	Unit 1	Concrete Berm	GH-02.a	Active	concrete berm with valved drain
Ghent - Power Generation - Ghent	R-015	Unit 1 ID Fan Lube Oil Reservoirs (1-2B)	Oil- Turbine	Outside-Not Covered	Unit 1 Boiler-Turbine, Auxiliary Systems, PJFF and FGD Areas	275	275	Gallons	1	Steel Reservoir	Reservoirs - Oil	Unit 1	Concrete Berm	GH-02.a	Active	concrete berm with valved drain
Ghent - Power Generation - Ghent	R-016	Unit 1 FGD Hydraulic Valves Control System	Oil- Hydraulic	GH U1 FGD	Unit 1 Boiler-Turbine, Auxiliary Systems, PJFF and FGD Areas	165	165	Gallons	1	Steel Reservoir	Reservoirs - Oil	Unit 1 FGD	Concrete Berm	GH-02.a	Active	concrete berm with valved drain
Ghent - Power Generation - Ghent	R-017	Unit 1 FGD Forced Oxidation Blowers Lube Oil Coolers (1-1)	Oil- Turbine	Outside-Not Covered	Unit 1 Boiler-Turbine, Auxiliary Systems, PJFF and FGD Areas	110	110	Gallons	1	Equipment-Oil filled other	Reservoirs - Oil	Unit 1 FGD	Concrete Berm	GH-02.a	Active	concrete berm with valved drain
Ghent - Power Generation - Ghent	R-018	Unit 1 FGD Forced Oxidation Blowers Lube Oil Coolers (1-2)	Oil- Turbine	Outside-Not Covered	Unit 1 Boiler-Turbine, Auxiliary Systems, PJFF and FGD Areas	110	110	Gallons	1	Equipment-Oil filled other	Reservoirs - Oil	Unit 1 FGD	Concrete Berm	GH-02.a	Active	concrete berm with valved drain
Ghent - Power Generation - Ghent	R-019	Unit 2 Main Turbine Oil Reservoir	Oil- Turbine	GH U2 Boiler Turbine Bldg	Unit 2 Boiler-Turbine, Auxiliary Systems, PJFF and FGD Areas	11,500	11,500	Gallons	1	Steel Reservoir	Reservoirs - Oil	Unit 2	Sumps and/or collection system	GH-01.n	Active	Floor drains to O/W separator
Ghent - Power Generation - Ghent	R-020	Unit 2 Boiler Feed Pump Turbine Oil Reservoirs	Oil- Turbine	GH U2 Boiler Turbine Bldg	Unit 2 Boiler-Turbine, Auxiliary Systems, PJFF and FGD Areas	1,000	1,000	Gallons	1	Steel Reservoir	Reservoirs - Oil	Unit 2	Sumps and/or collection system	GH-01.n	Active	Floor drains to O/W separator
Ghent - Power Generation - Ghent	R-021	Unit 2 Boiler Feed Pump Turbine Oil Reservoirs	Oil- Turbine	GH U2 Boiler Turbine Bldg	Unit 2 Boiler-Turbine, Auxiliary Systems, PJFF and FGD Areas	1,000	1,000	Gallons	1	Steel Reservoir	Reservoirs - Oil	Unit 2	Sumps and/or collection system	GH-01.n	Active	Floor drains to O/W separator
Ghent - Power Generation - Ghent	R-022	Unit 2 Hydrogen Seal Oil Reservoir	Oil- Turbine	GH U2 Boiler Turbine Bldg	Unit 2 Boiler-Turbine, Auxiliary Systems, PJFF and FGD Areas	605	605	Gallons	1	Steel Reservoir	Reservoirs - Oil	Unit 2	Sumps and/or collection system	GH-01.n	Active	Floor drains to O/W separator
Ghent - Power Generation - Ghent	R-023	Unit 2 Electro-Hydraulic Control System Reservoir	Oil- EH Fluid (Includes Fyrquel)	GH U2 Boiler Turbine Bldg	Unit 2 Boiler-Turbine, Auxiliary Systems, PJFF and FGD Areas	375	375	Gallons	1	Steel Reservoir	Reservoirs - Oil	Unit 2	Sumps and/or collection system	GH-01.n	Active	Floor drains to O/W separator
Ghent - Power Generation - Ghent	R-024	Unit 2 Coal Mill Gear Box 2-1	Oil- Gear Compound	GH U2 Boiler Turbine Bldg	Unit 2 Boiler-Turbine, Auxiliary Systems, PJFF and FGD Areas	375	375	Gallons	1	Steel Reservoir	Reservoirs - Oil	Unit 2	Sumps and/or collection system	GH-01.n	Active	Floor drains to O/W separator
Ghent - Power Generation - Ghent	R-025	Unit 2 Coal Mill Gear Box 2-2	Oil- Gear Compound	GH U2 Boiler Turbine Bldg	Unit 2 Boiler-Turbine, Auxiliary Systems, PJFF and FGD Areas	375	375	Gallons	1	Steel Reservoir	Reservoirs - Oil	Unit 2	Sumps and/or collection system	GH-01.n	Active	Floor drains to O/W separator

Material Inventory Detail

Facility	Item ID	Comments-Name/Item Description	Material	Building List or outside, outside covered	Location Group/Site Area	Capacity	Individual Container Capacity	Capacity Unit of Measure	Qty of Containers	Container Type	Item Type	Comments-Location-Relative reference to location/Floor Number	Vessel Secondary Containment	Spill Sub-Drainage Area ID	Op. Status	Comments-General Comments
Ghent - Power Generation - Ghent	R-026	Unit 2 Coal Mill Gear Box 2-3	Oil- Gear Compound	GH U2 Boiler Turbine Bldg	Unit 2 Boiler-Turbine, Auxiliary Systems, PJFF and FGD Areas	375	375	Gallons	1	Steel Reservoir	Reservoirs - Oil	Unit 2	Sumps and/or collection system	GH-01.n	Active	Floor drains to O/W separator
Ghent - Power Generation - Ghent	R-027	Unit 2 Coal Mill Gear Box 2-4	Oil- Gear Compound	GH U2 Boiler Turbine Bldg	Unit 2 Boiler-Turbine, Auxiliary Systems, PJFF and FGD Areas	375	375	Gallons	1	Steel Reservoir	Reservoirs - Oil	Unit 2	Sumps and/or collection system	GH-01.n	Active	Floor drains to O/W separator
Ghent - Power Generation - Ghent	R-028	Unit 2 Coal Mill Gear Box 2-5	Oil- Gear Compound	GH U2 Boiler Turbine Bldg	Unit 2 Boiler-Turbine, Auxiliary Systems, PJFF and FGD Areas	375	375	Gallons	1	Steel Reservoir	Reservoirs - Oil	Unit 2	Sumps and/or collection system	GH-01.n	Active	Floor drains to O/W separator
Ghent - Power Generation - Ghent	R-029	Unit 2 Coal Mill Gear Box 2-6	Oil- Gear Compound	GH U2 Boiler Turbine Bldg	Unit 2 Boiler-Turbine, Auxiliary Systems, PJFF and FGD Areas	375	375	Gallons	1	Steel Reservoir	Reservoirs - Oil	Unit 2	Sumps and/or collection system	GH-01.n	Active	Floor drains to O/W separator
Ghent - Power Generation - Ghent	R-030	Unit 2 ID Fan Lube Oil Reservoirs (2-1)	Oil- Turbine	Outside-Not Covered	Unit 2 Boiler-Turbine, Auxiliary Systems, PJFF and FGD Areas	180	180	Gallons	1	Steel Reservoir	Reservoirs - Oil	Unit 2	Concrete Berm	GH-02.a	Active	concrete berm with valved drain
Ghent - Power Generation - Ghent	R-031	Unit 2 ID Fan Lube Oil Reservoirs (2-2)	Oil- Turbine	Outside-Not Covered	Unit 2 Boiler-Turbine, Auxiliary Systems, PJFF and FGD Areas	180	180	Gallons	1	Steel Reservoir	Reservoirs - Oil	Unit 2	Concrete Berm	GH-02.a	Active	concrete berm with valved drain
Ghent - Power Generation - Ghent	R-032	Unit 2 FGD Hydraulic Valves Control System	Oil- Hydraulic	GH U2 FGD	Unit 2 Boiler-Turbine, Auxiliary Systems, PJFF and FGD Areas	165	165	Gallons	1	Steel Reservoir	Reservoirs - Oil	Unit 2 FGD	Concrete Berm	NA	Active	concrete berm with valved drain
Ghent - Power Generation - Ghent	R-033	Unit 2 FGD Forced Oxidation Blowers Lube Oil Coolers (2-1)	Oil- Turbine	GH U2 FGD	Unit 2 Boiler-Turbine, Auxiliary Systems, PJFF and FGD Areas	110	110	Gallons	1	Equipment-Oil filled other	Reservoirs - Oil	Unit 2 FGD	Sumps and/or collection system	NA	Active	Water/oil heat exchanger inside building. Building sumps to PWS.
Ghent - Power Generation - Ghent	R-034	Unit 2 FGD Forced Oxidation Blowers Lube Oil Coolers (2-2)	Oil- Turbine	GH U2 FGD	Unit 2 Boiler-Turbine, Auxiliary Systems, PJFF and FGD Areas	110	110	Gallons	1	Equipment-Oil filled other	Reservoirs - Oil	Unit 2 FGD	Sumps and/or collection system	NA	Active	Water/oil heat exchanger inside building. Building sumps to PWS.
Ghent - Power Generation - Ghent	R-035	Unit 2 FGD Forced Oxidation Blowers Lube Oil Coolers (2-3)	Oil- Turbine	GH U2 FGD	Unit 2 Boiler-Turbine, Auxiliary Systems, PJFF and FGD Areas	110	110	Gallons	1	Equipment-Oil filled other	Reservoirs - Oil	Unit 2 FGD	Sumps and/or collection system	NA	Active	Water/oil heat exchanger inside building. Building sumps to PWS.
Ghent - Power Generation - Ghent	R-036	Unit 3 Main Turbine Oil Reservoir	Oil- Turbine	GH U3 Boiler Turbine Bldg	Unit 3 Boiler-Turbine, Auxiliary Systems, ESP, PJFF and FGD Areas	11,500	11,500	Gallons	1	Steel Reservoir	Reservoirs - Oil	Unit 3	Sumps and/or collection system	GH-01.n	Active	Floor drains to O/W separator
Ghent - Power Generation - Ghent	R-037	Unit 3 Turbine Oil Reservoir	Oil- Turbine	GH U3 Boiler Turbine Bldg	Unit 3 Boiler-Turbine, Auxiliary Systems, ESP, PJFF and FGD Areas	500	500	Gallons	1	Steel Reservoir	Reservoirs - Oil	Unit 3&4 Turbine oil storage room Steel filter-conditioner assembly	Concrete Berm	GH-01.n	Active	Drains to O/W separator
Ghent - Power Generation - Ghent	R-038	Unit 3 Hydrogen Seal Oil Reservoir	Oil- Turbine	GH U3 Boiler Turbine Bldg	Unit 3 Boiler-Turbine, Auxiliary Systems, ESP, PJFF and FGD Areas	605	605	Gallons	1	Steel Reservoir	Reservoirs - Oil	Unit 3	Sumps and/or collection system	GH-01.n	Active	Drains to O/W separator
Ghent - Power Generation - Ghent	R-039	Unit 3 - Electro-Hydraulic Control System Reservoir	Oil- EH Fluid (Includes Fyrquel)	GH U3 Boiler Turbine Bldg	Unit 3 Boiler-Turbine, Auxiliary Systems, ESP, PJFF and FGD Areas	375	375	Gallons	1	Steel Reservoir	Reservoirs - Oil	Unit 3	Concrete Berm	GH-01.n	Active	Drains to O/W separator
Ghent - Power Generation - Ghent	R-040	Unit 3 Coal Mill Gear Box 3-1	Oil- Gear Compound	GH U3 Boiler Turbine Bldg	Unit 3 Boiler-Turbine, Auxiliary Systems, ESP, PJFF and FGD Areas	375	375	Gallons	1	Steel Reservoir	Reservoirs - Oil	Unit 3	Sumps and/or collection system	GH-01.n	Active	Floor drains to O/W separator
Ghent - Power Generation - Ghent	R-041	Unit 3 Coal Mill Gear Box 3-2	Oil- Gear Compound	GH U3 Boiler Turbine Bldg	Unit 3 Boiler-Turbine, Auxiliary Systems, ESP, PJFF and FGD Areas	375	375	Gallons	1	Steel Reservoir	Reservoirs - Oil	Unit 3	Sumps and/or collection system	GH-01.n	Active	Floor drains to O/W separator
Ghent - Power Generation - Ghent	R-042	Unit 3 Coal Mill Gear Box 3-3	Oil- Gear Compound	GH U3 Boiler Turbine Bldg	Unit 3 Boiler-Turbine, Auxiliary Systems, ESP, PJFF and FGD Areas	375	375	Gallons	1	Steel Reservoir	Reservoirs - Oil	Unit 3	Sumps and/or collection system	GH-01.n	Active	Floor drains to O/W separator
Ghent - Power Generation - Ghent	R-043	Unit 3 Coal Mill Gear Box 3-4	Oil- Gear Compound	GH U3 Boiler Turbine Bldg	Unit 3 Boiler-Turbine, Auxiliary Systems, ESP, PJFF and FGD Areas	375	375	Gallons	1	Steel Reservoir	Reservoirs - Oil	Unit 3	Sumps and/or collection system	GH-01.n	Active	Floor drains to O/W separator
Ghent - Power Generation - Ghent	R-044	Unit 3 Coal Mill Gear Box 3-5	Oil- Gear Compound	GH U3 Boiler Turbine Bldg	Unit 3 Boiler-Turbine, Auxiliary Systems, ESP, PJFF and FGD Areas	375	375	Gallons	1	Steel Reservoir	Reservoirs - Oil	Unit 3	Sumps and/or collection system	GH-01.n	Active	Floor drains to O/W separator
Ghent - Power Generation - Ghent	R-045	Unit 3 Coal Mill Gear Box 3-6	Oil- Gear Compound	GH U3 Boiler Turbine Bldg	Unit 3 Boiler-Turbine, Auxiliary Systems, ESP, PJFF and FGD Areas	375	375	Gallons	1	Steel Reservoir	Reservoirs - Oil	Unit 3	Sumps and/or collection system	GH-01.n	Active	Floor drains to O/W separator

Material Inventory Detail

Facility	Item ID	Comments-Name/Item Description	Material	Building List or outside, outside covered	Location Group/Site Area	Capacity	Individual Container Capacity	Capacity Unit of Measure	Qty of Containers	Container Type	Item Type	Comments-Location-Relative reference to location/Floor Number	Vessel Secondary Containment	Spill Sub-Drainage Area ID	Op. Status	Comments-General Comments
Ghent - Power Generation - Ghent	R-046	Unit 3 ID Fan lube oil reservoirs (3-1A)	Oil- Turbine	Outside-Not Covered	Unit 3 Boiler-Turbine, Auxiliary Systems, ESP, PJFF and FGD Areas	275	275	Gallons	1	Steel Reservoir	Reservoirs - Oil	Unit 3	Concrete Berm	GH-03.a	Active	Concrete berm with valved drain
Ghent - Power Generation - Ghent	R-047	Unit 3 ID Fan lube oil reservoirs (3-1B)	Oil- Turbine	Outside-Not Covered	Unit 3 Boiler-Turbine, Auxiliary Systems, ESP, PJFF and FGD Areas	275	275	Gallons	1	Steel Reservoir	Reservoirs - Oil	Unit 3	Concrete Berm	GH-03.a	Active	Concrete berm with valved drain
Ghent - Power Generation - Ghent	R-048	Unit 3 ID Fan lube oil reservoirs (3-2A)	Oil- Turbine	Outside-Not Covered	Unit 3 Boiler-Turbine, Auxiliary Systems, ESP, PJFF and FGD Areas	275	275	Gallons	1	Steel Reservoir	Reservoirs - Oil	Unit 3	Concrete Berm	GH-03.a	Active	Concrete berm with valved drain
Ghent - Power Generation - Ghent	R-049	Unit 3 ID Fan lube oil reservoirs (3-2B)	Oil- Turbine	Outside-Not Covered	Unit 3 Boiler-Turbine, Auxiliary Systems, ESP, PJFF and FGD Areas	275	275	Gallons	1	Steel Reservoir	Reservoirs - Oil	Unit 3	Concrete Berm	GH-03.a	Active	Concrete berm with valved drain
Ghent - Power Generation - Ghent	R-050	Unit 3 FGD Hydraulic Valves Control System	Oil- Hydraulic	GH U3 FGD	Unit 3 Boiler-Turbine, Auxiliary Systems, ESP, PJFF and FGD Areas	165	165	Gallons	1	Steel Reservoir	Reservoirs - Oil	Unit 3	Concrete Berm	NA	Active	concrete berm with valved drain
Ghent - Power Generation - Ghent	R-051	Unit 3 FGD Forced Oxidation Blowers Lube Oil Coolers 3-1	Oil- Turbine	Outside-Not Covered	Unit 3 Boiler-Turbine, Auxiliary Systems, ESP, PJFF and FGD Areas	110	110	Gallons	1	Equipment-Oil filled other	Reservoirs - Oil	Unit 3	Concrete Berm	GH-03.a	Active	concrete berm with valved drain
Ghent - Power Generation - Ghent	R-052	Unit 3 FGD Forced Oxidation Blowers Lube Oil Coolers 3-2	Oil- Turbine	Outside-Not Covered	Unit 3 Boiler-Turbine, Auxiliary Systems, ESP, PJFF and FGD Areas	110	110	Gallons	1	Equipment-Oil filled other	Reservoirs - Oil	Unit 3	Concrete Berm	GH-03.a	Active	concrete berm with valved drain
Ghent - Power Generation - Ghent	R-053	Unit 4 Main Turbine Oil Reservoir	Oil- Turbine	GH U4 Boiler Turbine Bldg	Unit 4 Boiler-Turbine, Auxiliary Systems, ESP, PJFF and FGD Areas	11,500	11,500	Gallons	1	Steel Reservoir	Reservoirs - Oil	Unit 4 (includes Boiler Feed pumps)	Sumps and/or collection system	GH-01.n	Active	Floor drains to O/W separator
Ghent - Power Generation - Ghent	R-054	Unit 4 Turbine Oil Reservoir	Oil- Turbine	GH U4 Boiler Turbine Bldg	Unit 4 Boiler-Turbine, Auxiliary Systems, ESP, PJFF and FGD Areas	500	500	Gallons	1	Steel Reservoir	Reservoirs - Oil	Unit 3&4 Turbine oil storage room Steel filter-conditioner assembly	Concrete Berm	GH-01.n	Active	Drains to O/W separator
Ghent - Power Generation - Ghent	R-055	Unit 4 Hydrogen Seal Oil Reservoir	Oil- Turbine	GH U4 Boiler Turbine Bldg	Unit 4 Boiler-Turbine, Auxiliary Systems, ESP, PJFF and FGD Areas	605	605	Gallons	1	Steel Reservoir	Reservoirs - Oil	Unit 4	Sumps and/or collection system	GH-01.n	Active	Drains to O/W separator
Ghent - Power Generation - Ghent	R-056	Unit 4 - Electro-Hydraulic Control System Reservoir	Oil- EH Fluid (Includes Fyrquel)	GH U4 Boiler Turbine Bldg	Unit 4 Boiler-Turbine, Auxiliary Systems, ESP, PJFF and FGD Areas	375	375	Gallons	1	Steel Reservoir	Reservoirs - Oil	Unit 4	Sumps and/or collection system	GH-01.n	Active	Drains to O/W separator
Ghent - Power Generation - Ghent	R-057	Unit 4 Coal Mill Gear Box 4-1	Oil- Gear Compound	GH U4 Boiler Turbine Bldg	Unit 4 Boiler-Turbine, Auxiliary Systems, ESP, PJFF and FGD Areas	165	165	Gallons	1	Steel Reservoir	Reservoirs - Oil	Unit 4	Sumps and/or collection system	GH-01.n	Active	Drains to O/W separator
Ghent - Power Generation - Ghent	R-058	Unit 4 Coal Mill Gear Box 4-2	Oil- Gear Compound	GH U4 Boiler Turbine Bldg	Unit 4 Boiler-Turbine, Auxiliary Systems, ESP, PJFF and FGD Areas	165	165	Gallons	1	Steel Reservoir	Reservoirs - Oil	Unit 4	Sumps and/or collection system	GH-01.n	Active	Drains to O/W separator
Ghent - Power Generation - Ghent	R-059	Unit 4 Coal Mill Gear Box 4-3	Oil- Gear Compound	GH U4 Boiler Turbine Bldg	Unit 4 Boiler-Turbine, Auxiliary Systems, ESP, PJFF and FGD Areas	165	165	Gallons	1	Steel Reservoir	Reservoirs - Oil	Unit 4	Sumps and/or collection system	GH-01.n	Active	Drains to O/W separator
Ghent - Power Generation - Ghent	R-060	Unit 4 Coal Mill Gear Box 4-4	Oil- Gear Compound	GH U4 Boiler Turbine Bldg	Unit 4 Boiler-Turbine, Auxiliary Systems, ESP, PJFF and FGD Areas	165	165	Gallons	1	Steel Reservoir	Reservoirs - Oil	Unit 4	Sumps and/or collection system	GH-01.n	Active	Drains to O/W separator
Ghent - Power Generation - Ghent	R-061	Unit 4 Coal Mill Gear Box 4-5	Oil- Gear Compound	GH U4 Boiler Turbine Bldg	Unit 4 Boiler-Turbine, Auxiliary Systems, ESP, PJFF and FGD Areas	165	165	Gallons	1	Steel Reservoir	Reservoirs - Oil	Unit 4	Sumps and/or collection system	GH-01.n	Active	Drains to O/W separator
Ghent - Power Generation - Ghent	R-062	Unit 4 Coal Mill Gear Box 4-6	Oil- Gear Compound	GH U4 Boiler Turbine Bldg	Unit 4 Boiler-Turbine, Auxiliary Systems, ESP, PJFF and FGD Areas	165	165	Gallons	1	Steel Reservoir	Reservoirs - Oil	Unit 4	Sumps and/or collection system	GH-01.n	Active	Drains to O/W separator
Ghent - Power Generation - Ghent	R-063	Unit 4 ID Fan lube oil reservoirs (4-1A)	Oil- Turbine	Outside-Not Covered	Unit 4 Boiler-Turbine, Auxiliary Systems, ESP, PJFF and FGD Areas	275	275	Gallons	1	Steel Reservoir	Reservoirs - Oil	Unit 4	Concrete Berm	GH-03.a	Active	concrete berm with valved drain
Ghent - Power Generation - Ghent	R-064	Unit 4 ID Fan lube oil reservoirs (4-1B)	Oil- Turbine	Outside-Not Covered	Unit 4 Boiler-Turbine, Auxiliary Systems, ESP, PJFF and FGD Areas	275	275	Gallons	1	Steel Reservoir	Reservoirs - Oil	Unit 4	Concrete Berm	GH-03.a	Active	concrete berm with valved drain

Material Inventory Detail

Facility	Item ID	Comments-Name/Item Description	Material	Building List or outside, outside covered	Location Group/Site Area	Capacity	Individual Container Capacity	Capacity Unit of Measure	Qty of Containers	Container Type	Item Type	Comments-Location-Relative reference to location/Floor Number	Vessel Secondary Containment	Spill Sub-Drainage Area ID	Op. Status	Comments-General Comments
Ghent - Power Generation - Ghent	R-065	Unit 4 ID Fan lube oil reservoirs (4-2A)	Oil- Turbine	Outside-Not Covered	Unit 4 Boiler-Turbine, Auxiliary Systems, ESP, PJFF and FGD Areas	275	275	Gallons	1	Steel Reservoir	Reservoirs - Oil	Unit 4	Concrete Berm	GH-03.a	Active	concrete berm with valved drain
Ghent - Power Generation - Ghent	R-066	Unit 4 ID Fan lube oil reservoirs (4-2B)	Oil- Turbine	Outside-Not Covered	Unit 4 Boiler-Turbine, Auxiliary Systems, ESP, PJFF and FGD Areas	275	275	Gallons	1	Steel Reservoir	Reservoirs - Oil	Unit 4	Concrete Berm	GH-03.a	Active	concrete berm with valved drain
Ghent - Power Generation - Ghent	R-067	Unit 4 FGD Hydraulic Valves Control System	Oil- Hydraulic	GH U4 FGD	Unit 4 Boiler-Turbine, Auxiliary Systems, ESP, PJFF and FGD Areas	165	165	Gallons	1	Steel Reservoir	Reservoirs - Oil	Unit 4 FGD	Concrete Berm	NA	Active	concrete berm with valved drain
Ghent - Power Generation - Ghent	R-068	Unit 4 FGD Forced Oxidation Blowers Lube Oil Coolers 4-1	Oil- Turbine	Outside-Not Covered	Unit 4 Boiler-Turbine, Auxiliary Systems, ESP, PJFF and FGD Areas	110	110	Gallons	1	Equipment-Oil filled other	Reservoirs - Oil	Unit 4 FGD	Concrete Berm	GH-03.a	Active	concrete berm with valved drain
Ghent - Power Generation - Ghent	R-069	Unit 4 FGD Forced Oxidation Blowers Lube Oil Coolers 4-2	Oil- Turbine	Outside-Not Covered	Unit 4 Boiler-Turbine, Auxiliary Systems, ESP, PJFF and FGD Areas	110	110	Gallons	1	Equipment-Oil filled other	Reservoirs - Oil	Unit 4 FGD	Concrete Berm	GH-03.a	Active	concrete berm with valved drain
Ghent - Power Generation - Ghent	R-070	Ball Mill Lubricating System Reservoir 0-1	Oil- Lubrication all grades	GH Limestone Slurry Prep./Ball Mill	Limestone Pile, Slurry Preparation, Storage Buildings and Limestone Barge Unloader	250	250	Gallons	1	Steel Reservoir	Reservoirs - Oil		Sumps and/or collection system	NA	Active	building sumps to limestone slurry tanks
Ghent - Power Generation - Ghent	R-071	Ball Mill Lubricating System Reservoir 0-2	Oil- Lubrication all grades	GH Limestone Slurry Prep./Ball Mill	Limestone Pile, Slurry Preparation, Storage Buildings and Limestone Barge Unloader	250	250	Gallons	1	Steel Reservoir	Reservoirs - Oil		Sumps and/or collection system	NA	Active	building sumps to limestone slurry tanks
Ghent - Power Generation - Ghent	R-072	Ball Mill Lubricating System Reservoir 0-3	Oil- Lubrication all grades	GH Limestone Slurry Prep./Ball Mill	Limestone Pile, Slurry Preparation, Storage Buildings and Limestone Barge Unloader	250	250	Gallons	1	Steel Reservoir	Reservoirs - Oil		Sumps and/or collection system	NA	Active	building sumps to limestone slurry tanks
Ghent - Power Generation - Ghent	R-073	Coal Unloader Bucket Drive Reservoir	Oil- Lubrication all grades	Outside-Not Covered	Coal Pile, Maintenance, Storage Buildings and Coal Barge Unloader	150	150	Gallons	1	Steel Reservoir	Reservoirs - Oil		Drip Pan Containment	SW-OR	Active	drip pan with valved drain, drainage to coal barge below (preferred)or directly to river
Ghent - Power Generation - Ghent	R-074	Apron Belt Hydraulic unit	Oil- Gear Compound	GH CCRT Transfer Tower #7	CCRT-FA/BA/Gypsum-Transport/Dewatering Area	80	80	Gallons	1	Steel Reservoir	Reservoirs - Oil	Located in transfer tower #7.	Sumps and/or collection system	GH-01.d	Active	Concrete floor drains to sump
Ghent - Power Generation - Ghent	R-075	Remote Submerged Chain Conveyor Hydraulic Drive Reservoirs	Oil- Hydraulic	GH CCRT Bottom Ash Dewatering Bldg	CCRT-FA/BA/Gypsum-Transport/Dewatering Area	150	150	Gallons	1	Steel Reservoir	Reservoirs - Oil		Concrete Berm	GH-01.d	Active	concrete floor-trenches to building sump to 1.d KO Sed trap/Process Channel
Ghent - Power Generation - Ghent	R-076	Remote Submerged Chain Conveyor Hydraulic Valve Reservoirs	Oil- Hydraulic	GH CCRT Bottom Ash Dewatering Bldg	CCRT-FA/BA/Gypsum-Transport/Dewatering Area	150	150	Gallons	1	Steel Reservoir	Reservoirs - Oil		Concrete Berm	GH-01.d	Active	concrete floor-trenches to building sump to 1.d KO Sed trap/Process Channel
Ghent - Power Generation - Ghent	R-077	Remote Submerged Chain Conveyor Hydraulic Valve Reservoirs	Oil- Hydraulic	GH CCRT Bottom Ash Dewatering Bldg	CCRT-FA/BA/Gypsum-Transport/Dewatering Area	150	150	Gallons	1	Steel Reservoir	Reservoirs - Oil		Concrete Berm	GH-01.d	Active	concrete floor-trenches to building sump to 1.d KO Sed trap/Process Channel
Ghent - Power Generation - Ghent	R-078	Stacker Reclaimer Hydraulic Reservoir	Oil- Hydraulic	Outside-Not Covered	Coal Pile, Maintenance, Storage Buildings and Coal Barge Unloader	350	350	Gallons	1	Steel Reservoir	Reservoirs - Oil	Coalyard	Sumps and/or collection system	GH-01.h	Active	Drains to coalyard settling basin #1 (west)
Ghent - Power Generation - Ghent	E-001	Unit 1 Main GSU, G-025	Oil- Mineral Electrical	Outside-Not Covered	Unit 1 Boiler-Turbine, Auxiliary Systems, PJFF and FGD Areas	11,000	11,000	Gallons	1	Equipment-Oil filled transformer	Electrical Equipment - Oil	South Unit 1 main GSU	Concrete Berm	GH-01.n	Active	Drains to O/W separator
Ghent - Power Generation - Ghent	E-002	Unit 1 Aux 1A, G-024	Oil- Mineral Electrical	Outside-Not Covered	Unit 1 Boiler-Turbine, Auxiliary Systems, PJFF and FGD Areas	2,480	2,480	Gallons	1	Equipment-Oil filled transformer	Electrical Equipment - Oil	Northeast of Unit 1	Concrete Berm	GH-01.n	Active	Drains to O/W separator
Ghent - Power Generation - Ghent	E-003	Unit 1 Aux 1B, G-023	Oil- Mineral Electrical	Outside-Not Covered	Unit 1 Boiler-Turbine, Auxiliary Systems, PJFF and FGD Areas	2,480	2,480	Gallons	1	Equipment-Oil filled transformer	Electrical Equipment - Oil	Northwest of Unit 1	Concrete Berm	GH-01.n	Active	Drains to O/W separator
Ghent - Power Generation - Ghent	E-004	Unit 1 Reserve Aux, G-022	Oil- Mineral Electrical	Outside-Not Covered	Unit 1 Boiler-Turbine, Auxiliary Systems, PJFF and FGD Areas	3,118	3,118	Gallons	1	Equipment-Oil filled transformer	Electrical Equipment - Oil	Northwest Unit 1	Concrete Berm	GH-01.n	Active	Drains to O/W separator
Ghent - Power Generation - Ghent	E-005	Unit 1 Aux 1C, UAT 1C	Oil- Mineral Electrical	Outside-Not Covered	Unit 1 Boiler-Turbine, Auxiliary Systems, PJFF and FGD Areas	2,957	2,957	Gallons	1	Equipment-Oil filled transformer	Electrical Equipment - Oil	south Unit 1	Concrete Berm	GH-01.n	Active	concrete berms w/valved drains

Material Inventory Detail

Facility	Item ID	Comments-Name/Item Description	Material	Building List or outside, outside covered	Location Group/Site Area	Capacity	Individual Container Capacity	Capacity Unit of Measure	Qty of Containers	Container Type	Item Type	Comments-Location-Relative reference to location/Floor Number	Vessel Secondary Containment	Spill Sub-Drainage Area ID	Op. Status	Comments-General Comments
Ghent - Power Generation - Ghent	E-005o	Former Unit 1 Aux 1C, UAT 1C	Oil- Mineral Electrical	Outside-Not Covered	Unit 1 Boiler-Turbine, Auxiliary Systems, PJFF and FGD Areas	0	0	Gallons	1	Equipment-Oil filled transformer	Electrical Equipment - Oil	Permanently closed on site	NA	GH-02.a	Perm Closed/ Retired Onsite	Permanently closed on site
Ghent - Power Generation - Ghent	E-006	Unit 1 Reserve Aux 1C, RAT 1C	Oil- Mineral Electrical	Outside-Not Covered	Unit 1 Boiler-Turbine, Auxiliary Systems, PJFF and FGD Areas	3,961	3,961	Gallons	1	Equipment-Oil filled transformer	Electrical Equipment - Oil	southeast of Unit 1 FGD	Concrete Berm	GH-02.a	Active	concrete berms w/valved drains
Ghent - Power Generation - Ghent	E-006o	Former Unit 1 Reserve Aux 1C, RAT 1C	Oil- Mineral Electrical	Outside-Not Covered	Unit 1 Boiler-Turbine, Auxiliary Systems, PJFF and FGD Areas	0	0	Gallons	1	Equipment-Oil filled transformer	Electrical Equipment - Oil	Permanently closed on site	NA	GH-02.a	Perm Closed/ Retired Onsite	Permanently closed on site
Ghent - Power Generation - Ghent	E-007	Unit 2 Main GSU, G-027	Oil- Mineral Electrical	Outside-Not Covered	Unit 2 Boiler-Turbine, Auxiliary Systems, PJFF and FGD Areas	15,500	15,500	Gallons	1	Equipment-Oil filled transformer	Electrical Equipment - Oil	south Unit 2 Main GSU	Concrete Berm	GH-01.n	Active	Drains to O/W separator
Ghent - Power Generation - Ghent	E-008	Unit 2 Aux 2A, G-033	Oil- Mineral Electrical	Outside-Not Covered	Unit 2 Boiler-Turbine, Auxiliary Systems, PJFF and FGD Areas	2,443	2,443	Gallons	1	Equipment-Oil filled transformer	Electrical Equipment - Oil	west U2 GSU	Concrete Berm	GH-01.n	Active	Drains to O/W separator
Ghent - Power Generation - Ghent	E-009	Unit 2 Aux 2B, G-034	Oil- Mineral Electrical	Outside-Not Covered	Unit 2 Boiler-Turbine, Auxiliary Systems, PJFF and FGD Areas	3,010	3,010	Gallons	1	Equipment-Oil filled transformer	Electrical Equipment - Oil	west U2 GSU	Concrete Berm	GH-01.n	Active	Drains to O/W separator
Ghent - Power Generation - Ghent	E-010	Unit 2 Reserve Aux, RAT 2	Oil- Mineral Electrical	Outside-Not Covered	Unit 2 Boiler-Turbine, Auxiliary Systems, PJFF and FGD Areas	3,108	3,108	Gallons	1	Equipment-Oil filled transformer	Electrical Equipment - Oil	west of U2 GSU	Concrete Berm	GH-01.n	Active	Drains to O/W separator
Ghent - Power Generation - Ghent	E-011	Unit 2 Aux 2C, UAT 2C	Oil- Mineral Electrical	Outside-Not Covered	Unit 2 Boiler-Turbine, Auxiliary Systems, PJFF and FGD Areas	2,898	2,898	Gallons	1	Equipment-Oil filled transformer	Electrical Equipment - Oil	south of U2 GSU	Concrete Berm	GH-01.n	Active	concrete berms w/valved drains
Ghent - Power Generation - Ghent	E-012	Unit 2 Reserve Aux 2C, RAT 2C	Oil- Mineral Electrical	Outside-Not Covered	Unit 2 Boiler-Turbine, Auxiliary Systems, PJFF and FGD Areas	3,961	3,961	Gallons	1	Equipment-Oil filled transformer	Electrical Equipment - Oil	southeast of Unit 1 FGD	Concrete Berm	GH-02.a	Active	concrete berms w/valved drains
Ghent - Power Generation - Ghent	E-013	Unit 3 Main GSU, G-060	Oil- Mineral Electrical	Outside-Not Covered	Unit 3 Boiler-Turbine, Auxiliary Systems, ESP, PJFF and FGD Areas	21,743	21,743	Gallons	1	Equipment-Oil filled transformer	Electrical Equipment - Oil	south Unit 3 Main GSU	Concrete Berm	GH-01.n	Active	Drains to O/W separator
Ghent - Power Generation - Ghent	E-014	Unit 3 Aux 3A, G-035	Oil- Mineral Electrical	Outside-Not Covered	Unit 3 Boiler-Turbine, Auxiliary Systems, ESP, PJFF and FGD Areas	3,120	3,120	Gallons	1	Equipment-Oil filled transformer	Electrical Equipment - Oil	west of U3 GSU	Concrete Berm	GH-01.n	Active	Drains to O/W separator
Ghent - Power Generation - Ghent	E-015	Unit 3 Aux 3B. G-036	Oil- Mineral Electrical	Outside-Not Covered	Unit 3 Boiler-Turbine, Auxiliary Systems, ESP, PJFF and FGD Areas	3,120	3,120	Gallons	1	Equipment-Oil filled transformer	Electrical Equipment - Oil	west U3 GSU	Concrete Berm	GH-01.n	Active	Drains to O/W separator
Ghent - Power Generation - Ghent	E-016	Unit 3 Reserve Aux, G-029	Oil- Mineral Electrical	Outside-Not Covered	Unit 3 Boiler-Turbine, Auxiliary Systems, ESP, PJFF and FGD Areas	3,895	3,895	Gallons	1	Equipment-Oil filled transformer	Electrical Equipment - Oil	west U3 GSU	Concrete Berm	GH-01.n	Active	Drains to O/W separator
Ghent - Power Generation - Ghent	E-017	Unit 3 Aux 3C, UAT 3C	Oil- Mineral Electrical	Outside-Not Covered	Unit 3 Boiler-Turbine, Auxiliary Systems, ESP, PJFF and FGD Areas	4,066	4,066	Gallons	1	Equipment-Oil filled transformer	Electrical Equipment - Oil	south U3 GSU	Concrete Berm	GH-01.n	Active	Drains to O/W separator
Ghent - Power Generation - Ghent	E-018	Unit 3 Reserve Aux 3C, RAT 3C	Oil- Mineral Electrical	Outside-Not Covered	Unit 3 Boiler-Turbine, Auxiliary Systems, ESP, PJFF and FGD Areas	2,606	2,606	Gallons	1	Equipment-Oil filled transformer	Electrical Equipment - Oil	southeast of U3	Concrete Berm	GH-01.n	Active	concrete berms w/valved drains
Ghent - Power Generation - Ghent	E-019	Unit 3 FGD Aux A, FGD 3A	Oil- Mineral Electrical	Outside-Not Covered	Unit 3 Boiler-Turbine, Auxiliary Systems, ESP, PJFF and FGD Areas	2,838	2,838	Gallons	1	Equipment-Oil filled transformer	Electrical Equipment - Oil	northeast Unit 3 FGD	Concrete Berm	GH-02.a	Active	concrete berms w/valved drains
Ghent - Power Generation - Ghent	E-020	Unit 3 FGD Aux B, FGD 3B	Oil- Mineral Electrical	Outside-Not Covered	Unit 3 Boiler-Turbine, Auxiliary Systems, ESP, PJFF and FGD Areas	2,838	2,838	Gallons	1	Equipment-Oil filled transformer	Electrical Equipment - Oil	northeast Unit 3 FGD	Concrete Berm	GH-02.a	Active	concrete berms w/valved drains
Ghent - Power Generation - Ghent	E-021	Unit 3 ESP Transformers	Oil- Mineral Electrical	GH U3 ESP	Unit 3 Boiler-Turbine, Auxiliary Systems, ESP, PJFF and FGD Areas	8,208	152	Gallons	54	Equipment-Oil filled transformer	Electrical Equipment - Oil	27 inside 3-1 ESP & 27 inside 3-2 ESP (54 total)	Metal Berm	GH-01.n	Active	steel catch basin w/valved drain to outside
Ghent - Power Generation - Ghent	E-022	Unit 4 Main GSU, G-032	Oil- Mineral Electrical	Outside-Not Covered	Unit 4 Boiler-Turbine, Auxiliary Systems, ESP, PJFF and FGD Areas	16,173	16,173	Gallons	1	Equipment-Oil filled transformer	Electrical Equipment - Oil	south Unit 4 Main GSU	Concrete Berm	GH-01.n	Active	Drains to O/W separator
Ghent - Power Generation - Ghent	E-023	Unit 4 Aux 4A, G-037	Oil- Mineral Electrical	Outside-Not Covered	Unit 4 Boiler-Turbine, Auxiliary Systems, ESP, PJFF and FGD Areas	3,120	3,120	Gallons	1	Equipment-Oil filled transformer	Electrical Equipment - Oil	east U4 GSU	Concrete Berm	GH-01.n	Active	Drains to O/W separator

Material Inventory Detail

Facility	Item ID	Comments-Name/Item Description	Material	Building List or outside, outside covered	Location Group/Site Area	Capacity	Individual Container Capacity	Capacity Unit of Measure	Qty of Containers	Container Type	Item Type	Comments-Location-Relative reference to location/Floor Number	Vessel Secondary Containment	Spill Sub-Drainage Area ID	Op. Status	Comments-General Comments
Ghent - Power Generation - Ghent	E-024	Unit 4 Aux 4B, G-038	Oil- Mineral Electrical	Outside-Not Covered	Unit 4 Boiler-Turbine, Auxiliary Systems, ESP, PJFF and FGD Areas	3,120	3,120	Gallons	1	Equipment-Oil filled transformer	Electrical Equipment - Oil	west U4 GSU	Concrete Berm	GH-01.n	Active	Drains to O/W separator
Ghent - Power Generation - Ghent	E-025	Unit 4 Reserve Aux, RAT 4	Oil- Mineral Electrical	Outside-Not Covered	Unit 4 Boiler-Turbine, Auxiliary Systems, ESP, PJFF and FGD Areas	2,934	2,934	Gallons	1	Equipment-Oil filled transformer	Electrical Equipment - Oil	south U4 GSU	Concrete Berm	GH-01.n	Active	Drains to O/W separator
Ghent - Power Generation - Ghent	E-026	Unit 4 Aux 4C, UAT 4C	Oil- Mineral Electrical	Outside-Not Covered	Unit 4 Boiler-Turbine, Auxiliary Systems, ESP, PJFF and FGD Areas	4,066	4,066	Gallons	1	Equipment-Oil filled transformer	Electrical Equipment - Oil	south U4 GSU	Concrete Berm	GH-01.n	Active	Drains to O/W separator
Ghent - Power Generation - Ghent	E-027	Unit 4 Reserve Aux 4C, RAT 4C	Oil- Mineral Electrical	Outside-Not Covered	Unit 4 Boiler-Turbine, Auxiliary Systems, ESP, PJFF and FGD Areas	3,886	3,886	Gallons	1	Equipment-Oil filled transformer	Electrical Equipment - Oil	south Unit 4 FGD	Concrete Berm	GH-03.a	Active	concrete berms w/valved drains
Ghent - Power Generation - Ghent	E-028	Unit 4 FGD Aux A, FGD 4A	Oil- Mineral Electrical	Outside-Not Covered	Unit 4 Boiler-Turbine, Auxiliary Systems, ESP, PJFF and FGD Areas	2,838	2,838	Gallons	1	Equipment-Oil filled transformer	Electrical Equipment - Oil	south Unit 4 FGD	Concrete Berm	GH-03.a	Active	concrete berms w/valved drains
Ghent - Power Generation - Ghent	E-029	Unit 4 FGD Aux B, FGD 4B	Oil- Mineral Electrical	Outside-Not Covered	Unit 4 Boiler-Turbine, Auxiliary Systems, ESP, PJFF and FGD Areas	2,838	2,838	Gallons	1	Equipment-Oil filled transformer	Electrical Equipment - Oil	south Unit 4 FGD	Concrete Berm	GH-03.a	Active	concrete berms w/valved drains
Ghent - Power Generation - Ghent	E-030	Unit 4 ESP Transformers	Oil- Mineral Electrical	GH U4 ESP	Unit 4 Boiler-Turbine, Auxiliary Systems, ESP, PJFF and FGD Areas	8,208	152	Gallons	54	Equipment-Oil filled transformer	Electrical Equipment - Oil	27 inside 4-1ESP & 27 inside 4-2ESP (54 total)	Metal Berm	GH-01.n	Active	
Ghent - Power Generation - Ghent	E-031	Limestone Slurry Prep Equip Aux A, LS-A	Oil- Mineral Electrical	Outside-Not Covered	Limestone Pile, Slurry Preparation, Storage Buildings and Limestone Barge Unloader	2,403	2,403	Gallons	1	Equipment-Oil filled transformer	Electrical Equipment - Oil	north Limestone Preparation	Concrete Berm	GH-03.a	Active	concrete berms w/valved drains
Ghent - Power Generation - Ghent	E-032	Limestone Slurry Prep Equip Aux B, LS-B	Oil- Mineral Electrical	Outside-Not Covered	Limestone Pile, Slurry Preparation, Storage Buildings and Limestone Barge Unloader	2,403	2,403	Gallons	1	Equipment-Oil filled transformer	Electrical Equipment - Oil	north Limestone Preparation	Concrete Berm	GH-03.a	Active	concrete berms w/valved drains
Ghent - Power Generation - Ghent	E-033	Coal Unloader equipment 4kV transformer, A1	Oil- Mineral Electrical	Outside-Not Covered	Coal Pile, Maintenance, Storage Buildings and Coal Barge Unloader	210	210	Gallons	1	Equipment-Oil filled transformer	Electrical Equipment - Oil	below transfer house 1	Concrete Berm	GH-01.g	Active	concrete berms w/ pump to coal pile runoff pond
Ghent - Power Generation - Ghent	E-034	Coal-yard equipment 4kV transformer, B1	Oil- Mineral Electrical	Outside-Not Covered	Coal Pile, Maintenance, Storage Buildings and Coal Barge Unloader	210	210	Gallons	1	Equipment-Oil filled transformer	Electrical Equipment - Oil	below sample house	Gravel Berm	GH-01.h	Active	drains to west coal pile runoff pond
Ghent - Power Generation - Ghent	E-035	Coal-yard equipment 4kV transformer, B2	Oil- Mineral Electrical	Outside-Not Covered	Coal Pile, Maintenance, Storage Buildings and Coal Barge Unloader	210	210	Gallons	1	Equipment-Oil filled transformer	Electrical Equipment - Oil	below sample house	Gravel Berm	GH-01.h	Active	drains to west coal pile runoff pond
Ghent - Power Generation - Ghent	E-036	Coal-yard Stacker equipment 4kV transformer	Oil- Mineral Electrical	Outside-Not Covered	Coal Pile, Maintenance, Storage Buildings and Coal Barge Unloader	200	200	Gallons	1	Equipment-Oil filled transformer	Electrical Equipment - Oil	stacker structure	Gravel Berm	GH-01.h	Active	drains to west coal pile runoff pond
Ghent - Power Generation - Ghent	E-037	Unit 1 - E/F SCR, 1E	Oil- Mineral Electrical	GH U1 Boiler Turbine Bldg	Unit 1 Boiler-Turbine, Auxiliary Systems, PJFF and FGD Areas	223	223	Gallons	1	Equipment-Oil filled transformer	Electrical Equipment - Oil	Unit 1 - E/F SCR Electrical Equipment Room Transformers	Concrete Berm	GH-01.d	Perm Closed/ Retired Onsite	floor drains to sump to process channel
Ghent - Power Generation - Ghent	E-038	Unit 1 - E/F SCR, 1F	Oil- Mineral Electrical	GH U1 Boiler Turbine Bldg	Unit 1 Boiler-Turbine, Auxiliary Systems, PJFF and FGD Areas	223	223	Gallons	1	Equipment-Oil filled transformer	Electrical Equipment - Oil	Unit 1 - E/F SCR Electrical Equipment Room Transformers	Concrete Berm	GH-01.d	Active	floor drains to sump to process channel
Ghent - Power Generation - Ghent	E-039	Unit 1 - G/H, 1G	Oil- Mineral Electrical	Outside-Not Covered	Unit 1 Boiler-Turbine, Auxiliary Systems, PJFF and FGD Areas	268	268	Gallons	1	Equipment-Oil filled transformer	Electrical Equipment - Oil	Previously U1 Cooling Tower 4kV power supply, replaced 1E U1 SCR supply	Concrete Berm	GH-01.d	Active	
Ghent - Power Generation - Ghent	E-040	Unit 1 - G/H, 1H	Oil- Mineral Electrical	Outside-Not Covered	Unit 1 Boiler-Turbine, Auxiliary Systems, PJFF and FGD Areas	268	268	Gallons	1	Equipment-Oil filled transformer	Electrical Equipment - Oil	Unit 1 - G/H Cooling Tower 4kV power supply	Concrete Berm	GH-01.i	Temp. Out of Service	drains to west coal pile runoff pond
Ghent - Power Generation - Ghent	E-043	Ammonia Tank Facility Transformer	Oil- Mineral Electrical	Outside-Not Covered	H2-Hydrogen Storage, NH3-Ammonia Liquid Storage Tanks, and SCR Delivery Systems	193	193	Gallons	1	Equipment-Oil filled transformer	Electrical Equipment - Oil	Ammonia Tank Farm Transformer	Concrete Berm	GH-19.b	Active	
Ghent - Power Generation - Ghent	E-044	Administration Building Transformer	Oil- Mineral Electrical	Outside-Not Covered	Miscellaneous	262	262	Gallons	1	Equipment-Oil filled transformer	Electrical Equipment - Oil	Administration Building Transformer	Concrete Berm	GH-03.a	Active	concrete berm w/valved drain

Material Inventory Detail

Facility	Item ID	Comments-Name/Item Description	Material	Building List or outside, outside covered	Location Group/Site Area	Capacity	Individual Container Capacity	Capacity Unit of Measure	Qty of Containers	Container Type	Item Type	Comments-Location-Relative reference to location/Floor Number	Vessel Secondary Containment	Spill Sub-Drainage Area ID	Op. Status	Comments-General Comments
Ghent - Power Generation - Ghent	E-045	Spare Unit GSU Transformer	Oil- Mineral Electrical	Outside-Not Covered	West Plant Area (Spare Transformers & Outage Work)	16,420	16,420	Gallons	1	Equipment-Oil filled transformer	Electrical Equipment - Oil	Spare Unit GSU Transformer	Concrete Berm	GH-15.a	Temp. Out of Service	concrete berm w/valved drain to area runoff
Ghent - Power Generation - Ghent	E-046	Spare 1500 kVa Transformer	Oil- Mineral Electrical	Outside-Not Covered	West Plant Area (Spare Transformers & Outage Work)	340	340	Gallons	1	Equipment-Oil filled transformer	Electrical Equipment - Oil	Spare 1500 kVa Transformer	Concrete Berm	GH-15.a	Temp. Out of Service	concrete berm w/valved drain to area runoff
Ghent - Power Generation - Ghent	E-047	Spare FGD Transformer (old RAT3C)	Oil- Mineral Electrical	Outside-Not Covered	West Plant Area (Spare Transformers & Outage Work)	4,103	4,103	Gallons	1	Equipment-Oil filled transformer	Electrical Equipment - Oil	Spare FGD Transformer (old RAT3C)	Concrete Berm	GH-15.a	Temp. Out of Service	concrete berm w/valved drain to area runoff
Ghent - Power Generation - Ghent	E-050	U1 East Plant Contractors Trailers Supply 4160/480/277	Oil- Mineral Electrical	Outside-Not Covered	Unit 1 Boiler-Turbine, Auxiliary Systems, PJFF and FGD Areas	285	285	Gallons	1	Equipment-Oil filled transformer	Electrical Equipment - Oil	Unit 1-east plant Contractors Trailers Supply	Concrete Berm	GH-02.a	Active	concrete berms w/valved drains
Ghent - Power Generation - Ghent	E-051	Fleet Spare Unit GSU	Oil- Mineral Electrical	Outside-Not Covered	West Plant Area (Spare Transformers & Outage Work)	18,809	18,809	Gallons	1	Equipment-Oil filled transformer	Electrical Equipment - Oil	Fleet Spare Unit GSU	Concrete Berm	GH-15.a	Temp. Out of Service	concrete berm w/valved drain to area runoff
Ghent - Power Generation - Ghent	E-061	CCR Material Handling Area Aux Transformer 1A, OAP100EA	Oil- Mineral Electrical	Outside-Not Covered	CCRT-FA/BA/Gypsum-Transport/Dewatering Area	1,305	1,305	Gallons	1	Equipment-Oil filled transformer	Electrical Equipment - Oil	east Gypsum Processing Bldg	Concrete Berm	GH-01.m	Active	
Ghent - Power Generation - Ghent	E-062	CCR Material Handling Area Aux Transformer 1B, OAP100EB	Oil- Mineral Electrical	Outside-Not Covered	CCRT-FA/BA/Gypsum-Transport/Dewatering Area	1,305	1,305	Gallons	1	Equipment-Oil filled transformer	Electrical Equipment - Oil	east Gypsum Processing Bldg	Concrete Berm	GH-01.m	Active	
Ghent - Power Generation - Ghent	E-063	Transformer 1A, OAP103EA	Oil- Mineral Electrical	Outside-Not Covered	Landfill, Main Haul Road, Leachate-Stormwater Ponds	976	976	Gallons	1	Equipment-Oil filled transformer	Electrical Equipment - Oil	CCR Loadout Area Building	Concrete Berm	GH-01.u	Active	1.u area drains to 1.t basin then to 1.d KO/Process ditch
Ghent - Power Generation - Ghent	E-064	Transformer 1B, OAP103EB	Oil- Mineral Electrical	Outside-Not Covered	Landfill, Main Haul Road, Leachate-Stormwater Ponds	976	976	Gallons	1	Equipment-Oil filled transformer	Electrical Equipment - Oil	CCR Loadout Area Building	Concrete Berm	GH-01.u	Active	1.u area drains to 1.t basin then to 1.d KO/Process ditch
Ghent - Power Generation - Ghent	E-065	Transformer 1A, AP106EAB	Oil- Mineral Electrical	Outside-Not Covered	Landfill, Main Haul Road, Leachate-Stormwater Ponds	277	277	Gallons	1	Equipment-Oil filled transformer	Electrical Equipment - Oil	CCR Loadout Area Building	Concrete Berm	GH-01.u	Active	1.u area drains to 1.t basin then to 1.d KO/Process ditch
Ghent - Power Generation - Ghent	E-066	Transformer 1B, AP106EBB	Oil- Mineral Electrical	Outside-Not Covered	Landfill, Main Haul Road, Leachate-Stormwater Ponds	277	277	Gallons	1	Equipment-Oil filled transformer	Electrical Equipment - Oil	CCR Loadout Area Building	Concrete Berm	GH-01.u	Active	1.u area drains to 1.t basin then to 1.d KO/Process ditch
Ghent - Power Generation - Ghent	E-067	Dewatering Drag Chain Conveyor Building Heat Transformer, OAH101E	Oil- Mineral Electrical	Outside-Not Covered	CCRT-FA/BA/Gypsum-Transport/Dewatering Area	477	477	Gallons	1	Equipment-Oil filled transformer	Electrical Equipment - Oil	East Bottom Ash Dewatering Bldg	Concrete Berm	GH-01.m	Active	
Ghent - Power Generation - Ghent	E-068	Gypsum Processing Building Heat Transformer, OGP108E	Oil- Mineral Electrical	Outside-Not Covered	CCRT-FA/BA/Gypsum-Transport/Dewatering Area	477	477	Gallons	1	Equipment-Oil filled transformer	Electrical Equipment - Oil	Gypsum Processing Building	Concrete Berm	GH-01.m	Active	drains adjacent areas surface runoff
Ghent - Power Generation - Ghent	E-069	Unit #1 Fly Ash, 1FA100EA	Oil- Mineral Electrical	Outside-Not Covered	Unit 1 Boiler-Turbine, Auxiliary Systems, PJFF and FGD Areas	398	398	Gallons	1	Equipment-Oil filled transformer	Electrical Equipment - Oil	north Unit 1/2 Fly Ash Transport Building	Concrete Berm	GH-02.a	Active	drains adjacent areas surface runoff
Ghent - Power Generation - Ghent	E-070	Unit #1 Fly Ash, 1FA100EB	Oil- Mineral Electrical	Outside-Not Covered	Unit 1 Boiler-Turbine, Auxiliary Systems, PJFF and FGD Areas	398	398	Gallons	1	Equipment-Oil filled transformer	Electrical Equipment - Oil	north Unit 1/2 Fly Ash Transport Building	Concrete Berm	GH-02.a	Active	drains adjacent areas surface runoff
Ghent - Power Generation - Ghent	E-071	Unit #2 Fly Ash, 2FA100EA	Oil- Mineral Electrical	Outside-Not Covered	Unit 2 Boiler-Turbine, Auxiliary Systems, PJFF and FGD Areas	398	398	Gallons	1	Equipment-Oil filled transformer	Electrical Equipment - Oil	north Unit 1/2 Fly Ash Transport Building	Concrete Berm	GH-02.a	Active	drains adjacent areas surface runoff
Ghent - Power Generation - Ghent	E-072	Unit #2 Fly Ash, 2FA100EB	Oil- Mineral Electrical	Outside-Not Covered	Unit 2 Boiler-Turbine, Auxiliary Systems, PJFF and FGD Areas	398	398	Gallons	1	Equipment-Oil filled transformer	Electrical Equipment - Oil	north Unit 1/2 Fly Ash Transport Building	Concrete Berm	GH-02.a	Active	drains adjacent areas surface runoff
Ghent - Power Generation - Ghent	E-073	Unit #3 Fly Ash, 3FA100EA	Oil- Mineral Electrical	Outside-Not Covered	Unit 3 Boiler-Turbine, Auxiliary Systems, ESP, PJFF and FGD Areas	398	398	Gallons	1	Equipment-Oil filled transformer	Electrical Equipment - Oil	west Unit 3/4 Fly Ash Transport Building	Concrete Berm	GH-03.a	Active	drains adjacent areas surface runoff
Ghent - Power Generation - Ghent	E-074	Unit #3 Fly Ash, 3FA100EB	Oil- Mineral Electrical	Outside-Not Covered	Unit 3 Boiler-Turbine, Auxiliary Systems, ESP, PJFF and FGD Areas	398	398	Gallons	1	Equipment-Oil filled transformer	Electrical Equipment - Oil	west Unit 3/4 Fly Ash Transport Building	Concrete Berm	GH-03.a	Active	drains adjacent areas surface runoff
Ghent - Power Generation - Ghent	E-075	Unit #4 Fly Ash, 4FA100EA	Oil- Mineral Electrical	Outside-Not Covered	Unit 4 Boiler-Turbine, Auxiliary Systems, ESP, PJFF and FGD Areas	398	398	Gallons	1	Equipment-Oil filled transformer	Electrical Equipment - Oil	west Unit 3/4 Fly Ash Transport Building	Concrete Berm	GH-03.a	Active	drains adjacent areas surface runoff
Ghent - Power Generation - Ghent	E-076	Unit #4 Fly Ash, 4FA100EB	Oil- Mineral Electrical	Outside-Not Covered	Unit 4 Boiler-Turbine, Auxiliary Systems, ESP, PJFF and FGD Areas	398	398	Gallons	1	Equipment-Oil filled transformer	Electrical Equipment - Oil	west Unit 3/4 Fly Ash Transport Building	Concrete Berm	GH-03.a	Active	drains adjacent areas surface runoff

Material Inventory Detail

Facility	Item ID	Comments-Name/Item Description	Material	Building List or outside, outside covered	Location Group/Site Area	Capacity	Individual Container Capacity	Capacity Unit of Measure	Qty of Containers	Container Type	Item Type	Comments-Location-Relative reference to location/Floor Number	Vessel Secondary Containment	Spill Sub-Drainage Area ID	Op. Status	Comments-General Comments
Ghent - Power Generation - Ghent	E-077	Gypsum Processing Area SUS Transformer A, OGP100EA	Oil- Mineral Electrical	Outside-Not Covered	CCRT-FA/BA/Gypsum-Transport/Dewatering Area	441	441	Gallons	1	Equipment-Oil filled transformer	Electrical Equipment - Oil	East Gypsum Processing Bldg	Concrete Berm	GH-01.m	Active	drains adjacent areas surface runoff
Ghent - Power Generation - Ghent	E-078	Gypsum Processing Area SUS Transformer B, OGP100EB	Oil- Mineral Electrical	Outside-Not Covered	CCRT-FA/BA/Gypsum-Transport/Dewatering Area	441	441	Gallons	1	Equipment-Oil filled transformer	Electrical Equipment - Oil	East Gypsum Processing Bldg	Concrete Berm	GH-01.m	Active	drains adjacent areas surface runoff
Ghent - Power Generation - Ghent	E-079	Gypsum Storage Area SUS Transformer A, OGP105EA	Oil- Mineral Electrical	Outside-Not Covered	CCRT-FA/BA/Gypsum-Transport/Dewatering Area	475	475	Gallons	1	Equipment-Oil filled transformer	Electrical Equipment - Oil	East Gypsum Storage Area	Concrete Berm	GH-01.m	Active	drains adjacent areas surface runoff
Ghent - Power Generation - Ghent	E-080	Gypsum Storage Area SUS Transformer B, OGP105EB	Oil- Mineral Electrical	Outside-Not Covered	CCRT-FA/BA/Gypsum-Transport/Dewatering Area	475	475	Gallons	1	Equipment-Oil filled transformer	Electrical Equipment - Oil	East Gypsum Storage Area	Concrete Berm	GH-01.m	Active	drains adjacent areas surface runoff
Ghent - Power Generation - Ghent	E-081	Fire Pump SUS Transformer A, OFP100EA	Oil- Mineral Electrical	Outside-Not Covered	CCRT-FA/BA/Gypsum-Transport/Dewatering Area	283	283	Gallons	1	Equipment-Oil filled transformer	Electrical Equipment - Oil	North Fire Pump House	Concrete Berm	GH-01.m	Active	drains adjacent areas surface runoff
Ghent - Power Generation - Ghent	E-082	Fire Pump SUS Transformer B, OFP100EB	Oil- Mineral Electrical	Outside-Not Covered	CCRT-FA/BA/Gypsum-Transport/Dewatering Area	283	283	Gallons	1	Equipment-Oil filled transformer	Electrical Equipment - Oil	North Fire Pump House	Concrete Berm	GH-01.m	Active	drains adjacent areas surface runoff

Appendix G

Bulk Storage Tank Information Sheets

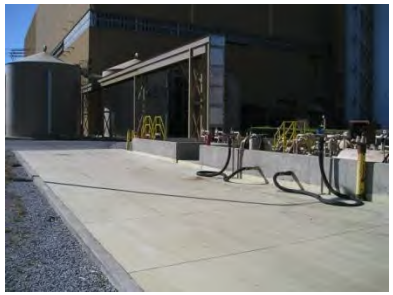
Appendix G Discussion – Tank Information Sheets

40 CFR Part 112 requires that certain requirements be established for ***each*** regulated bulk storage tank. To document and establish that these requirements have been assessed, a Source Tank Information Sheet was prepared for each ***regulated bulk storage tank***, with the exception of portable containers (e.g., drums, totes, etc), at the Station. The components of the Tank Information Sheet provide inspection information to satisfy requirements of 40 CFR Part 112, STI SP-001, and/or API 653. Additional information regarding specific inspection schedules and checklists are provided in Appendices included in this Plan.

A brief description and/or explanation of the various fields on the Source Tank Information Sheet is provided below:

Facility:	identifies where this tank resides
Tank Identification:	tank number or ID assigned by the Station
Location:	Physical location of the tank on the Station
Type:	Single or double walled or hybrid tank
Construction:	Steel, plastic, etc.
Contents:	Type of oil stored
Volume:	Rated or designed maximum tank volume
Tank Installation Date:	When tank was constructed
Inspection Standard:	Required inspection for this type of tank (STI SP-001, API 653, etc.)
Certification:	Whether tank requires inspection ***by a certified inspector*** and, if yes, the ***standard*** established inspection interval.
Inspection Schedule:	The schedule for routine inspections (observations and tests) to be performed by Station personnel.
Corrosion Rate:	If applicable, is obtained from previous tank inspections and can impact the frequency of inspection by certified inspectors.
Drain Valves:	This refers to whether any draining devices where observed ***on the tank.*** This is important, because it triggers a security requirement.
Drain Valve Secured:	This states whether the draining device was secured in a manner to impede a vandal from releasing the contents of the tank (this ***does not*** refer to the containment drain)
Level Monitoring:	Establishes how the fluid level in the tank is monitored.
Other Fail Safe:	Whether other fail safe equipment (e.g., overfill alarm, etc.) is employed to assist in prevent an oil release.
Corrosion Protection:	If a corrosion protection system (e.g., sacrificial anode, impressed current system, etc.) is in use. If yes, it needs to be periodically tested.
Internal Heating Coils:	Establishes whether the tank uses internal heating coils for viscosity management. Some internal heating coils are a potential source for an oil release and require periodic inspection.
Lighting:	The SPCC Rules require lighting in close proximity to oil storage tanks so that a tank release can be observed during inclement weather.
Secondary Containment:	How the tank achieves the specifically sized secondary containment requirement.
Precipitation Drain:	This refers to how precipitation is drained from the containment system.
Discharge Scenarios:	The regulations require that the certifying Professional Engineer consider several ways in which oil could be released from a bulk storage tank or during material transfer into or out of a bulk storage tank. These considerations include: a determination of how much oil could be released, an estimated rate of release, direction the release may flow, and methods employed to mitigate the release from entering navigable water.
Comments:	General observations obtained during ***each*** tank assessment.
Recommendations:	Observations that suggested to assist the facility with SPCC compliance or reminders of actions required to maintain compliance with the SPCC requirements.

Source Tank Information Sheet

Facility Ghent Generating Station		Source or Tank Identification Tank #1	**Imber**
Location	East of Unit 1	  	
Type	Single wall		
Construction	Steel		
Contents	Fuel Oil		
Volume	442,250		

Inspections Information				
Tank Installation date	Inspection Standard	Certification by Outside Inspector Required?	Inspection Schedule	Corrosion Rate (inches/year)
1974	API-653	Yes See Tank Inspection Report	Monthly by facility representative	See Tank Inspection Report

Miscellaneous Information						
Drain Valves with Direct Outward Discharge	Drain Valve Secured	Level Monitoring Method	Other Fail Safe Engineering	Corrosion Protection	Internal Heating Coils	Lighting
Yes	Yes	Gauge	Mechanical Overfill	No	No	Yes

Secondary Containment Information							
Type	Length (feet)	Width (feet)	Height (feet)	Displacement (cubic feet)	Available Volume (gallons)	Percentage of Volume of Largest Tank	Precipitation Drainage Method
Concrete Irregular shape					~966,000		Gate Valve

Potential Spill Predictions, Volumes, Rates and Controls

Facility Ghent Generating Station			Source or Tank Identification Tank #1	
Potential Event Rating	Maximum Potential Release Volume (gallons)	Maximum Discharge Rate	Direction of Flow	Secondary Containment
Failure of Tank **Unlikely**	442,250	Gradual to Instantaneous	West towards storm catch basin to Outfall 002 to Ohio River	Concrete Dike
Tank Overfill **Possible**	100	100 gallons per minute (less than 1 minute)	Same as above	Concrete Dike
Hose leak during tank loading **Possible**	100	100 gallons per minute (less than 1 minute)	A release from the loading area would be diverted into Tank #2 containment system	Concrete Diversionary structure to oil / water separator
General Comments, Observations and/or Recommendations			**General Inspection Requirements(1)**	
• Tank inspected by outside contractor • New containment/vault built for formerly underground piping. • New conveyance rack built for aboveground piping. Rack designed to provide a level of containment. • Periodically check to insure proper operation of overfill device. • Tank Master Drain and Flow valve is secured with a lock. • Tank Master Drain and Flow valve is secured by virtue of location within Station perimeter fence and site security measures (e.g., patrols).			-Monthly • Inspect tank monthly per standard. • Ensure that storm water gate valve is closed when not in use • Check Operation of Level Gauge during filling • Check and secure all outward flowing valves when not in use. • Inspect the transfer pipeline containment vault for product. • Maintain the tank and equipment in accordance with the most recent API 653 Inspection Document recommendations	

(1) – please refer to the SPCC Plan API 653 tank inspection checklist for the complete tank inspection requirements.
(2) – prior to refueling, please refer to tank loading procedures contained in this plan.

Source Tank Information Sheet

Facility Ghent Generating Station		Source or Tank Identification Tank #2
Location	East Unit #1	
Type	Single wall	
Construction	Steel	
Contents	Fuel Oil	
Volume	100,000	

Inspections Information

Tank Installation date	Inspection Standard	Certification by Outside Inspector Required?	Inspection Schedule	Corrosion Rate (inches/year)
1971	API-653	Yes See Tank Inspection Report	Monthly by facility representative	See Tank Inspection Report

Miscellaneous Information

Drain Valves with Direct Outward Discharge	Drain Valve Secured	Level Monitoring Method	Other Fail Safe Engineering	Corrosion Protection	Internal Heating Coils	Lighting
Yes	Yes	Gauge	Overfill Alarm	No	No	Yes

Secondary Containment Information

Type	Length (feet)	Width (feet)	Height (feet)	Displacement (cubic feet)	Available Volume (gallons)	Percentage of Volume of Largest Tank	Precipitation Drainage Method
Concrete Dike	64	62	4	15872	114,892	~114%	Gate Valve

Potential Spill Predictions, Volumes, Rates and Controls

Facility Ghent Generating Station			Source or Tank Identification Tank #2	
Potential Event Rating	Maximum Potential Release Volume (gallons)	Maximum Discharge Rate	Direction of Flow	Secondary Containment
Failure of Tank **Unlikely**	100,000	Gradual to Instantaneous	North toward storm catch basin to Outfall 002 to Ohio River	Concrete Dike
Tank Overfill **Possible**	100	100 gallons/minute (less than 1 minute)	Same as above	Concrete Dike
Hose leak during tank loading **Possible**	100	100 gallons/minute (less than 1 minute)	North into Tank #2 Containment	Concrete Diversionary structure to oil / water separator
General Comments, Observations and/or Recommendations			**General Inspection Requirements(1)**	
• Tank inspected by outside contractor • New conveyance rack built for aboveground piping. Rack designed to provide a level of containment. • Periodically check the operation of the mechanical overfill device. • Tank Master Drain and Flow valve is secured with a lock. • Tank Master Drain and Flow valve is secured by virtue of location within Station perimeter fence and site security measures (e.g., patrols).			-Monthly • Inspect tank monthly per standard. • Keep cover over liner to minimize UV degradation • Ensure that storm water gate valve is closed when not in use • Check Operation of Level Gauge during filling • Check and secure all outward flowing valves when not in use. • Maintain the tank and equipment in accordance with the most recent API 653 Inspection Document recommendations	

(1) – please refer to the SPCC Plan API 653 tank inspection checklist for the complete tank inspection requirements.
(2) – prior to refueling, please refer to tank loading procedures contained in this plan.

Source Tank Information Sheet

Facility Ghent Generating Station		Source or Tank Identification Tank #3
Location	East of Unit #1 & south of Tank #2	
Type	Double wall	
Construction	Steel	
Contents	Fuel Oil	
Volume	300	

Inspections Information

Tank Installation date	Inspection Standard	Certification by Outside Inspector Required?	Inspection Schedule	Corrosion Rate (inches/year)
2009	STI-SP-001	No	Monthly by facility representative	N/A

Miscellaneous Information

Drain Valves with Direct Outward Discharge	Drain Valve Secured	Level Monitoring Method	Other Fail Safe Engineering	Corrosion Protection	Internal Heating Coils	Lighting
Yes	N/A	Gauge	Interstitial Leak Gauge	No	No	Yes

Secondary Containment Information

Type	Length (feet)	Width (feet)	Height (feet)	Displacement (cubic feet)	Available Volume (gallons)	Percentage of Volume of Largest Tank	Precipitation Drainage Method
Concrete Dike	64	62	4	15872	114,892	>100% Tank is Double-walled and inside concrete dike	Gate Valve

Potential Spill Predictions, Volumes, Rates and Controls

Facility Ghent Generating Station			Source or Tank Identification Tank #3	
Potential Event Rating	Maximum Potential Release Volume (gallons)	Maximum Discharge Rate	Direction of Flow	Secondary Containment
Failure of Tank **Unlikely**	300	Gradual to Instantaneous	West towards storm catch basin to Outfall 002 to Ohio River	Concrete Dike
Tank Overfill **Possible**	20	20 gallons/minute (less than 1 minute)	Same as above	Concrete Dike
Hose leak during tank loading **Possible**	20	20 gallons/minute (less than 1 minute)	North into Tank #2 Containment	Concrete Diversionary structure
General Comments, Observations and/or Recommendations			**General Inspection Requirements(1)**	
• Tank is Double-walled tank inside concrete containment dike. • Tank is equipped with fuel level indicator float • Tank is equipped with secondary containment float. • Tank is filled from a small transfer line inside the containment system. • Tank uses a hand crank to transfer fuel. • Tank Master Drain and Flow valve is secured by virtue of location within Station perimeter fence and site security measures (e.g., patrols).			-Monthly • Inspect tank monthly per standard. • Check and secure all outward flowing valves when not in use. • Maintain the tank and equipment in accordance with the most recent STI SP001 Inspection Document recommendations	

(1) – please refer to the SPCC Plan STI SP-001 tank inspection checklist for the complete tank inspection requirements.
(2) – prior to refueling, please refer to tank loading procedures contained in this plan.

* API 653 can be used in lieu of STI SP-001, if desired.

Source Tank Information Sheet

Facility Ghent Generating Station		Source or Tank Identification Tank #4
Location	East Unit #3 ESP	  
Type	Single wall	
Construction	Steel	
Contents	Fuel Oil	
Volume	20,000	

Inspections Information

Tank Installation date	Inspection Standard	Certification by Outside Inspector Required?	Inspection Schedule	Corrosion Rate (inches/year)
1980	STI SP-001	Yes	Monthly by facility representative	N/A

Miscellaneous Information

Drain Valves with Direct Outward Discharge	Drain Valve Secured	Level Monitoring Method	Other Fail Safe Engineering	Corrosion Protection	Internal Heating Coils	Lighting
Yes	Yes	Gauge	Overfill Alarm	No	No	Yes

Secondary Containment Information

Type	Length (feet)	Width (feet)	Height (feet)	Displacement (cubic feet)	Available Volume (gallons)	Percentage of Volume of Largest Tank	Precipitation Drainage Method
Concrete	45	22	4	3960	29,620	148%	Gate Valve

Potential Spill Predictions, Volumes, Rates and Controls

Facility Ghent Generating Station			Source or Tank Identification Tank #4	
Potential Event Rating	Maximum Potential Release Volume (gallons)	Maximum Discharge Rate	Direction of Flow	Secondary Containment
Failure of Tank **Unlikely**	20,000	Gradual to Instantaneous	West towards storm catch basin to Outfall 002 to Ohio River	Concrete Containment Dike
Tank Overfill **Possible**	100	100 gallons/minute (less than 1 minute)	Same as above	Concrete Containment Dike
General Comments, Observations and/or Recommendations			**General Inspection Requirements(1)**	
• Tank is remote filled from larger tank. • Tank is equipped with fuel level gauges and level transmitter. • Tank pump are located in containment. This area is drained into the oil/water separator. • Numerous sample ports on tank that require a level of security. • Tank aboveground transfer piping in pipe rack designed to provide level of containment. In the event of a release, oil would flow back toward tank containment. • Tank Master Drain and Flow valve is secured by virtue of location within Station perimeter fence and site security measures (e.g., patrols).			-Monthly • Inspect tank monthly per standard. • Ensure that storm water gate valve is closed when not in use • Check Operation of Level Gauge during filling • Check and secure all outward flowing valves when not in use. • Maintain the tank and equipment in accordance with the most recent STI SP-001 Inspection Document recommendations	

(1) – please refer to the SPCC Plan STI SP-001 tank inspection checklist for the complete tank inspection requirements.
(2) – prior to refueling, please refer to tank loading procedures contained in this plan.

Source Tank Information Sheet

Facility Ghent Generating Station		Source or Tank Identification Tank #5
Location	Coal Yard	
Type	Double wall	
Construction	Steel	
Contents	Fuel Oil	
Volume	12,000	

Inspections Information				
Tank Installation date	Inspection Standard	Certification by Outside Inspector Required?	Inspection Schedule	Corrosion Rate (inches/year)
2004	STI SP-001	Yes	Monthly by facility representative	N/A

Miscellaneous Information						
Drain Valves with Direct Outward Discharge	Drain Valve Secured	Level Monitoring Method	Other Fail Safe Engineering	Corrosion Protection	Internal Heating Coils	Lighting
Yes	Yes	Gauge		No	No	Yes

Secondary Containment Information							
Type	Length (feet)	Width (feet)	Height (feet)	Displacement (cubic feet)	Available Volume (gallons)	Percentage of Volume of Largest Tank	Precipitation Drainage Method
Double-walled Tank						Double-walled Tank	N/A

Potential Spill Predictions, Volumes, Rates and Controls

Facility Ghent Generating Station			Source or Tank Identification Tank #5	
Potential Event Rating	Maximum Potential Release Volume (gallons)	Maximum Discharge Rate	Direction of Flow	Secondary Containment
Failure of Tank **Unlikely**	12,000	Gradual to Instantaneous	South toward storm water drainage ditch that flows to the coal pile run off basin	Double-walled Tank
Tank Overfill **Possible**	20	20 gallons/minute (less than 1 minute)	South toward storm water drainage ditch that flows to the coal pile run off basin	Absorbents
Hose leak during tank loading **Possible**	20	20 gallons/minute (less than 1 minute)	South toward storm water drainage ditch that flows to the coal pile run off basin	Absorbents
General Comments, Observations and/or Recommendations			**General Inspection Requirements(1)**	
• Tank filled from top. • Tank is Double-walled tank with interstitial inspection glass port. • Tank is equipped with level gauge. • Tank has overspill protection. • Tank dispenser should be locked when not in use. • Tank equipped with Emergency Stop. • Tank Master Drain and Flow valve is secured by virtue of location within Station perimeter fence and site security measures (e.g., patrols).			-Monthly • Inspect tank monthly per standard. • Check Operation of Level Gauge during filling • Check and secure all outward flowing valves when not in use. • Maintain the tank and equipment in accordance with the most recent STI SP-001 Inspection Document recommendations	

(1) – please refer to the SPCC Plan STI SP-001 tank inspection checklist for the complete tank inspection requirements.
(2) – prior to refueling, please refer to tank loading procedures contained in this plan.

* API 653 can be used in lieu of STI SP-001, if desired.

Source Tank Information Sheet

Facility Ghent Generating Station		Source or Tank Identification Tank #6	**Imber**
Location	Coalyard Warehouse		
Type	Double wall		
Construction	Steel		
Contents	Kerosene		
Volume	500		

Inspections Information

Tank Installation date	Inspection Standard	Certification by Outside Inspector Required?	Inspection Schedule	Corrosion Rate (inches/year)
~2000	STI SP-001	No	Monthly by facility representative	N/A

Miscellaneous Information

Drain Valves with Direct Outward Discharge	Drain Valve Secured	Level Monitoring Method	Other Fail Safe Engineering	Corrosion Protection	Internal Heating Coils	Lighting
Yes	Yes	Gauge		No	No	Yes

Secondary Containment Information

Type	Length (feet)	Width (feet)	Height (feet)	Displacement (cubic feet)	Available Volume (gallons)	Percentage of Volume of Largest Tank	Precipitation Drainage Method
Double-walled Tank						110%	N/A

Potential Spill Predictions, Volumes, Rates and Controls

Facility Ghent Generating Station			Source or Tank Identification Tank #6	
Potential Event Rating	Maximum Potential Release Volume (gallons)	Maximum Discharge Rate	Direction of Flow	Secondary Containment
Failure of Tank **Unlikely**	500	Gradual to Instantaneous	The tank sits adjacent to a storm water conveyance system that flows into the coal pile run off pond.	Double-walled Tank
Tank Overfill **Possible**	20	20 gallons/minute (less than 1 minute)	The tank sits adjacent to a storm water conveyance system that flows into the coal pile run off pond.	Absorbents and coal pile run off pond
Hose leak during tank loading **Possible**	20	20 gallons/minute (less than 1 minute)	The tank sits adjacent to a storm water conveyance system that flows into the coal pile run off pond.	Absorbents and coal pile run off pond
General Comments, Observations and/or Recommendations			**General Inspection Requirements(1)**	
• Tank is Double-walled tank adjacent to a storm water conveyance system that discharges into the coal pile run off pond. • Tank is equipped with fuel level indicator float • Tank is equipped with secondary containment float. • Tank dispenser must be plugged in order to operate. • Master Drain and Flow Valve is secured with a threaded plug. • Tank Master Drain and Flow valve is secured by virtue of location within Station perimeter fence and site security measures (e.g., patrols).			-Monthly • Inspect tank monthly per standard. • Check Operation of Level Gauge during filling • Check and secure all outward flowing valves when not in use. • Maintain the tank and equipment in accordance with the most recent STI SP-001 Inspection Document recommendations	

(1) – please refer to the SPCC Plan STI SP-001 tank inspection checklist for the complete tank inspection requirements.
(2) – prior to refueling, please refer to tank loading procedures contained in this plan.
* API 653 can be used in lieu of STI SP-001, if desired.

Source Tank Information Sheet

Facility Ghent Generating Station		Source or Tank Identification Tank #7
Location	Mobile Equipment Refueling (South of Unit 1-2 fuel oil tank)	
Type	Double wall	
Construction	Steel	
Contents	Gasoline	
Volume	1,000	

Inspections Information

Tank Installation date	Inspection Standard	Certification by Outside Inspector Required?	Inspection Schedule	Corrosion Rate (inches/year)
1993	STI SP-001	No	Monthly by facility representative	N/A

Miscellaneous Information

Drain Valves with Direct Outward Discharge	Drain Valve Secured	Level Monitoring Method	Other Fail Safe Engineering	Corrosion Protection	Internal Heating Coils	Lighting
Yes	Yes	Gauge		No	No	Yes

Secondary Containment Information

Type	Length (feet)	Width (feet)	Height (feet)	Displacement (cubic feet)	Available Volume (gallons)	Percentage of Volume of Largest Tank	Precipitation Drainage Method
Double-walled Tank						110% (double walled tank) inside concrete dike, drained to oil/water separator)	manually drained

Potential Spill Predictions, Volumes, Rates and Controls

Facility Ghent Generating Station			Source or Tank Identification Tank #7	
Potential Event Rating	Maximum Potential Release Volume (gallons)	Maximum Discharge Rate	Direction of Flow	Secondary Containment
Failure of Tank **Unlikely**	1,000	Gradual to instantaneous	Valved drain to oil / water separator	Double walled tank and concrete berm that drains to oil / water separator
Tank Overfill **Possible**	X < 25	(fill rate of 25 gpm) Less than one minute	Same as above	Double walled tank and concrete berm that drains to oil / water separator
Hose leak during tank loading **Possible**	X < 25	(fill rate of 25 gpm) Less than one minute	Same as above	Diversionary structure to oil / water separator
General Comments, Observations and/or Recommendations			**General Inspection Requirements(1)**	
• Tank is Double-walled tank inside concrete berm • Tank is equipped with fuel level indicator gauge. • Concrete berm drains to oil / water separator • Tank Master Drain and Flow valve is secured by virtue of location within Station perimeter fence and site security measures (e.g., patrols).			-Monthly • Inspect tank monthly per standard. • Check Operation of Level Gauge during filling • Check and secure all outward flowing valves when not in use. • Maintain the tank and equipment in accordance with the most recent STI SP-001 Inspection Document recommendations	

(1) – please refer to the SPCC Plan STI SP-001 tank inspection checklist for the complete tank inspection requirements.
(2) – prior to refueling, please refer to tank loading procedures contained in this plan.

* API 653 can be used in lieu of STI SP-001, if desired.

Source Tank Information Sheet

Facility Ghent Generating Station		Source or Tank Identification Tank #8
Location	Mobile Equipment Refueling (South of Unit 1-2 fuel oil containment)	
Type	Double wall	
Construction	Steel	
Contents	Diesel	
Volume	1,000	

Inspections Information

Tank Installation date	Inspection Standard	Certification by Outside Inspector Required?	Inspection Schedule	Corrosion Rate (inches/year)
1993	STI SP-001	No	Monthly by facility representative	N/A

Miscellaneous Information

Drain Valves with Direct Outward Discharge	Drain Valve Secured	Level Monitoring Method	Other Fail Safe Engineering	Corrosion Protection	Internal Heating Coils	Lighting
Yes	Yes	Gauge		No	No	Yes

Secondary Containment Information

Type	Length (feet)	Width (feet)	Height (feet)	Displacement (cubic feet)	Available Volume (gallons)	Percentage of Volume of Largest Tank	Precipitation Drainage Method
Double-walled Tank						110% (double walled tank inside concrete berm, drained to oil/water separator)	manually drained

Potential Spill Predictions, Volumes, Rates and Controls

Facility Ghent Generating Station			Source or Tank Identification Tank #8	
Potential Event Rating	Maximum Potential Release Volume (gallons)	Maximum Discharge Rate	Direction of Flow	Secondary Containment
Failure of Tank **Unlikely**	1,000	Gradual to instantaneous	Concrete berm valved drain to oil / water separator	Double walled tank and concrete berm that drains to oil / water separator
Tank Overfill **Possible**	X < 25	(fill rate of 25 gpm) Less than one minute	Same as above	Same as above
Hose leak during tank loading **Possible**	X < 25	(fill rate of 25 gpm) Less than one minute	Same as above	Diversionary structure to oil / water separator
General Comments, Observations and/or Recommendations			**General Inspection Requirements(1)**	
• Tank is Double-walled tank inside concrete berm • Tank is equipped with fuel level indicator gauge. • Berm drains to oil / water separator. • Tank Master Drain and Flow valve is secured by virtue of location within Station perimeter fence and site security measures (e.g., patrols).			-Monthly • Inspect tank monthly per standard. • Check Operation of Level Gauge during filling • Check and secure all outward flowing valves when not in use. • Maintain the tank and equipment in accordance with the most recent STI SP-001 Inspection Document recommendations	

(1) – please refer to the SPCC Plan STI SP-001 tank inspection checklist for the complete tank inspection requirements.
(2) – prior to refueling, please refer to tank loading procedures contained in this plan.

* API 653 can be used in lieu of STI SP-001, if desired.

Source Tank Information Sheet

Facility Ghent Generating Station		Source or Tank Identification Tank #12	**Imber**
Location	Emergency Generator (NW of Unit 3)		
Type	Single wall		
Construction	Steel		
Contents	Diesel		
Volume	150		

Inspections Information

Tank Installation date	Inspection Standard	Certification by Outside Inspector Required?	Inspection Schedule	Corrosion Rate (inches/year)
1980	STI SP-001	No	Monthly by facility representative	N/A

Miscellaneous Information

Drain Valves with Direct Outward Discharge	Drain Valve Secured	Level Monitoring Method	Other Fail Safe Engineering	Corrosion Protection	Internal Heating Coils	Lighting
Yes	Yes	Gauge	Hi-level shutoff	No	No	Yes

Secondary Containment Information

Type	Length (feet)	Width (feet)	Height (feet)	Displacement (cubic feet)	Available Volume (gallons)	Percentage of Volume of Largest Tank	Precipitation Drainage Method
Inside Room						Containment dike flows to oil/water separator	N/A

Potential Spill Predictions, Volumes, Rates and Controls

Facility Ghent Generating Station			Source or Tank Identification Tank #12	
Potential Event Rating	Maximum Potential Release Volume (gallons)	Maximum Discharge Rate	Direction of Flow	Secondary Containment
Failure of Tank **Unlikely**	150	Gradual to instantaneous	Into floor drain which flows into oil/water separator	Building Provide Level of Structural Containment. Floor Drain goes to Oil/Water Separator
Tank Overfill **Possible**	X < 10	(fill rate of 10 gpm) Less than one minute	Into floor drain which flows into oil/water separator	Building Provide Level of Structural Containment. Floor Drain goes to Oil/Water Separator
General Comments, Observations and/or Recommendations			**General Inspection Requirements(1)**	
• This is basically a day tank for the generator. • Tank is equipped with fuel level site gauge. • Piping transfer fuel to emergency generator. • Tank Master Drain and Flow valve is secured by virtue of location within Station perimeter fence and site security measures (e.g., patrols).			-Monthly • Inspect tank monthly per standard. • Check Operation of Level Gauge during filling • Check and secure all outward flowing valves when not in use. • Maintain the tank and equipment in accordance with the most recent STI SP-001 Inspection Document recommendations.	

(1) – please refer to the SPCC Plan STI SP-001 tank inspection checklist for the complete tank inspection requirements.
(2) – prior to refueling, please refer to tank loading procedures contained in this plan.

* API 653 can be used in lieu of STI SP-001, if desired.

Source Tank Information Sheet

Facility Ghent Generating Station		Source or Tank Identification Tank #13	**Imber**
Location	Emergency Generator (NE of Unit 4)		
Type	Single wall		
Construction	Steel		
Contents	Diesel		
Volume	150		

Inspections Information

Tank Installation date	Inspection Standard	Certification by Outside Inspector Required?	Inspection Schedule	Corrosion Rate (inches/year)
1983	STI SP-001	No	Monthly by facility representative	N/A

Miscellaneous Information

Drain Valves with Direct Outward Discharge	Drain Valve Secured	Level Monitoring Method	Other Fail Safe Engineering	Corrosion Protection	Internal Heating Coils	Lighting
Yes	Yes	Gauge	Hi-level shutoff	No	No	Yes

Secondary Containment Information

Type	Length (feet)	Width (feet)	Height (feet)	Displacement (cubic feet)	Available Volume (gallons)	Percentage of Volume of Largest Tank	Precipitation Drainage Method
Inside room						Floor Drain goes to Oil/Water Separator	N/A

Potential Spill Predictions, Volumes, Rates and Controls

Facility Ghent Generating Station			Source or Tank Identification Tank #13	
Potential Event Rating	Maximum Potential Release Volume (gallons)	Maximum Discharge Rate	Direction of Flow	Secondary Containment
Failure of Tank **Unlikely**	150	Gradual to instantaneous	Into floor drain which flows into oil/water separator	Building Provide Level of Structural Containment. Floor Drain goes to Oil/Water Separator
Tank Overfill **Possible**	X < 10	(fill rate of 10 gpm) Less than one minute	Into floor drain which flows into oil/water separator	Building Provide Level of Structural Containment. Floor Drain goes to Oil/Water Separator
General Comments, Observations and/or Recommendations			**General Inspection Requirements(1)**	
• This is basically a day tank for the generator. • Tank is equipped with fuel level site gauge. • Piping transfer fuel to emergency generator. • Tank Master Drain and Flow valve is secured by virtue of location within Station perimeter fence and site security measures (e.g., patrols).			-Monthly • Inspect tank monthly per standard. • Check Operation of Level Gauge during filling. • Check and secure all outward flowing valves when not in use. • Maintain the tank and equipment in accordance with the most recent STI SP-001 Inspection Document recommendations.	

(1) – please refer to the SPCC Plan STI SP-001 tank inspection checklist for the complete tank inspection requirements.
(2) – prior to refueling, please refer to tank loading procedures contained in this plan.

* API 653 can be used in lieu of STI SP-001, if desired.

Source Tank Information Sheet

Facility Ghent Generating Station		Source or Tank Identification Tank # T-17					Imber
Location	Equip. Storage Bldg. or Unit Bldg. Basement						
Type	Single Wall						
Construction	Steel						
Contents	Diesel Fuel						
Volume	190 Gallons						

Inspections Information				
Tank Installation date	Inspection Standard	Certification by Outside Inspector Required?	Inspection Schedule	Corrosion Rate (inches/year)
Unknown	STI SP-001	No	Monthly by facility representative	N/A

Miscellaneous Information						
Drain Valves with Direct Outward Discharge	Drain Valve Secured	Level Monitoring Method	Other Fail Safe Engineering	Corrosion Protection	Internal Heating Coils	Lighting
Yes	Yes	Gauge		No	No	Yes

Secondary Containment Information							
Type	Length (feet)	Width (feet)	Height (feet)	Displacement (cubic feet)	Available Volume (gallons)	Percentage of Volume of Largest Tank	Precipitation Drainage Method
PVC Drive-In Containment Berm or Concrete Floor Sump	10’	20’	4”		498 gallons	>110%	N/A

Potential Spill Predictions, Volumes, Rates and Controls

Facility Ghent Generating Station			Source or Tank Identification Tank #17	
Potential Event Rating	Maximum Potential Release Volume (gallons)	Maximum Discharge Rate	Direction of Flow	Secondary Containment
Failure of Tank **Unlikely**	190	Gradual to Instantaneous	Berm or Building floor to sumps then to O/W Separator	Berm or Building/Sumps ;& OWS
Tank Overfill **Possible**	100	100 gallons per minute (less than 1 minute)	Berm or Building floor to sumps then to O/W Separator	Berm or Building/Sumps ;& OWS
Hose leak during tank loading **Possible**	100	100 gallons per minute (less than 1 minute)	Berm or Building floor to sumps then to O/W Separator	Berm or Building/Sumps ;& OWS
General Comments, Observations and/or Recommendations			**General Inspection Requirements(1)**	
			-Monthly • Inspect tank monthly per standard. • Check Operation of Level Gauge during filling • Maintain the tank and equipment in accordance with the most recent STI-SP001 Inspection Document recommendations	

(1) – please refer to the SPCC Plan STI – SP001 tank inspection checklist for the complete tank inspection requirements.
(2) – prior to refueling, please refer to tank loading procedures contained in this plan.

Source Tank Information Sheet

Facility Ghent Generating Station		Source or Tank Identification Tank # T-18	Imber
Location	Coal Yard Warehouse #1 or various plant areas (portable)		
Type	Double Wall		
Construction	Steel		
Contents	Diesel Fuel		
Volume	106 Gallons		

Inspections Information				
Tank Installation date	Inspection Standard	Certification by Outside Inspector Required?	Inspection Schedule	Corrosion Rate (inches/year)
Year	STI SP-001	No	Monthly by facility representative	N/A

Miscellaneous Information						
Drain Valves with Direct Outward Discharge	Drain Valve Secured	Level Monitoring Method	Other Fail Safe Engineering	Corrosion Protection	Internal Heating Coils	Lighting
Yes	Yes	Gauge		No	No	Yes

Secondary Containment Information							
Type	Length (feet)	Width (feet)	Height (feet)	Displacement (cubic feet)	Available Volume (gallons)	Percentage of Volume of Largest Tank	Precipitation Drainage Method
Double Walled Tank						110	N/A

Potential Spill Predictions, Volumes, Rates and Controls

Facility Ghent Generating Station			Source or Tank Identification Tank #18	
Potential Event Rating	Maximum Potential Release Volume (gallons)	Maximum Discharge Rate	Direction of Flow	Secondary Containment
Failure of Tank **Unlikely**	106	Gradual to Instantaneous	Via Building Sumps then to Ash Treatment Basin No. 1	Double Wall Tank
Tank Overfill **Possible**	100	100 gallons per minute (less than 1 minute)	Via Building Sumps then to Ash Treatment Basin No. 1	Ash Treatment Basin No. 1
Hose leak during tank loading **Possible**	100	100 gallons per minute (less than 1 minute)	Via Building Sumps then to Ash Treatment Basin No. 1	Ash Treatment Basin No. 1
General Comments, Observations and/or Recommendations			**General Inspection Requirements(1)**	
Mobile Unit, When not in use, is parked inside of Coal Yard Warehouse #1			-Monthly • Inspect tank monthly per standard. • Check Operation of Level Gauge during filling • Maintain the tank and equipment in accordance with the most recent STI-SP001 Inspection Document recommendations	

(1) – please refer to the SPCC Plan STI – SP001 tank inspection checklist for the complete tank inspection requirements.
(2) – prior to refueling, please refer to tank loading procedures contained in this plan.

Source Tank Information Sheet

Facility Ghent Generating Station		Source or Tank Identification Tank #19 and #20
Location	Unit 1 and 2 (Inside, Southside)	
Type	Single wall	
Construction	Steel	
Contents	Clean Oil Dirty Oil	
Volume	15,000	

Inspections Information

Tank Installation date	Inspection Standard	Certification by Outside Inspector Required?	Inspection Schedule	Corrosion Rate (inches/year)
1973	STI SP-001	Yes	Monthly by facility representative	N/A

Miscellaneous Information

Drain Valves with Direct Outward Discharge	Drain Valve Secured	Level Monitoring Method	Other Fail Safe Engineering	Corrosion Protection	Internal Heating Coils	Lighting
Yes	Yes	Gauge		No	No	Yes

Secondary Containment Information

Type	Length (feet)	Width (feet)	Height (feet)	Displacement (cubic feet)	Available Volume (gallons)	Percentage of Volume of Largest Tank	Precipitation Drainage Method
Room Bermed						Residual drains to oil/water separator	N/A

Potential Spill Predictions, Volumes, Rates and Controls

Facility Ghent Generating Station			Source or Tank Identification Tank #19 and #20	
Potential Event Rating	Maximum Potential Release Volume (gallons)	Maximum Discharge Rate	Direction of Flow	Secondary Containment
Failure of Tank **Unlikely**	15,000	Gradual to instantaneous	Into floor drain which flows into oil/water separator	Building structure will provide some level of containment. Floor drains are elevated/overflow and discharge into the oil/water separator.
Tank Overfill **Possible**	X < 10	(fill rate of 10 gpm) Less than one minute	Into floor drain which flows into oil/water separator	Building structure will provide some level of containment. Floor drains are elevated/overflow and discharge into the oil/water separator.
General Comments, Observations and/or Recommendations			**General Inspection Requirements(1)**	
• Tank is located inside building, so tank failure is highly unlikely. • Clean Tank is remote filled. • Dirty Tank is remote unloaded. • Floor drain inside building goes to facility oil/water separator. • Tank Master Drain and Flow valve is secured by virtue of location within Station perimeter fence and site security measures (e.g., patrols).			-Monthly • Inspect tank monthly per standard. • Check Operation of Level Gauge during filling • Check and secure all outward flowing valves when not in use. • Maintain the tank and equipment in accordance with the most recent STI SP-001 Inspection Document recommendations.	

(1) – please refer to the SPCC Plan STI SP-001 tank inspection checklist for the complete tank inspection requirements.
(2) – prior to refueling, please refer to tank loading procedures contained in this plan.
* API 653 can be used in lieu of STI SP-001, if desired.

Source Tank Information Sheet

Facility Ghent Generating Station		Source or Tank Identification Tank #21 and #22
Location	Unit 3 – adjacent Demineralizer Room	
Type	Single wall	
Construction	Steel	
Contents	Clean Oil Dirty Oil	
Volume	15,000	

Inspections Information

Tank Installation date	Inspection Standard	Certification by Outside Inspector Required?	Inspection Schedule	Corrosion Rate (inches/year)
1980	STI SP-001	Yes	Monthly by facility representative	N/A

Miscellaneous Information

Drain Valves with Direct Outward Discharge	Drain Valve Secured	Level Monitoring Method	Other Fail Safe Engineering	Corrosion Protection	Internal Heating Coils	Lighting
Yes	Yes	Gauge		No	No	Yes

Secondary Containment Information

Type	Length (feet)	Width (feet)	Height (feet)	Displacement (cubic feet)	Available Volume (gallons)	Percentage of Volume of Largest Tank	Precipitation Drainage Method
Bermed Room						Residual drains to oil/water separator)	N/A

Potential Spill Predictions, Volumes, Rates and Controls

Facility Ghent Generating Station			Source or Tank Identification Tank #21 and #22	
Potential Event Rating	Maximum Potential Release Volume (gallons)	Maximum Discharge Rate	Direction of Flow	Secondary Containment
Failure of Tank **Unlikely**	15,000	Gradual to instantaneous	Into floor drain which flows into oil/water separator	Building structure will provide some level of containment. Floor drains are elevated/overflow and discharge into the oil/water separator.
Tank Overfill **Possible**	X < 10	(fill rate of 10 gpm) Less than one minute	Into floor drain which flows into oil/water separator	Building structure will provide some level of containment. Floor drains are elevated/overflow and discharge into the oil/water separator.
General Comments, Observations and/or Recommendations			**General Inspection Requirements(1)**	
• Tank is located inside building, so tank failure is highly unlikely. • Clean Tank is remote filled. • Dirty Tank is remote unloaded. • Floor drain inside building goes to facility oil/water separator. • Tank Master Drain and Flow valve is secured by virtue of location within Station perimeter fence and site security measures (e.g., patrols).			-Monthly • Inspect tank monthly per standard. • Check Operation of Level Gauge during filling. • Check and secure all outward flowing valves when not in use. • Maintain the tank and equipment in accordance with the most recent STI SP-001 Inspection Document recommendations.	

(1) – please refer to the SPCC Plan STI SP-001 tank inspection checklist for the complete tank inspection requirements.
(2) – prior to refueling, please refer to tank loading procedures contained in this plan.
* API 653 can be used in lieu of STI SP-001, if desired.

Source Tank Information Sheet

Facility Ghent Generating Station		Source or Tank Identification Tank #23 thru #26
Location	Coal Yard – Tractor Garage (inside)	
Type	Double-wall	
Construction	Steel	
Contents	Motor Oil Hydraulic Oil Gear Compound	
Volume	400 gallon each (T-25 is 300 gallons)	

Inspections Information

Tank Installation date	Inspection Standard	Certification by Outside Inspector Required?	Inspection Schedule	Corrosion Rate (inches/year)
2010	STI SP-001	No	Monthly by facility representative	N/A

Miscellaneous Information

Drain Valves with Direct Outward Discharge	Drain Valve Secured	Level Monitoring Method	Other Fail Safe Engineering	Corrosion Protection	Internal Heating Coils	Lighting
Yes	N/A	Gauge		No	No	Yes

Secondary Containment Information

Type	Length (feet)	Width (feet)	Height (feet)	Displacement (cubic feet)	Available Volume (gallons)	Percentage of Volume of Largest Tank	Precipitation Drainage Method
Double-walled							N/A

Potential Spill Predictions, Volumes, Rates and Controls

Facility Ghent Generating Station			Source or Tank Identification Tank #23 thru #26	
Potential Event Rating	Maximum Potential Release Volume (gallons)	Maximum Discharge Rate	Direction of Flow	Secondary Containment
Failure of Tank **Unlikely**	400	Gradual to instantaneous	Inside room, adjacent garage maintenance area with grade-level doors to coal pile, flows toward runoff pond (to ATB 1)	Double-wall tanks.
Tank Overfill **Possible**	X < 10	(fill rate of 10 gpm) Less than one minute	Same as above	Building structure will provide additional level of containment.
General Comments, Observations and/or Recommendations			**General Inspection Requirements(1)**	
• Tank is located inside building, so tank failure is highly unlikely. • Tanks are manually filled. • No floor drains inside building but general runoff goes to coal pile runoff pond and then pumped to ATB 1.			-Monthly • Inspect tank monthly per standard. • Check Operation of Level Gauge during filling. • Check and secure all outward flowing valves when not in use. • Maintain the tank and equipment in accordance with the most recent STI SP-001 Inspection Document recommendations.	

(1) – please refer to the SPCC Plan STI SP-001 tank inspection checklist for the complete tank inspection requirements.
(2) – prior to refueling, please refer to tank loading procedures contained in this plan.

* API 653 can be used in lieu of STI SP-001, if desired.

Source Tank Information Sheet

Imber

Facility	Source or Tank Identification
Ghent Generating Station	Tank #81 (Seasonal)

Location	Coalyard Warehouse
Type	Single wall
Construction	Steel
Contents	Kerosene
Volume	500



Inspections Information

Tank Installation date	Inspection Standard	Certification by Outside Inspector Required?	Inspection Schedule	Corrosion Rate (inches/year)
Seasonal	STI SP-001	No	Monthly by facility representative	N/A

Miscellaneous Information

Drain Valves with Direct Outward Discharge	Drain Valve Secured	Level Monitoring Method	Other Fail Safe Engineering	Corrosion Protection	Internal Heating Coils	Lighting
Yes	Yes	Gauge		No	No	Yes

Secondary Containment Information

Type	Length (feet)	Width (feet)	Height (feet)	Displacement (cubic feet)	Available Volume (gallons)	Percentage of Volume of Largest Tank	Precipitation Drainage Method
Metal Pan						110%	Manual

Potential Spill Predictions, Volumes, Rates and Controls

Facility Ghent Generating Station			Source or Tank Identification Tank #81 (Seasonal)	
Potential Event Rating	Maximum Potential Release Volume (gallons)	Maximum Discharge Rate	Direction of Flow	Secondary Containment
Failure of Tank **Unlikely**	500	Gradual to Instantaneous	The tank sits adjacent to a storm water conveyance system that flows into the coal pile run off pond.	Metal Pan
Tank Overfill **Possible**	20	20 gallons/minute (less than 1 minute)	The tank sits adjacent to a storm water conveyance system that flows into the coal pile run off pond.	Absorbents and coal pile run off pond
Hose leak during tank loading **Possible**	20	20 gallons/minute (less than 1 minute)	The tank sits adjacent to a storm water conveyance system that flows into the coal pile run off pond.	Absorbents and coal pile run off pond
General Comments, Observations and/or Recommendations			**General Inspection Requirements(1)**	
• Tank sits in a metal pan adjacent to a storm water conveyance system that discharges into the coal pile run off pond. • Tank is equipped with fuel level indicator float • Tank dispenser must be plugged in order to operate. • Master Drain and Flow Valve is secured with a threaded plug. • Tank Master Drain and Flow valve is secured by virtue of location within Station perimeter fence and site security measures (e.g., patrols).			-Monthly • Inspect tank monthly per standard. • Check Operation of Level Gauge during filling • Check and secure all outward flowing valves when not in use. • Maintain the tank and equipment in accordance with the most recent STI SP-001 Inspection Document recommendations	

(1) – please refer to the SPCC Plan STI SP-001 tank inspection checklist for the complete tank inspection requirements.
(2) – prior to refueling, please refer to tank loading procedures contained in this plan.
* API 653 can be used in lieu of STI SP-001, if desired.

Source Tank Information Sheet

Facility Ghent Generating Station		Source or Tank Identification Tank #89	Imber
Location	Coal Yard Warehouse Area		
Type	Double Walled Tank		
Construction	Steel		
Contents	Currently -Out of service		
Volume	500		

Inspections Information

Tank Installation date	Inspection Standard	Certification by Outside Inspector Required?	Inspection Schedule	Corrosion Rate (inches/year)
	STI SP-001	No	Monthly by facility representative	N/A

Miscellaneous Information

Drain Valves with Direct Outward Discharge	Drain Valve Secured	Level Monitoring Method	Other Fail Safe Engineering	Corrosion Protection	Internal Heating Coils	Lighting
Yes	Yes	Site Gauge		No	No	Yes

Secondary Containment Information

Type	Length (feet)	Width (feet)	Height (feet)	Displacement (cubic feet)	Available Volume (gallons)	Percentage of Volume of Largest Tank	Precipitation Drainage Method
Double Walled Tank							

Potential Spill Predictions, Volumes, Rates and Controls

Facility Ghent Generating Station			Source or Tank Identification Tank # 89	
Potential Event Rating	Maximum Potential Release Volume (gallons)	Maximum Discharge Rate	Direction of Flow	Secondary Containment
Failure of Tank **Unlikely**	500	Gradual to instantaneous	The area storm water conveyance system flows into the coal pile run off pond.	Double walled
Tank Overfill **Possible**	X < 25	(fill rate of 25 gpm) Less than one minute	The area storm water conveyance system flows into the coal pile run off pond.	Active measures and absorbents
Hose leak during tank loading **Possible**	X < 25	(fill rate of 25 gpm) Less than one minute	The area storm water conveyance system flows into the coal pile run off pond.	Active measures and absorbents
General Comments, Observations and/or Recommendations			**General Inspection Requirements(1)**	
• Tank shown in out-of-service condition at temporary location for maintenance. Confirm information once tank is reinstalled for reuse. • Tank is equipped with fuel level site gauge. • Tank Master Drain and Flow valve is secured by virtue of location within Station perimeter fence and site security measures (e.g., patrols).			-Monthly • Inspect tank monthly per standard. • Check Operation of Level Gauge during filling • Check and secure all outward flowing valves when not in use. • Maintain the tank and equipment in accordance with the most recent STI SP-001 Inspection Document recommendations	

(1) – please refer to the SPCC Plan STI SP-001 tank inspection checklist for the complete tank inspection requirements.
(2) – prior to refueling, please refer to tank loading procedures contained in this plan.

* API 653 can be used in lieu of STI SP-001, if desired.

Source Tank Information Sheet

Facility Ghent Generating Station		Source or Tank Identification Tank #90, 91	Imber
Location	Emergency Generator (NW of Unit 1)		
Type	Double walled		
Construction	Steel		
Contents	Diesel		
Volume	1,039 1,039		

Inspections Information

Tank Installation date	Inspection Standard	Certification by Outside Inspector Required?	Inspection Schedule	Corrosion Rate (inches/year)
2018	STI SP-001	No	Monthly by facility representative	N/A

Miscellaneous Information

Drain Valves with Direct Outward Discharge	Drain Valve Secured	Level Monitoring Method	Other Fail Safe Engineering	Corrosion Protection	Internal Heating Coils	Lighting
Yes	Yes	Site Gauge		No	No	Yes

Secondary Containment Information

Type	Length (feet)	Width (feet)	Height (feet)	Displacement (cubic feet)	Available Volume (gallons)	Percentage of Volume of Largest Tank	Precipitation Drainage Method
Concrete	11	4.3	1.2	57.2	428	110% (curb-area drains to oil/water separator)	N/A

Potential Spill Predictions, Volumes, Rates and Controls

Facility Ghent Generating Station			Source or Tank Identification Tanks # 90, 91	
Potential Event Rating	Maximum Potential Release Volume (gallons)	Maximum Discharge Rate	Direction of Flow	Secondary Containment
Failure of Tank **Unlikely**	500	Gradual to instantaneous	Floor Drain goes to Oil/Water Separator	Double walled and Concrete dike
Tank Overfill **Possible**	X < 25	(fill rate of 25 gpm) Less than one minute	Floor Drain goes to Oil/Water Separator	Double walled and Concrete dike
Hose leak during tank loading **Possible**	X < 25	(fill rate of 25 gpm) Less than one minute	Floor Drain goes to Oil/Water Separator	Absorbents
General Comments, Observations and/or Recommendations			**General Inspection Requirements(1)**	
• Tank containment dike drains to oil/water separator • Tank is equipped with fuel level site gauge. • Exterior fiberglass secondary containment was placed around transfer piping. • Piping transfer fuel to emergency generator. Tank • Tank Master Drain and Flow valve is secured by virtue of location within Station perimeter fence and site security measures (e.g., patrols).			-Monthly • Inspect tank monthly per standard. • Check Operation of Level Gauge during filling • Check and secure all outward flowing valves when not in use. • Maintain the tank and equipment in accordance with the most recent STI SP-001 Inspection Document recommendations	

(1) – please refer to the SPCC Plan STI SP-001 tank inspection checklist for the complete tank inspection requirements.
(2) – prior to refueling, please refer to tank loading procedures contained in this plan.

* API 653 can be used in lieu of STI SP-001, if desired.

Source Tank Information Sheet

Imber

Facility	Source or Tank Identification
Ghent Generating Station	Tank #92, #93

Location	Inside Unit 1 Boiler Room near Trona Bldg
Type	Double wall
Construction	Poly
Contents	Used Oil
Volume	1,000 gallons each



Inspections Information

Tank Installation date	Inspection Standard	Certification by Outside Inspector Required?	Inspection Schedule	Corrosion Rate (inches/year)
2018	STI SP-001	No	Monthly by facility representative	N/A

Miscellaneous Information

Drain Valves with Direct Outward Discharge	Drain Valve Secured	Level Monitoring Method	Other Fail Safe Engineering	Corrosion Protection	Internal Heating Coils	Lighting
No	N/A	Visual		No	No	Yes

Secondary Containment Information

Type	Length (feet)	Width (feet)	Height (feet)	Displacement (cubic feet)	Available Volume (gallons)	Percentage of Volume of Largest Tank	Precipitation Drainage Method
Double-walled Tanks						>100%	N/A

Potential Spill Predictions, Volumes, Rates and Controls

Facility Ghent Generating Station			Source or Tank Identification Tank #92, #93	
Potential Event Rating	Maximum Potential Release Volume (gallons)	Maximum Discharge Rate	Direction of Flow	Secondary Containment
Failure of Tank **Unlikely**	1,000	Gradual to Instantaneous	Concrete floor drains to oil/water separator	Double-wall tank
Tank Overfill **Unlikely**	X < 5	Tank is filled by small quantities	Concrete floor drains to oil/water separator	Absorbents
Spill during Unloading **Possible**	X < 20	Possible release during unloading	Concrete floor drains to oil/water separator	Absorbents
General Comments, Observations and/or Recommendations			**General Inspection Requirements(1)**	
• Tanks inside plastic storage containers			-Monthly • Inspect tank monthly per standard. • Maintain the tank and equipment in accordance with the most recent STI SP-001 Inspection Document recommendations.	

(1) – please refer to the SPCC Plan STI SP-001 tank inspection checklist for the complete tank inspection requirements.
(2) – prior to refueling, please refer to tank loading procedures contained in this plan.

* API 653 can be used in lieu of STI SP-001, if desired.

Source Tank Information Sheet

Facility Ghent Generating Station		Source or Tank Identification Tank #94	Imber
Location	Inside Unit 1 FGD		
Type	Double wall		
Construction	Steel		
Contents	Used Oil		
Volume	300 gallons each		

Inspections Information

Tank Installation date	Inspection Standard	Certification by Outside Inspector Required?	Inspection Schedule	Corrosion Rate (inches/year)
2018	STI SP-001	No	Monthly by facility representative	N/A

Miscellaneous Information

Drain Valves with Direct Outward Discharge	Drain Valve Secured	Level Monitoring Method	Other Fail Safe Engineering	Corrosion Protection	Internal Heating Coils	Lighting
No	N/A	Visual		No	No	Yes

Secondary Containment Information

Type	Length (feet)	Width (feet)	Height (feet)	Displacement (cubic feet)	Available Volume (gallons)	Percentage of Volume of Largest Tank	Precipitation Drainage Method
						Double-walled Tank	N/A

Potential Spill Predictions, Volumes, Rates and Controls

Facility Ghent Generating Station			Source or Tank Identification Tank #94	
Potential Event Rating	Maximum Potential Release Volume (gallons)	Maximum Discharge Rate	Direction of Flow	Secondary Containment
Failure of Tank **Unlikely**	300	Gradual to Instantaneous	Concrete floor drains to FGD Sump	Double-wall tank
Tank Overfill **Unlikely**	X < 5	Tank is filled by small quantities	Concrete floor drains to FGD Sump	Absorbents
Spill during Unloading **Possible**	X < 20	Possible release during unloading	Concrete floor drains to FGD Sump	Absorbents
General Comments, Observations and/or Recommendations			**General Inspection Requirements(1)**	
• Early Environmental Tank			-Monthly • Inspect tank monthly per standard. • Maintain the tank and equipment in accordance with the most recent STI SP-001 Inspection Document recommendations.	

(1) – please refer to the SPCC Plan STI SP-001 tank inspection checklist for the complete tank inspection requirements.
(2) – prior to refueling, please refer to tank loading procedures contained in this plan.

* API 653 can be used in lieu of STI SP-001, if desired.

Source Tank Information Sheet

Imber

Facility	Source or Tank Identification
Ghent Generating Station	Tank #95

Location	Inside Unit 4 FGD
Type	Double wall
Construction	Steel
Contents	Used Oil
Volume	300 gallons



Inspections Information

Tank Installation date	Inspection Standard	Certification by Outside Inspector Required?	Inspection Schedule	Corrosion Rate (inches/year)
2018	STI SP-001	No	Monthly by facility representative	N/A

Miscellaneous Information

Drain Valves with Direct Outward Discharge	Drain Valve Secured	Level Monitoring Method	Other Fail Safe Engineering	Corrosion Protection	Internal Heating Coils	Lighting
No	N/A	Visual		No	No	Yes

Secondary Containment Information

Type	Length (feet)	Width (feet)	Height (feet)	Displacement (cubic feet)	Available Volume (gallons)	Percentage of Volume of Largest Tank	Precipitation Drainage Method
						Double-walled Tanks	N/A

Potential Spill Predictions, Volumes, Rates and Controls

Facility Ghent Generating Station			Source or Tank Identification Tank #95	
Potential Event Rating	Maximum Potential Release Volume (gallons)	Maximum Discharge Rate	Direction of Flow	Secondary Containment
Failure of Tank **Unlikely**	300	Gradual to Instantaneous	Floor drains to trench to FGD Sump	Double-wall tank
Tank Overfill **Unlikely**	X < 5	Tank is filled by small quantities	Floor drains to trench to FGD Sump	Absorbents
Spill during Unloading **Possible**	X < 20	Possible release during unloading	Floor drains to trench to FGD Sump	Absorbents
General Comments, Observations and/or Recommendations			**General Inspection Requirements(1)**	
• Tank IS filled from the top after performing maintenance on vehicles. Small quantities are generally transfer into the tank at any given time. •			-Monthly • Inspect tank monthly per standard. • Maintain the tank and equipment in accordance with the most recent STI SP-001 Inspection Document recommendations.	

(1) – please refer to the SPCC Plan STI SP-001 tank inspection checklist for the complete tank inspection requirements.
(2) – prior to refueling, please refer to tank loading procedures contained in this plan.

* API 653 can be used in lieu of STI SP-001, if desired.

Source Tank Information Sheet

Facility Ghent Generating Station		Source or Tank Identification Tank #96, #97, and #98	Imber
Location	Coal Yard – Tractor Garage (East outside wall)		
Type	Double wall		
Construction	Steel		
Contents	Used Oil		
Volume	300 gallon each		

Inspections Information				
Tank Installation date	Inspection Standard	Certification by Outside Inspector Required?	Inspection Schedule	Corrosion Rate (inches/year)
2018	STI SP-001	No	Monthly by facility representative	N/A

Miscellaneous Information						
Drain Valves with Direct Outward Discharge	Drain Valve Secured	Level Monitoring Method	Other Fail Safe Engineering	Corrosion Protection	Internal Heating Coils	Lighting
No	N/A	Visual		No	No	Yes

Secondary Containment Information							
Type	Length (feet)	Width (feet)	Height (feet)	Displacement (cubic feet)	Available Volume (gallons)	Percentage of Volume of Largest Tank	Precipitation Drainage Method
						Double-walled Tanks	N/A

Potential Spill Predictions, Volumes, Rates and Controls

Facility Ghent Generating Station			Source or Tank Identification Tank #96, #97, and #98	
Potential Event Rating	Maximum Potential Release Volume (gallons)	Maximum Discharge Rate	Direction of Flow	Secondary Containment
Failure of Tank **Unlikely**	300	Gradual to Instantaneous	Toward coal yard settling basin #1	Double-wall tanks
Tank Overfill **Unlikely**	X < 5	Tank is filled by small quantities	Toward coal yard settling basin #1	Absorbents
Spill during Unloading **Possible**	X < 20	Possible release during unloading	Toward coal yard settling basin #1	Absorbents
General Comments, Observations and/or Recommendations			**General Inspection Requirements(1)**	
• Tanks are filled from the top after performing maintenance on vehicles. Small quantities are generally transfer into the tank at any given time. •			-Monthly • Inspect tank monthly per standard. • Maintain the tank and equipment in accordance with the most recent STI SP-001 Inspection Document recommendations.	

(1) – please refer to the SPCC Plan STI SP-001 tank inspection checklist for the complete tank inspection requirements.
(2) – prior to refueling, please refer to tank loading procedures contained in this plan.

* API 653 can be used in lieu of STI SP-001, if desired.

Source Tank Information Sheet

Facility Ghent Generating Station		Source or Tank Identification Tank # T-101					Imber
Location	CCR Maintenance Shop Area						
Type	Double Walled Tank						
Construction	Steel						
Contents	Diesel Fuel						
Volume	1,000 Gallons						

Inspections Information				
Tank Installation date	Inspection Standard	Certification by Outside Inspector Required?	Inspection Schedule	Corrosion Rate (inches/year)
12/9/20	STI SP-001	No	Monthly by facility representative	N/A

Miscellaneous Information						
Drain Valves with Direct Outward Discharge	Drain Valve Secured	Level Monitoring Method	Other Fail Safe Engineering	Corrosion Protection	Internal Heating Coils	Lighting
		Gauge	Interstitial space gauge	No	No	Yes

Secondary Containment Information							
Type	Length (feet)	Width (feet)	Height (feet)	Displacement (cubic feet)	Available Volume (gallons)	Percentage of Volume of Largest Tank	Precipitation Drainage Method
Double walled tank						>100%	NA

Potential Spill Predictions, Volumes, Rates and Controls

Facility Ghent Generating Station			Source or Tank Identification Tank #101	
Potential Event Rating	Maximum Potential Release Volume (gallons)	Maximum Discharge Rate	Direction of Flow	Secondary Containment
Failure of Tank **Unlikely**	1,000	Gradual to Instantaneous	Flat area drains to West CCR area pond	Double Walled Tank
Tank Overfill **Possible**	100	100 gallons per minute (less than 1 minute)	Flat area drains to West CCR area pond	Land Based Response
Hose leak during tank loading **Possible**	100	100 gallons per minute (less than 1 minute)	Flat area drains to West CCR area pond	Land Based Response
General Comments, Observations and/or Recommendations			**General Inspection Requirements(1)**	
			-Monthly • Inspect tank monthly per standard. • Check Operation of Level Gauge during filling • Maintain the tank and equipment in accordance with the most recent STI-SP001 Inspection Document recommendations	

(1) – Please refer to the SPCC Plan STI – SP001 tank inspection checklist for the complete tank inspection requirements.
(2) – Prior to refueling, please refer to tank loading procedures contained in this plan.

Source Tank Information Sheet

Facility Ghent Generating Station		Source or Tank Identification Tank #102					**Imber**
Location	CCRT Material Handling Area Tank						
Type	Double wall						
Construction	Steel						
Contents	Kerosene						
Volume	500						

Inspections Information				
Tank Installation date	Inspection Standard	Certification by Outside Inspector Required?	Inspection Schedule	Corrosion Rate (inches/year)
12/09/2020	STI SP-001	No	Monthly by facility representative	N/A

Miscellaneous Information						
Drain Valves with Direct Outward Discharge	Drain Valve Secured	Level Monitoring Method	Other Fail Safe Engineering	Corrosion Protection	Internal Heating Coils	Lighting
		Gauge		No	No	Yes

Secondary Containment Information							
Type	Length (feet)	Width (feet)	Height (feet)	Displacement (cubic feet)	Available Volume (gallons)	Percentage of Volume of Largest Tank	Precipitation Drainage Method
Double Walled Tank						>100%	N/A

Potential Spill Predictions, Volumes, Rates and Controls

Facility Ghent Generating Station			Source or Tank Identification Tank #102	
Potential Event Rating	Maximum Potential Release Volume (gallons)	Maximum Discharge Rate	Direction of Flow	Secondary Containment
Failure of Tank **Unlikely**	500	Gradual to Instantaneous	Area drains to west CCRT area pond.	Double-walled tank
Tank Overfill **Possible**	20	20 gallons/minute (less than 1 minute)	Area drains to west CCRT area pond.	Absorbents and CCRT are Pond
Hose leak during tank loading **Possible**	20	20 gallons/minute (less than 1 minute)	Area drains to west CCRT area pond.	Absorbents and CCRT are Pond
General Comments, Observations and/or Recommendations			**General Inspection Requirements(1)**	
• Tank is doubled walled. • Tank is equipped with fuel level indicator float • Tank dispenser must be plugged in order to operate. • Tank dispenser should be locked.			-Monthly • Inspect tank monthly per standard. • Check Operation of Level Gauge during filling • Check interstitial space • Check and secure all outward flowing valves when not in use. • Maintain the tank and equipment in accordance with the most recent STI SP-001 Inspection Document recommendations	

(1) – please refer to the SPCC Plan STI SP-001 tank inspection checklist for the complete tank inspection requirements.
(2) – prior to refueling, please refer to tank loading procedures contained in this plan.
* API 653 can be used in lieu of STI SP-001, if desired.

Source Tank Information Sheet

Facility Ghent Generating Station		Source or Tank Identification Tank #103	**Imber**
Location	Equipment Refueling Area Tank		
Type	Double wall		
Construction	Steel		
Contents	Kerosene		
Volume	500		

Inspections Information

Tank Installation date	Inspection Standard	Certification by Outside Inspector Required?	Inspection Schedule	Corrosion Rate (inches/year)
April 2021	STI SP-001	No	Monthly by facility representative	N/A

Miscellaneous Information

Drain Valves with Direct Outward Discharge	Drain Valve Secured	Level Monitoring Method	Other Fail Safe Engineering	Corrosion Protection	Internal Heating Coils	Lighting
		Gauge		No	No	Yes

Secondary Containment Information

Type	Length (feet)	Width (feet)	Height (feet)	Displacement (cubic feet)	Available Volume (gallons)	Percentage of Volume of Largest Tank	Precipitation Drainage Method
Double Wall Tank						>100%	N/A

Potential Spill Predictions, Volumes, Rates and Controls

Facility Ghent Generating Station			Source or Tank Identification Tank #103	
Potential Event Rating	Maximum Potential Release Volume (gallons)	Maximum Discharge Rate	Direction of Flow	Secondary Containment
Failure of Tank **Unlikely**	500	Gradual to Instantaneous	Area drains to oil/water separator.	Double-walled tank
Tank Overfill **Possible**	20	20 gallons/minute (less than 1 minute)	Area drains to oil/water separator.	Absorbents and oil/water separator
Hose leak during tank loading **Possible**	20	20 gallons/minute (less than 1 minute)	Area drains to oil/water separator.	Absorbents and oil/water separator
General Comments, Observations and/or Recommendations			**General Inspection Requirements(1)**	
• Double-walled tank • Tank is equipped with fuel level indicator float • Tank dispenser must be plugged in order to operate. • Tank dispenser should be locked.			-Monthly • Inspect tank monthly per standard. • Check Operation of Level Gauge during filling • Check interstitial space • Check and secure all outward flowing valves when not in use. • Maintain the tank and equipment in accordance with the most recent STI SP-001 Inspection Document recommendations	

(1) – please refer to the SPCC Plan STI SP-001 tank inspection checklist for the complete tank inspection requirements.
(2) – prior to refueling, please refer to tank loading procedures contained in this plan.
* API 653 can be used in lieu of STI SP-001, if desired.

Source Tank Information Sheet

Facility Ghent Generating Station		Source or Tank Identification Tank # 105	Imber
Location	West Plant Area Outside of West Equipment Storage Bldg.		
Type	Double wall		
Construction	Steel		
Contents	Diesel-Off Road		
Volume	550 Gallons		

Inspections Information

Tank Installation date	Inspection Standard	Certification by Outside Inspector Required?	Inspection Schedule	Corrosion Rate (inches/year)
	STI-SP-001	No	Monthly by facility representative	N/A

Miscellaneous Information

Drain Valves with Direct Outward Discharge	Drain Valve Secured	Level Monitoring Method	Other Fail Safe Engineering	Corrosion Protection	Internal Heating Coils	Lighting
No. Drain plug	N/A	Gauge	Spill bucket	No	No	Indirect

Secondary Containment Information

Type	Length (feet)	Width (feet)	Height (feet)	Displacement (cubic feet)	Available Volume (gallons)	Percentage of Volume of Largest Tank	Precipitation Drainage Method
Double-walled tank						Double-walled tank	N/A

Business Use

Potential Spill Predictions, Volumes, Rates and Controls

Facility Ghent Generating Station			Source or Tank Identification Tank #105	
Potential Event Rating	Maximum Potential Release Volume (gallons)	Maximum Discharge Rate	Direction of Flow	Secondary Containment
Failure of Tank **Unlikely**	550	Gradual to Instantaneous	Immediately to the North then area drainage to Black Rock Creek	Double-walled tank
Tank Overfill **Possible**	X < 25	100 gallons per minute (less than 1 minute)	Same as above	Absorbents/Active Measures
Hose leak during tank loading **Possible**	X < 25	100 gallons per minute (less than 1 minute)	Same as above	Absorbents/Active Measures
General Comments, Observations and/or Recommendations			**General Inspection Requirements(1)**	
• Tank is equipped with fuel level direct read gauge. • Tank Master Drain and Flow valve if present are secured by virtue of location within Station perimeter fence and site security measures (e.g., patrols).			-Monthly • Inspect tank monthly per standard. • Ensure that interstitial space is monitored for leaks. • Check Operation of Level Gauge during filling. • Maintain the tank and equipment in accordance with the most recent STI SP-001 Inspection Document recommendations	

(1) – please refer to the SPCC Plan STI SP-001 tank inspection checklist for the complete tank inspection requirements.
(2) – prior to refueling, please refer to tank loading procedures contained in this plan.

Appendix H

Example Fuel Loading Procedure

Example Truck to Bulk Tank Fuel Transfer Procedures

Prior to filling a bulk tank, you must determine the ullage

The inadvertent overfilling of vessels and tanks accounts for a large percentage of petroleum releases each year. Prior to any fuel delivery, facility personnel must confirm the unfilled volume of the receiving vessel or tank using one of the following methods or an equivalent procedure: 1) stick smaller tanks; 2) obtain volume information from existing direct read gauges; 3) obtain volume information from sensors installed in the tank.

As a rule of thumb, tanks should not be filled to more than 90% of their total capacity. This 10% buffer allows for expansion of fuels during ambient heating and cooling cycles and as a safeguard against an overfill event.

When the vendor arrives on site to provide fuel, the tank readings should be again re-taken the volume of fuel desired for delivery confirmed.

Transfer Procedure Checklist

Stage		Task
Before Transfer	□	Visually check all hoses for leaks and wet spots.
	□	Verify that sufficient volume (ullage) is available in the storage tank.
	□	Secure all drainage valves of the secondary containment structure in the closed position.
	□	Secure the tank vehicle with wheel chocks and interlocks (as applicable).
	□	Ensure that vehicle's parking brakes are set.
	□	When making a connection, shut off the vehicle engine. If transfer involves Class 3 materials (flammable liquids), keep vehicle engine off unless it is necessary to execute the transfer.
	□	Verify alignment of valves and functionality of the pumping system.
	□	Inspect the lower most drain and all outlets on tanker truck prior to initiating the transfer.
	□	Establish adequate bonding/grounding prior to connecting to the fuel transfer point.

Example Truck to Bulk Tank Fuel Transfer Procedures

Transfer Procedure Checklist (cont.)

During transfer	□	Driver must stay with the vehicle at all times during loading/unloading activities.
	□	Periodically inspect all system, hoses and connections.
	□	When loading, keep internal and external valves on the receiving tank open along with the pressure relief valves.
	□	Maintain communication with the pumping and receiving stations.
	□	Monitor the liquid level in the receiving tank to prevent overflow.
	□	Monitor flow meter to assure functionality.
	□	As transfer nears completion, reduce flow rate to prevent overfill. Tanks should not be filled more than 90% of capacity.
After transfer	□	Close all tank and loading valves before disconnecting.
	□	Securely close all vehicle internal, external, and dome cover valves before disconnecting.
	□	Secure all hatches.
	□	Disconnect grounding/bonding wires.
	□	Drain hoses into receiving/transfer tank or temporary holding vessel (a bucket, etc.) to remove the remaining oil before moving them away from the connection.
	□	Cap the end of the hose and other connecting devices before moving them to minimize loss of residual fluids.
	□	Remove wheel chocks and interlocks.
	□	Inspect the lowermost drain and all outlets on tank truck prior to departure. If necessary, tighten, adjust or replace caps, valves, or other equipment to prevent oil leaking while in transit.

Ghent Station Fuel Unloading/Refueling Procedure

1. Safety Awareness (prior to Unloading/Refueling):
    a. Prior to entering unloading/refueling area, inspect the area to ensure it's safe.
    b. Identify location of the nearest spill clean-up materials.
    c. Turn off vehicle/equipment being refueled.
    d. Inspect the transfer hose and connections to ensure no cuts/abrasions, defects, etc. that would cause a leak.
    e. Verify appropriate material is being unloaded or used for refueling.
    f. Attendant must be present at all times during unloading/refueling operation
2. Unload/Refuel Equipment: Do not completely top-off tank to avoid overflowing tank.
    a. Check tank levels before filling and frequently during the filling process.
3. Place hose/nozzle back inside containment area (if applicable).
4. Clean up any small drips/spills from hose during refueling operation. A stocked spill kit should be located at or near the refueling station.
    a. In case of a more "substantial" leak/spill – follow plant spill reporting instructions:
        i. Notify the Unit 1 and 2 Control Room at 347-4126 (or via plant radio, plant intercom, etc.).

Appendix I

Inspection Schedule

Appendix I Discussion – Inspections of Tanks and Equipment

40 CFR Part 112 requires that various inspections and testing be performed at SPCC regulated facilities. Inspections are required to ensure that various equipment, structures, and practices are in good working order and/or being followed, while testing involved the physical assessment of a component.

The regulations require that the Professional Engineer certifying the SPCC Plan establish a minimum frequency for inspection and tests that adhere to either referenced standards or good engineering practices.

An example of an inspection may involve a monthly visual assessment, following a specific checklist of a bulk storage tank and/or containment system.

An example of testing may include actuating a float or sensor (e.g., tank overfill sensor) to ensure that the required response (e.g., alarm condition) occurs.

Lastly, some inspections (e.g., structural integrity tests, etc.) may be required to be performed by a certified inspector to ensure regulatory compliance.

The documents contained within this appendix were prepared to direct the Station staff to the various regulatory requires inspection and testing (including integrity tests, where applicable) for SPCC compliance.

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Ghent Generating Station Inspection and Testing Program Schedule Imber

The following table identifies the overall inspection and testing program and scheduled frequency designed for this facility. The table includes broad headings for the general inspection and testing areas. The actual inspection and/or testing checklist to be populated is included in subsequent appendices.

Facility Inspection Schedule		
Facility Component	**Action**	**Frequency/Circumstance**
Bulk Storage Tanks		
ASTs (T-#)	Inspect Visually Inspect Integrity	See Tank and Portable Container Specific Schedule
Containment Accumulated Rainwater (if applicable)	Check for oil, if present Remediate before draining. Maintain drainage log	Monthly
Mobile/Portable Storage Containers (drums, totes, etc.)		
Portable Container Areas (PA-#)	Inspect Visually	See Tank and Portable Container Specific Schedule
Aboveground Piping		
Tank to Tank Transfers • Trench (Tank 1 to Tank 2) • Tank 2 to 4 • Tank 4 to 12 or 13	Leak and Integrity Check Walk pipe run and inspect pipe and pipe supports	Monthly With Tank Inspection
Storage Tank Associated Piping		
Equipment Associated Piping	Leak and Integrity Check	Routine by Operation of Equipment.
Transformer		
Transformers	Leak Check	Routine by Operation of Equipment.
Containment Accumulated Rainwater (if applicable)	Check for oil, if present Remediate before draining	Monthly.
Fuel Transfer Area in Front of Tank 2		
Transfer Pumps	Inspect for oil leaks associated with pump or hose	Monthly
Containment	Is stormwater accumulated in the system. If yes, drain stormwater in accordance with approved procedure.	Monthly or after large stormwater events
Fill Ports/Hoses	Ensure transfer connection are closed and capped when not in use	After each Use and Monthly

Facility Inspection Schedule		
Facility Component	**Action**	**Frequency/Circumstance**
Oil-Water Separator		
Capacity	Check Accumulated Oil and Sludge	Monthly
Control Panel	Operational	
Pumps	Verify Reliability (backup)	
Outside Operational Equipment (Reservoirs)		
Fans, Coolers, etc.	Leak Check	Routine by Operation of Equipment.
Containment Accumulated Rainwater (if applicable)	Check for oil, if present Remediate before draining	Monthly
Coal Unloader Barge Sprocket Reservoir	Inspect spill pan	Monthly
Coal Unloader Conveyor Run-off Sump	Check for the presence of oil in the sump water	Minimum every 3 months
Inside Operational Equipment (Reservoirs)		
Turbines, Fans, Coolers, etc.	Leak Check	Routine by Operation of Equipment.
Plant Waste Waters - Diversionary Containment Structures		
Process Pond (Outfall 001)	Presence of Oil Sheen Containment Boom Integrity	Monthly
Secondary Pond (Outfall 009)		
Other KPDES outfalls	Presence of Oil Sheen	Monthly
Security		
Facility Security	Contractor Checks Site Security	Routine Daily Rounds
Lighting	Local lighting is operational.	
Fuel Dispensers Security	Locked/Status (Vandalism)	
Roads, Ditches, and Swales	Spill Discovery	
Spill Kits		
Land Based Response (Spill Kit)	Inventory and re-order	Monthly and after each use.
Tank Trucks		
Follow Fuel Transfer Procedure	Visually Inspect.	Prior to filling and departure.

General Inspection and Testing Program [40 CFR 112.7(e)]

The inspection schedule was developed using the criteria provided in API 653 and STI SP-001. The table below identifies the inspection standard to use AND the inspection frequency. A separate Appendix provides information on what to be inspected. The rationale for the inspection criteria is included in the pages that follow this table.

Inspection/Test	T-1	T-2	T-3	T-4
	#2 Fuel Oil	#2 Fuel Oil	#2 Fuel Oil	#2 Fuel Oil
Visual inspection by facility personnel (as per the provided monthly checklist)	M A	M A	M A	M A
Inspection by certified inspector (as per API 653)	**Required E(5), I(10)**	**Required E(5), I(10)**	N/A	N/A
Inspection by certified inspector (as per STI SP-001)	N/A	N/A	N/R	**Required E(20)**
Inspection/Test	T-5	T-6	T-7	T-8
	Diesel Fuel	Kerosene	Gasoline	Diesel Fuel
Visual inspection by facility personnel (as per the provided monthly checklist)	M A	M A	M A	M A
Inspection by certified inspector (as per API 653)	N/A	N/A	N/A	N/A
Inspection by certified inspector (as per STI SP-001)	**Required E(20)**	N/R	N/R	N/R

M – Periodic AST Inspection (minimum monthly interval)

A – Annual AST Inspection (more detailed)

E – Formal external inspection by a certified inspector

(x) – indicates the inspection frequency in years

I – Formal internal inspection by a certified inspector

(x) – indicates the inspection frequency in years

N/A – Not Applicable

N/R – Not Required,

Tank less than 5,000 gallons

(1) – contractors are required to maintain their own inspection records on their tanks

Business Use

Ghent Generating Station Tank Specific Inspection Schedule

Inspection/Test	T-12	T-13	T-17	T-18
	Diesel Fuel	Diesel Fuel	Diesel Fuel	Diesel Fuel
Visual inspection by facility personnel (as per the provided monthly checklist)	M A	M A	M A	M A
Inspection by certified inspector (as per API 653)	N/A	N/A	N/A	N/A
Inspection by certified inspector (as per STI SP-001)	N/R	N/R	N/R	N/R

Inspection/Test	T-19 & 20	T-21 & 22	T-23 through T-26	T-81
	Clean Oil Used Oil	Clean Oil Used Oil	Oil	Kerosene
Visual inspection by facility personnel (as per the provided monthly checklist)	M A	M A	M A	M A
Inspection by certified inspector (as per API 653)	N/A	N/A	N/A	N/A
Inspection by certified inspector (as per STI SP-001)	**Required E(5), I(10)**	**Required E(5), I(10)**	N/R	N/R

M – Periodic AST Inspection (minimum monthly interval)

A – Annual AST Inspection (more detailed)

E – Formal external inspection by a certified inspector

(x) – indicates the inspection frequency in years

I – Formal internal inspection by a certified inspector

(x) – indicates the inspection frequency in years

N/A – Not Applicable

N/R – Not Required,

Tank less than 5,000 gallons

(1) – contractors are required to maintain their own inspection records on their tanks

Business Use

Ghent Generating Station Tank Specific Inspection Schedule

Inspection/Test	T-89	T-90, T-91	T-92 through T-98	T-101
	Kerosene	Diesel Fuel	Oil	Diesel Fuel
Visual inspection by facility personnel (as per the provided monthly checklist)	M A	M A	M A	M A
Inspection by certified inspector (as per API 653)	N/A	N/A	N/A	N/A
Inspection by certified inspector (as per STI SP-001)	N/R	N/R	N/R	N/R

Inspection/Test	T-102, T-103	T-105	55-gallon drums	Totes
	Kerosene	Diesel Fuel	Oil	Oil
Visual inspection by facility personnel (as per the provided monthly checklist)	M A	M A	M	M
Inspection by certified inspector (as per API 653)	N/A	N/A	N/A	N/A
Inspection by certified inspector (as per STI SP-001)	N/R	N/R	N/R	N/R

M – Periodic AST Inspection (minimum monthly interval)
A – Annual AST Inspection (more detailed)
E – Formal external inspection by a certified inspector
(x) – indicates the inspection frequency in years
I – Formal internal inspection by a certified inspector
(x) – indicates the inspection frequency in years
N/A – Not Applicable
N/R – Not Required,
Tank less than 5,000 gallons
(1) – contractors are required to maintain their own inspection records on their tanks

Bulk Storage Containers Inspection and Tests

Testing Clarification

> **Section 112.8(c)(6)** states - Test each aboveground container for integrity on a regular schedule, and whenever you make material repairs. The frequency of and type of testing must take into account container size and design (such as floating roof, skid-mounted, elevated, or partially buried). You must combine visual inspection with another testing technique such as hydrostatic testing, radiographic testing, ultrasonic testing, acoustic emissions testing, or another system of nondestructive shell testing. You must keep comparison records and you must also inspect the container's supports and foundations. In addition, you must frequently inspect the outside of the container for signs of deterioration, discharges, or accumulation of oil inside diked areas. Records of inspections and tests kept under usual and customary business practices will suffice for purposes of this paragraph. (underline added).

The reference to "another testing technique" is only applicable IF required by the referenced standard. For example, STI SP-001 does not require testing, other than visual inspection, for shop built tanks less than a certain volume (depending on tank category). For tanks that require inspection by a certified tank inspector, the inspector will determine the type of "testing technique" applicable for that tank during their inspection.

Field Erected ASTs

Tanks #1 and #2 are field constructed tanks built in 1974 and 1971, respectively. The tanks are loaded from a remote truck ***loading area*** (does not meet the definition of a load rack). The loading area is equipped with a trench drain that captures stormwater and any oil spilled in the vicinity and diverts it into Tank #2 containment berm. The piping from the loading area to Tank #1 is installed in an open trench. Since the piping is not in contact with the earth and any leak would be visible during inspection, this piping is NOT considered buried piping rather would be considered aboveground piping in a vault. The remaining piping is aboveground. These tanks are inspected per API Standard 653.

Tanks #19 - #22 were identified as being field erected in 1971. These single walled tanks are supported by a concrete slab which provides a release prevention barrier. These tanks are inspected per STI SP-001 Appendix B for Category 1 tanks. API 653 could also be used.

Business Use

Single Wall Shop Built Tanks (less than 5,000 gallons)

There are a number of single-wall shop built tank less than 5,000 gallons located at the site. Per Inspection Standard STI SP-001, these (Category 1) tanks only require visual inspection. Some are equipped with fuel gauges, and some rely on the fuel transfer operator to visually observe the fuel during the transfer operation.

Double-Wall Shop Built Tanks (less than 5,000 gallons)

There are a number of double-wall shop built tank less than 5,000 gallons located at the site. Per Inspection Standard STI SP-001, these (Category 1) tanks only require visual inspection. These tanks are equipped with an interstitial space monitor that monitors the space between the primary and secondary shell for liquid. Some of the tanks have indicator gauges and some require a plug to be removed. The interstitial space has to be evaluated on a monthly basis for compliance with the regulation.

Shop Built Tanks (greater than 5,000 gallons)

Shop tanks greater than 5,000-gallon require inspection by a certified tank inspector. The tank inspector will determine the extent of the required inspection, including whether additional testing non-destructive testing techniques are required. The inspection interval will be determined by the tank construction, tank age and results of previous testing. If the tank was not built to the required UL standard, then the external tank testing frequency may every 5 years. If previous tank testing documentation cannot be found, the tank should be tested on a 5 year frequency until the certified inspector establishes a formal testing schedule for that tank. Shop built tanks that were built in accordance with the UL standard and have a name plate construction date after 2000, can be inspected on a 20 year schedule unless material repairs are made to the tank or the monthly visual inspection indicates a concern regarding the tank integrity.

Outdoor Drums

55-gallon drums are located in several areas of the facility. Drums located at these areas must be inspected on a monthly basis. If located within an outdoor dike, the rainwater must be inspected before the contents of the dike can be discharged in accordance with the requirements contained in the SPCC plan.

Business Use

STI SP-001 Inspection Standard Summary

STI SP-001 establishes its inspection schedule and requirements based on a tank category evaluation. The definitions of the AST's categories are:

- Category 1 – AST with spill control and with a Continuous Release Detection Method (CRDM)
- Category 2 – AST with spill control and without CRDM
- Category 3 – AST without spill control and without CRDM.

Spill Control is defined as:

- Remote impounding
- Secondary containment dike/berm
- Secondary containment AST
- Secondary containment system

Continuous Release Detection Method is defined as:

- Release Protection Barrier (RPB) is a barrier designed to divert leaks toward the perimeter of the AST where they can easily be detected (e.g., concrete, elastomeric liners, etc.)
- Secondary containment including double-walled ASTs, double-bottom ASTs, or an AST that is located in a dike, pan, box, etc. such that the entire capacity of the AST can be contained.
- Elevated AST that is not in contact with the ground and which is raised above the surface of the ground or bottom of a vault using tank supports. An elevated AST allows for a visual external inspection of the bottom of the primary tank (e.g., tanks located on grills, grates, cradles, with legs or other types of support.

Business Use

The following table provides an example of assigning a Category to a type of AST:

Tank Configuration	Tank Has CRDM	AST Category
AST in contact with the ground(1)	No	2 or 3
Elevated tank with no part of the AST in contact with ground (includes concrete encased tanks) (1)	Yes	1
Vertical tank with a Release Protection Barrier and spill control	Yes	1
Vertical tank with double bottom and spill control	Yes	1
Vertical tank with RPB under tank and spill control	Yes	1
Double-walled AST	Yes	1
AST with secondary containment dike/berm	Yes	1

(1)Ground is understood to mean bare earth.

Once the AST category has been identified, STI SP-001 provides the following Inspection Schedule:

AST Type and Size (U.S. gallons)		Category 1	Category 2	Category 3
Shop-Fabricated ASTs	0-1,100	P	P	P, E&L (10)
	1,101-5,000	P	P, E&L (10)	P, E&L(5), I(10) Or P, L(2), E(5)
	5,001-30,000	P, E(20)	P, E(10), I(20) Or P, E(5), L(10)	P, E&L(5), I(10) Or P, L(2), E(5)
	30,001-50,000	P, E(20)	P, E&L(5), I(15)	P, E&L(5), I(10)
Field-erected AST		P, E(5), I(10)	P, E&L(5), I(10)	P, E&L(5), I(10)
Portable Containers		P	P	P**

** Owner shall either discontinue use of portable container for storage or have the portable container Department of Transportation tested and recertified per the following schedule:
Plastic portable containers – every 7 years
Steel portable containers – every 12 years
Stainless steel portable containers – every 17 years
P – Periodic AST Inspection (minimum monthly interval)
E – Formal external inspection by a certified inspector
I – Formal internal inspection by a certified inspector
L – Leak test by owner or owner's designee
( ) – indicates maximum inspection interval in years. For example, E(5) indicates formal external inspection every 5 years.

The inspection schedule is subject to modification by the inspector. Refer to the prior inspection for additional details.

Appendix J

Example Inspections Checklists

Ghent Generating Station Monthly Facility Inspection

Inspection focuses on general facility areas and equipment (i.e. site security, common equipment, stormwater retention systems, etc.) that are incorporated in the facility's SPCC, GPP and BMP Plans.

Inspection Area	Yes	No	N/A
Bulk Storage Tanks and Portable Drum Areas			
See Monthly Facility SPCC Bulk Storage Inspection sheets.	See Other Inspection Sheet		
Fuel Transfer Areas - Equipment			
Are there any obvious signs of oil drip/seep/leak at fuel transfer areas?			
Are there any connections uncapped and not in use?			
Transformers (Main GSU's)			
Does the exterior of the transformer show signs of an oil release?			
Is there any surface staining in the general area of the transformer?			
Is water present in the containment berm?			
Oil-Filled Equipment			
Does the exterior of the equipment show signs of an oil release?			
Is there any surface staining in the general area of the equipment?			
Oil/Water Separator			
Is the oil-water separator oil level high or high-high?			
Are solids present in the oil/water separator?			
Is there any evidence that the oil/water separator is not properly functioning?			
Are the Control Panel/instrumentation/pumps inoperable or out of service?			
Aboveground Piping			
Is there any evidence of possible release (oil, slurry, ash, etc.) from aboveground piping?			
Is there any evidence of piping supports or piping structural change (e.g., sagging between support structures)?			
Substation			
Is there any visual sign of a leak or staining in the general area of the substation?			
Tank Instrumentation			
Is there any indication that level sensors, floats or alarms not operating properly?			
Bulk Storage of Limestone			
Is there any evidence of run off from the limestone storage pile area not going to the limestone sump?			
Bulk Limestone Slurry Storage			
Any evidence of tanks leaking?			
Is there any indication that level sensors, floats or alarms not operating properly?			
Bulk Gypsum Slurry Storage			
Any evidence of tanks leaking?			
Is there any indication that level sensors, floats or alarms not operating properly?			
Bulk Storage of Hydrated Lime/PAC			
Any evidence of tanks leaking/material blowing from bin vent filter?			
Is there any indication that level sensors, floats or alarms not operating properly?			
Bulk storage of Deicers and Dust Suppressants			
Any evidence of tanks/totes/drums leaking?			
Bulk Chemical Storage Tanks			
See Monthly Bulk Chemical Storage Tank Inspection Checklist performed by Ghent Lab	See Other Inspection Sheet		
Miscellaneous Plant and Process Waste (chemical clean wastes, etc.)			
Any evidence of tanks/totes/piping leaking?			
General Plant Runoff Areas/Storm Drains			
Are there signs of erosion or precipitated solids/pollutants in the general plant runoff areas?			
Anhydrous Ammonia Storage			
Any evidence of tank, piping, flange, etc. leaks?			
Construction BMPs			
Are there any issues with BMP construction control measures?			

KPDES Outfalls			
For the following outfalls, are there any visual signs of erosion; need for maintenance/ housekeeping; or spillage/contamination that would result in pollutants/contaminates being discharged? ***Note any issues in Comments box below.***			
• Outfall 001 – Combined Ash Pond Overflow, Coal Pile Runoff, Outfall 005, Outfall 006			
• Outfall 002 – Once Through Cooling Tower Waters (Units 1 and 2), SW Runoff, Backwash			
• Outfall 003 – Once Through Cooling Tower Waters (Units 3 and 4), SW Runoff, Backwash			
• Outfall 005 – Metal Cleaning Waste (Internal Outfall to Outfall 001)			
• Outfall 006 – Cooling Tower Blowdown (Internal Outfall to Outfall 001)			
• Outfall 012 – Landfill South ES/SWM Pond			
• Outfall 013 – Temporary Stormwater Pond			
Groundwater Wells			
Groundwater (production and deep monitoring) wells in good condition; no sign of contamination?			
Landfill and Surface Impoundments			
Are there any signs of pollutants, contamination or erosion on roadway or along exterior of landfill?			
• Landfill			
• Landfill Leachate and Runoff Ponds			
• Ash Treatment Basin 1			
• Ash Treatment Basin 2			
• Gypsum Stack			
• Sediment Pond			
• Secondary Pond			
Loading and Unloading of Coal and Limestone			
Are there any signs of discoloration or distress due to coal or limestone unloading?			
Landfill DTLS, Main Haul Road, Leachate and Runoff Ponds			
Any evidence of contamination (oil, etc.) on water?			
Are the perimeter drainage channels/roads maintained?			
Secondary Pond			
Any evidence of contamination (oil, etc.) on water?			
Any skimmer booms missing, not in place, or need to be replaced?			
Process Ponds (North, South, Process Channel and Knock-out Chambers)			
Is there any evidence of contamination in the north and/or south process ponds?			
Is the process channel contain excessive accumulated TSS?			
Are the process/knockout-chambers maintained?			
PWS-Process Water Treatment Area			
Is there any evidence of contamination in the area drainage channels or east settling basin?			
Does the east settling basin contain excessive accumulated TSS?			
CCRT- Fly Ash Silos, Bottom Ash Dewatering, Gypsum Dewatering Area			
Is there any evidence of contamination in the area drainage channels or CCR-contact pond?			
Does the CCR-contact pond contain excessive accumulated TSS?			
Coal Pile Runoff Ponds			
Is there any evidence of contamination in the east and/or west coal pile runoff ponds?			
Is the coal pile perimeter ditch maintained?			
Waste Storage Areas			
Are there signs of discoloration or distress in the general waste storage areas?			
Security			
Are there any facility entrance gates observed unlocked and unattended?			
Does the fencing, gates or lighting show malfunctions or signs of trespass?			
Spill Kits			
Do any facility spill kits require stock items?			

Comments	Inspection Performed By Date

STI SP001 Portable Container Monthly Inspection Checklist

General Inspection Information:

Inspection Date: _____ Prior Inspection Date: _____ Retain until date: _____

Inspector Name (print): _____ Title: _____

Inspector's Signature (): _____

Container(s) inspected ID _____

Regulatory facility name and ID number (if applicable) _____

Inspection Guidance:

- This checklist is intended as a model. Locally developed checklists are acceptable as long as they are substantially equivalent (as applicable).
- This periodic Inspection is intended for monitoring the external condition and its containment structure. This visual inspection does not require a Certified Inspector. It shall be performed by an owner's inspector who is familiar with the site and can identify changes and developing problems. Note the non-conformance and corresponding corrective action in the comment section.
- Retain the completed checklists for at least 36 months.

	Item	Area:	Area:	Area:	Area:
	Portable Container Containment/Storage Area				
1	Are all portable container(s) within designated storage area?	□Yes □No	□Yes □No	□Yes □No	□Yes □No
2	Is the containment and storage area free of excess liquid, debris, cracks or fire hazards?	□Yes □No	□Yes □No	□Yes □No	□Yes □No
3	Are drain valves closed and in good working condition?	□Yes □ No □N/A	□Yes □ No □N/A	□Yes □ No □N/A	□Yes □ No □N/A
4	Are containment egress pathways clear and any gates/doors operable?	□Yes □ No □N/A	□Yes □ No □N/A	□Yes □ No □N/A	□Yes □ No □N/A
	Container				
5	Is the container free of leaks? Note*: If "No", identify container and describe leak.*	□Yes □No	□Yes □No	□Yes □No	□Yes □No
6	Is the container free of distortions, buckling, denting or bulging?	□Yes □No	□Yes □No	□Yes □No	□Yes □No

Comments:

STI SP001 Monthly Inspection Checklist

General Inspection Information:

Inspection Date: _____ Prior Inspection Date: _____ Retain until date: _____

Inspector Name (print): _____ Title: _____

Inspector's Signature _____

Tank(s) inspected ID _____

Regulatory facility name and ID number (if applicable) _____

Inspection Guidance:

- This checklist is intended as a model. Locally developed checklists are acceptable as long as they are substantially equivalent (as applicable). Inspections of multiple tanks may be captured on one form as long as the tanks are substantially the same.
- For equipment not included in this Standard, follow the manufacturer recommended inspection/testing schedules and procedures.
- The periodic AST Inspection is intended for monitoring the external AST condition and its containment structure. This visual inspection does not require a Certified Inspector. It shall be performed by an owner's inspector per paragraph 4.1.2 of the standard.
- Upon discovery of water in the primary tank, secondary containment area, interstice, or spill container, remove promptly or take other corrective action. Inspect the liquid for regulated products or other contaminants and dispose of properly.
- Non-conforming items important to tank or containment integrity require evaluation by an engineer experienced in AST design, a Certified Inspector, or a tank manufacturer who will determine the corrective action. Note the non-conformance and corresponding corrective action in the comment section.
- Retain the completed checklists for at least 36 months.
- **After severe weather (snow, ice, wind storms) or maintenance (such as coating) that could affect the operation of critical components (normal and emergency vents, valves), an inspection of these components is required as soon as the equipment is safely accessible after the event.**

	ITEM	STATUS	COMMENTS / DATE CORRECTED
	Tank and Piping		
1	Is tank exterior (roof, shell, heads, bottom, connections, fittings, valves, etc.) free of visible leaks? **Note***: If "No", identify tank and describe leak and actions taken.*	□ Yes □ No	
2	Is the tank liquid level gauge legible and in good working condition?	□ Yes □ No □ N/A	
3	Is the area around the tank (concrete surfaces, ground, containment, etc.) free of visible signs of leakage?	□ Yes □ No	

Imber

4	Is the primary tank free of water or has another preventative measure been taken? NOTE: Refer to paragraphs 6.10 and 6.11 of the standard for alternatives for Category 1 tanks. N/A is only appropriate for these alternatives.	□ Yes □ No □ N/A	
5	For double-wall or double bottom tanks or CE-ASTs, is interstitial monitoring equipment (where applicable) in good working condition?	□ Yes □ No □ N/A	
6	For double-wall tanks or double bottom tanks or CE-ASTs, is interstice free of liquid? Remove the liquid if it is found. If tank product is found, investigate possible leak.	□ Yes □ No □ N/A	
	Equipment on tank		
7	If overfill equipment has a "test" button, does it activate the audible horn or light to confirm operation? If battery operated, replace battery if needed.	□ Yes □ No □ N/A	
8	Is overfill prevention equipment in good working condition? If it is equipped with a mechanical test mechanism, actuate the mechanism to confirm operation.	□ Yes □ No □ N/A	
9	Is the spill container (spill bucket) empty, free of visible leaks and in good working condition?	□ Yes □ No □ N/A	
10	Are piping connections to the tank (valves, fittings, pumps, etc.) free of visible leaks? **Note***: If "No", identify location and describe leak.*	□ Yes □ No	
11	Do the ladders/platforms/walkways appear to be secure with no sign of severe corrosion or damage?	□ Yes □ No □ N/A	
	Containment (Diking/Impounding)		
12	Is the containment free of excess liquid, debris, cracks, corrosion, erosion, fire hazards and other integrity issues?	□ Yes □ No □ N/A	
13	Are dike drain valves closed and in good working condition?	□ Yes □ No □ N/A	
14	Are containment egress pathways clear and any gates/doors operable?	□ Yes □ No □ N/A	
	Concrete Exterior AST (CE-AST)		
15	Inspect all sides for cracks in concrete. Are there any cracks in the concrete exterior larger than 1/16"?	□ Yes □ No □ N/A	
16	Inspect concrete exterior body of the tank for cleanliness, need of coating, or rusting where applicable. Tank exterior in acceptable condition?	□ Yes □ No □ N/A	
17	Visual inspect all tank top openings including nipples, manways, tank top overfill containers, and leak detection tubes. Is the sealant between all tank top openings and concrete intact and in good condition?	□ Yes □ No □ N/A	
	Other Conditions		
18	Is the system free of any other conditions that need to be addressed for continued safe operation?	□ Yes □ No	

Additional Comments:

STI SP001 Annual Inspection Checklist

General Inspection Information:

Inspection Date: _____ Prior Inspection Date: _____ Retain until date: _____

Inspector Name (print):_____ Title: _____

Inspector's Signature: _____

Tank(s) inspected ID _____

Regulatory facility name and ID number (if applicable) _____

Inspection Guidance:

- This checklist is intended as a model. Locally developed checklists are acceptable as long as they are substantially equivalent (as applicable).
- For equipment not included in this Standard, follow the manufacturer recommended inspection/testing schedules and procedures.
- The periodic AST Inspection is intended for monitoring the external AST condition and its containment structure. This visual inspection does not require a Certified Inspector. It shall be performed by an owner's inspector per paragraph 4.1.2 of the standard.
- Remove promptly standing water or liquid discovered in the primary tank, secondary containment area, interstice, or spill container. Before discharge to the environment, inspect the liquid for regulated products or other contaminants and disposed of it properly.
- In order to comply with EPA SPCC (Spill Prevention, Control and Countermeasure) rules, a facility should regularly test liquid level sensing devices to ensure proper operation (40 CFR 112.8(c)(8)(v)).
- Non-conforming items important to tank or containment integrity require evaluation by an engineer experienced in AST design, a Certified Inspector, or a tank manufacturer who will determine the corrective action. Note the non-conformance and corresponding corrective action in the comment section.
- Retain the completed checklists for at least 36 months.
- Complete this checklist on an annual basis, supplemental to the owner monthly-performed inspection checklists.
- **Note: If a change has occurred to the tank system or containment that may affect the SPCC plan, the condition should be evaluated against the current plan requirement by a Professional Engineer knowledgeable in SPCC development and implementation.**

	ITEM	STATUS	COMMENTS / DATE CORRECTED
	Tank Foundation/Supports		
1	Free of tank settlement or foundation washout?	☐Yes ☐No	
2	Concrete pad or ring wall free of cracking and spalling?	☐Yes ☐No ☐N/A	

3	Tank supports in satisfactory condition?	☐Yes ☐No ☐N/A	
4	Is water able to drain away from tank if tank is resting on a foundation or on the ground?	☐Yes ☐No ☐N/A	
5	Is the grounding strap between the tank and foundation/supports in good condition?	☐Yes ☐No ☐N/A	
Tank Shell, Heads and Roof			
6	Free of visible signs of coating failure?	☐Yes ☐No	
7	Free of noticeable distortions, buckling, denting, or bulging?	☐Yes ☐No	
8	Free of standing water on roof?	☐Yes ☐No ☐N/A	
9	Are all labels and tags intact and legible?	☐Yes ☐No	
Tank Manways, Piping, and Equipment			
10	Flanged connection bolts tight and fully engaged with no sign of wear or corrosion?	☐Yes ☐No ☐N/A	
Tank Equipment			
11	Normal and emergency vents free of obstructions?	☐Yes ☐No	
12	Normal vent on tanks storing gasoline equipped with pressure/vacuum vent?	☐Yes ☐No ☐N/A	
13	Are flame arrestors free of corrosion and are air passages free of blockage?	☐Yes ☐No ☐N/A	
14	Is the emergency vent in good working condition and functional, as required by manufacturer? Consult manufacturer's requirements. Verify that components are moving freely (including long-bolt manways).	☐Yes ☐No ☐N/A	
15	Is interstitial leak detection equipment in good condition? Are windows on sight gauges clear? Are wire connections intact? If equipment has a test function, does it activate to confirm operation?"	☐Yes ☐No ☐N/A	

16	Are all valves free of leaks, corrosion and other damage? Follow manufacturers' instructions for regular maintenance of these items. Check the following and verify (as applicable): □ Anti-siphon valve □ Check valve □ Gate valve □ Pressure regulator valve □ Expansion relief valve □ Solenoid valve □ Fire valve □ Shear valve	☐Yes ☐No ☐N/A ☐Yes ☐No ☐N/A ☐Yes ☐No ☐N/A ☐Yes ☐No ☐N/A ☐Yes ☐No ☐N/A ☐Yes ☐No ☐N/A ☐Yes ☐No ☐N/A	
17	Are strainers and filters clean and in good condition?	☐Yes ☐No ☐N/A	
Insulated Tanks			
18	Free of missing insulation? Insulation free of visible signs of damage? Insulation adequately protected from water intrusion?	☐Yes ☐No ☐N/A	
19	Insulation free of noticeable areas of moisture?	☐Yes ☐No ☐N/A	
20	Insulation free of mold?	☐Yes ☐No ☐N/A	
21	Free of visible signs of coating failure?	☐Yes ☐No ☐N/A	
Tank / Piping Release Detection			
22	Is inventory control being performed and documented if required?	☐Yes ☐No ☐N/A	
23	Is release detection being performed and documented if required?	☐Yes ☐No ☐N/A	
Other Equipment			
24	Are electrical wiring and boxes in good condition?	☐Yes ☐No ☐N/A	
25	Has the cathodic protection system on the tank been tested as required by the designing engineer?	☐Yes ☐No ☐N/A	

Additional Comments:

STI SP001 AST Record

Form completed by (Name) _____ Date _____

(Title) _____

OWNER INFORMATION	FACILITY INFORMATION	INSTALLER INFORMATION
Name	Name	Name
Number and Street	Number and Street	Number and Street
City, State, Zip Code	City, State, Zip Code	City, State, Zip Code
	Regulatory facility ID number (if applicable)	

.

OWNER'S TANK ID	OTHER ID	INITIAL SERVICE DATE

Manufacturer: Contents: Construction Date: Last Repair/Reconstruction Date:

Dimensions: Capacity: Last Change of Product Date:

Design: ☐ UL _____ ☐ SwRI _____ ☐ API _____ ☐ Other _____ ☐ Unknown
☐ Horizontal ☐ Vertical ☐ Rectangular

Construction: ☐ Bare Steel ☐ Cathodically Protected (Check one: A. ☐ Galvanic or B. ☐ Impressed Current) Date Installed: _____
☐ Coated Steel ☐ Concrete encased steel ☐ Stainless steel ☐ Other _____
☐ Double-Bottom ☐ Double-Wall ☐ Lined inside; Date lining installed: _____

Spill control: ☐ Earthen Dike ☐ Steel Dike ☐ Concrete
☐ None ☐ Other _____

Tank elevated on supports ☐ yes ☐ no
Support material: ☐ steel ☐ concrete ☐ other _____

CRDM: ☐ yes ☐ no
If yes, type: ☐ Release Prevention Barrier ☐ Elevated tank ☐ Double bottom tank
☐ Double wall tank ☐ CE-AST ☐ other _____

Release Prevention Barrier: ☐ yes ☐ no If yes, Date Installed: _____
If yes, Type: ☐ concrete ☐ synthetic liner ☐ clay liner ☐ steel ☐ other _____

AST Category: ☐ Category 1 ☐ Category 2 ☐ Category 3

OWNER'S TANK ID	OTHER ID	INITIAL SERVICE DATE

Manufacturer: Contents: Construction Date: Last Repair/Reconstruction Date:

Dimensions: Capacity: Last Change of Product Date:

Design: ☐ UL _____ ☐ SwRI _____ ☐ API _____ ☐ Other _____ ☐ Unknown
☐ Horizontal ☐ Vertical ☐ Rectangular

Construction: ☐ Bare Steel ☐ Cathodically Protected (Check one: A. ☐ Galvanic or B. ☐ Impressed Current) Date Installed: _____
☐ Coated Steel ☐ Concrete encased steel ☐ Stainless steel ☐ Other _____
☐ Double-Bottom ☐ Double-Wall ☐ Lined inside; Date lining installed: _____

Spill control: ☐ Earthen Dike ☐ Steel Dike ☐ Concrete
☐ None ☐ Other _____

Tank elevated on supports ☐ yes ☐ no
Support material: ☐ steel ☐ concrete ☐ other _____

CRDM: ☐ yes ☐ no
If yes, type: ☐ Release Prevention Barrier ☐ Elevated tank ☐ Double bottom tank
☐ Double wall tank ☐ CE-AST ☐ other _____

Release Prevention Barrier: ☐ yes ☐ no If yes, Date Installed: _____
If yes, Type: ☐ concrete ☐ synthetic liner ☐ clay liner ☐ steel ☐ other _____

AST Category: ☐ Category 1 ☐ Category 2 ☐ Category 3

OWNER'S TANK ID	OTHER ID	INITIAL SERVICE DATE

Manufacturer: Contents: Construction Date: Last Repair/Reconstruction Date:

Dimensions: Capacity: Last Change of Product Date:

Design: ☐ UL _____ ☐ SwRI _____ ☐ API _____ ☐ Other _____ ☐ Unknown
☐ Horizontal ☐ Vertical ☐ Rectangular

Construction: ☐ Bare Steel ☐ Cathodically Protected (Check one: A. ☐ Galvanic or B. ☐ Impressed Current) Date Installed: _____
☐ Coated Steel ☐ Concrete encased steel ☐ Stainless steel ☐ Other _____
☐ Double-Bottom ☐ Double-Wall ☐ Lined inside; Date lining installed: _____

Spill control: ☐ Earthen Dike ☐ Steel Dike ☐ Concrete
☐ None ☐ Other _____

Tank elevated on supports ☐ yes ☐ no
Support material: ☐ steel ☐ concrete ☐ other _____

CRDM: ☐ yes ☐ no
If yes, type: ☐ Release Prevention Barrier ☐ Elevated tank ☐ Double bottom tank
☐ Double wall tank ☐ CE-AST ☐ other _____

Release Prevention Barrier: ☐ yes ☐ no If yes, Date Installed: _____
If yes, Type: ☐ concrete ☐ synthetic liner ☐ clay liner ☐ steel ☐ other _____

AST Category: ☐ Category 1 ☐ Category 2 ☐ Category 3

Appendix K

Stormwater Drainage Procedure

Example Bulk Storage Tank
Containment (e.g. berm, concrete dikes, steel box, etc.) Drainage Instructions

Precipitation, including rain, snow, sleet and ice, should be removed from containment areas after the precipitation event.

Rainwater:
Prior to draining rainwater, the entire containment area should be observed for signs of spill or leaks.

If signs of spills or leaks are observed, they should be removed and the source identified and correct prior to a) opening a discharge valve or b) starting a discharge pump.

- Sheens on the surface of the water can be removed with absorbent pads or pigs*. CI Agent can also be used to solidify the oil.
- Sludges or large leaks may require a pump or special handling. Environmental Affairs (EA) coordinator should be contacted prior to attempting to remove.
- The tank and transfer lines should be observed for sources of the leak. If a leak is identified, it should be corrected before draining.
- If no leak is identified, the source may have been from a spill or drip during transfer operations.

After the containment area is observed for spills or leaks, the a) drain valve or b) pump may be opened/started and the rainwater allowed to drain.

- The draining of rainwater should be observed until the containment area is free of standing water.
- If signs of spills or leaks are observed during the draining, the valve/pump should be closed/stopped.
- After the rainwater has drained out of the containment area, the valve/pump should be closed/stopped.
- The Diked Area Drainage Report Form or a MAXIMO report, should be completed, signed and given to the appropriate supervisor for their signature and properly filled.

* If the containment area has other hazardous materials petroleum fuel, oils, or lubricants, consult a manager to determine if the material used for collecting or cleaning the containment area are considered hazardous waste.

Table 1. Diked Area Drainage Report Form

Diked Area Drainage Report Form			
Containment Area:			
Appearance of water at time of draining:			
If oil or sheen is present, what was done to clean it up:			
Was the source of oil or sheen identified, and if so, what was done to correct the problem:			
Date Drainage Started		Time Drainage Started:	
Date Drainage Stopped (Containment Resealed)		Time Drainage Stopped (Containment Resealed)	
Operator Name			
Operator Signature			
Supervisor Name			
Supervisor Signature			

Appendix L

Failsafe Engineering Information

Appendix L Discussion – Method of Satisfying Failsafe Requirements

40 CFR Part 112.8(c)(8) requires that ***bulk storage tank(s)*** include one of the following

(i) High liquid level alarms with an audible or visual signal at a constantly attended operation or surveillance station. In smaller facilities an audible air vent may suffice.
(ii) High liquid level pump cutoff devices set to stop flow at a predetermined container content level.
(iii) Direct audible or code signal communication between the container gauger and the pumping station.
(iv) A fast response system for determining the liquid level of each bulk storage container such as digital computers, telepulse, or direct vision gauges. If you use this alternative, a person must be present to monitor gauges and the overall filling of bulk storage containers.
(v) You must regularly test liquid level sensing devices to ensure proper operation.

Or achieve these “failsafe” objectives through the use of a means that satisfies the environmental equivalence of these specific requirements.

To document that each ***bulk storage tank(s)*** was evaluated for compliance **AND** to specifically identify how each bulk storage tank complies with this requirement, a compliance table was populated for the regulated ***bulk storage tank(s)*** present at the Station.

Fail Safe Engineering Details
Refer to electronic version for updates

Item ID	Comments-Name/Item Description	Material	Building List or outside, outside covered	Capacity	Individual Container Capacity	Capacity Unit of Measure	Qty of Containers	Container Type	Tank Level Gauging	High Level Alarm	Double-Wall System Interstitial Monitoring?	SPCC Drainage Log
T-001	Main Fuel Oil Storage Tank	Fuel- Diesel (#2 Fuel Oil Off Road)	Outside-Not Covered	442,250	442,250	Gallons	1	AST - Single Walled - Steel	Direct Read	Visual	NA	Yes
T-002	Units 1-2 Fuel Oil Tank	Fuel- Diesel (#2 Fuel Oil Off Road)	Outside-Not Covered	100,000	100,000	Gallons	1	AST - Single Walled - Steel	Direct Read	Audible	NA	Yes
T-003	Unloading Transfer Pumps Priming Tank	Fuel- Diesel (#2 Fuel Oil Off Road)	Outside-Not Covered	300	300	Gallons	1	AST - Double Walled - Steel	Direct Read	EE-Environmental Equivalent Measures	Yes	No
T-004	Units 3-4 Fuel Oil Tank	Fuel- Diesel (#2 Fuel Oil Off Road)	Outside-Not Covered	20,000	20,000	Gallons	1	AST - Single Walled - Steel	Direct Read	Audible	NA	Yes
T-005	Coalyard Mobile Equipment Fuel Tank	Fuel- Diesel (#2 Fuel Oil On Road)	Outside-Not Covered	12,000	12,000	Gallons	1	AST - Double Walled - Steel	Direct Read	EE-Environmental Equivalent Measures	Yes	No
T-006	Coalyard Warehouse Kerosene Tank	Fuel-#1 Fuel Oil (Kerosene)	Outside-Not Covered	500	500	Gallons	1	AST - Double Walled - Steel	Direct Read	EE-Environmental Equivalent Measures	Yes	No
T-007	Vehicle Refueling -- Gasoline	Fuel-Gasoline	Outside-Not Covered	1,000	1,000	Gallons	1	AST - Double Walled - Steel	Direct Read	EE-Environmental Equivalent Measures	Yes	No
T-008	Vehicle Refueling -- Diesel Fuel	Fuel- Diesel (#2 Fuel Oil On Road)	Outside-Not Covered	1,000	1,000	Gallons	1	AST - Double Walled - Steel	Direct Read	EE-Environmental Equivalent Measures	Yes	No
T-012	Unit 3 Emergency Generator Fuel Tank	Fuel- Diesel (#2 Fuel Oil Off Road)	GH U3 Boiler Turbine Bldg	150	150	Gallons	1	AST - Single Walled - Steel	Direct Read	EE-Environmental Equivalent Measures	NA	No
T-013	Unit 4 Emergency Generator Fuel Tank	Fuel- Diesel (#2 Fuel Oil Off Road)	GH U3 Boiler Turbine Bldg	150	150	Gallons	1	AST - Single Walled - Steel	Direct Read	EE-Environmental Equivalent Measures	NA	No

Fail Safe Engineering Details
Refer to electronic version for updates

Item ID	Comments-Name/Item Description	Material	Building List or outside, outside covered	Capacity	Individual Container Capacity	Capacity Unit of Measure	Qty of Containers	Container Type	Tank Level Gauging	High Level Alarm	Double-Wall System Interstitial Monitoring?	SPCC Drainage Log
T-017	Portable-Skid Air Compressor	Fuel- Diesel (#2 Fuel Oil Off Road)	GH Equipment Storage Building West Plant Area	190	190	Gallons	1	AST - Single Walled - Steel	Direct Read	EE-Environmental Equivalent Measures	NA	No
T-018	Portable Emergency Generator	Fuel- Diesel (#2 Fuel Oil Off Road)	GH Warehouse-Coal yard	106	106	Gallons	1	AST - Double Walled - Steel	Direct Read	EE-Environmental Equivalent Measures	Yes	No
T-019	Unit 1&2 Clean Oil Tank	Oil- Turbine	GH U1 Boiler Turbine Bldg	15,000	15,000	Gallons	1	AST - Single Walled - Steel	Direct Read	EE-Environmental Equivalent Measures	NA	No
T-020	Unit 1&2 Dirty Oil Tank	Oil- Turbine	GH U1 Boiler Turbine Bldg	15,000	15,000	Gallons	1	AST - Single Walled - Steel	Direct Read	EE-Environmental Equivalent Measures	NA	No
T-021	Unit 3&4 Clean Oil Tank	Oil- Turbine	GH U3 Boiler Turbine Bldg	15,000	15,000	Gallons	1	AST - Single Walled - Steel	Direct Read	EE-Environmental Equivalent Measures	NA	No
T-022	Unit 3&4 Dirty Oil Tank	Oil- Turbine	GH U3 Boiler Turbine Bldg	15,000	15,000	Gallons	1	AST - Single Walled - Steel	Direct Read	EE-Environmental Equivalent Measures	NA	No
T-023	Transmission Oil (30W)	Oil- Lubrication all grades	GH Coal Yard Tractor Garage	400	400	Gallons	1	AST - Double Walled - Steel	Manual	EE-Environmental Equivalent Measures	Yes	No
T-024	Hydraulic Oil	Oil- Lubrication all grades	GH Coal Yard Tractor Garage	400	400	Gallons	1	AST - Double Walled - Steel	Manual	EE-Environmental Equivalent Measures	Yes	No
T-025	Gear Compound	Oil- Lubrication all grades	GH Coal Yard Tractor Garage	300	300	Gallons	1	AST - Double Walled - Steel	Manual	EE-Environmental Equivalent Measures	Yes	No
T-026	Motor Oil (15W40)	Oil- Lubrication all grades	GH Coal Yard Tractor Garage	400	400	Gallons	1	AST - Double Walled - Steel	Manual	EE-Environmental Equivalent Measures	Yes	No
T-081	Seasonal Coalyard Kerosene Tank	Fuel-#1 Fuel Oil (Kerosene)	Outside-Not Covered	500	500	Gallons	1	AST - Single Walled - Steel	Direct Read	EE-Environmental Equivalent Measures	NA	Yes

Fail Safe Engineering Details
Refer to electronic version for updates

Item ID	Comments-Name/Item Description	Material	Building List or outside, outside covered	Capacity	Individual Container Capacity	Capacity Unit of Measure	Qty of Containers	Container Type	Tank Level Gauging	High Level Alarm	Double-Wall System Interstitial Monitoring?	SPCC Drainage Log
T-089	Coalyard Miscellaneous Equipment Kerosene Tank	Fuel-#1 Fuel Oil (Kerosene)	GH Warehouse-Coal yard	500	500	Gallons	1	AST - Double Walled - Steel	Direct Read	EE-Environmental Equivalent Measures	Yes	No
T-090	Unit 1 Emergency Generator Fuel Tank	Fuel- Diesel (#2 Fuel Oil Off Road)	Outside-Not Covered	1,039	1,039	Gallons	1	AST - Double Walled - Steel	Direct Read	EE-Environmental Equivalent Measures	No	No
T-091	Unit 2 Emergency Generator Fuel Tank	Fuel- Diesel (#2 Fuel Oil Off Road)	Outside-Not Covered	1,039	1,039	Gallons	1	AST - Double Walled - Steel	Direct Read	EE-Environmental Equivalent Measures	NA	No
T-092	Unit 1 Boiler Room, Used Oil	Oil- Used for Recycling	GH U1 Boiler Turbine Bldg	1,000	1,000	Gallons	1	AST - Double Walled - Poly	Direct Read	EE-Environmental Equivalent Measures	Yes	No
T-093	Unit 1 Boiler Room, Used Oil	Oil- Used for Recycling	GH U1 Boiler Turbine Bldg	1,000	1,000	Gallons	1	AST - Double Walled - Poly	Direct Read	EE-Environmental Equivalent Measures	Yes	No
T-094	Unit 1 FGD Used Oil	Oil- Used for Recycling	GH U1 FGD	300	300	Gallons	1	AST - Double Walled - Steel	Direct Read	EE-Environmental Equivalent Measures	Yes	No
T-095	Unit 4 FGD Used Oil	Oil- Used for Recycling	GH U4 FGD	300	300	Gallons	1	AST - Double Walled - Steel	Direct Read	EE-Environmental Equivalent Measures	Yes	No
T-096	Coalyard Used Oil	Oil- Used for Recycling	Outside-Not Covered	300	300	Gallons	1	AST - Double Walled - Steel	Direct Read	EE-Environmental Equivalent Measures	Yes	No
T-097	Coalyard Used Oil	Oil- Used for Recycling	Outside-Not Covered	300	300	Gallons	1	AST - Double Walled - Steel	Direct Read	EE-Environmental Equivalent Measures	Yes	No
T-098	Coalyard Used Oil	Oil- Used for Recycling	Outside-Not Covered	300	300	Gallons	1	AST - Double Walled - Steel	Direct Read	EE-Environmental Equivalent Measures	Yes	No
T-101	CCR Material Handling Area Diesel Tank	Fuel- Diesel (#2 Fuel Oil On Road)	Outside-Not Covered	1,000	1,000	Gallons	1	AST - Double Walled - Steel	Direct Read	EE-Environmental Equivalent Measures	Yes	No

Fail Safe Engineering Details
Refer to electronic version for updates

Item ID	Comments-Name/Item Description	Material	Building List or outside, outside covered	Capacity	Individual Container Capacity	Capacity Unit of Measure	Qty of Containers	Container Type	Tank Level Gauging	High Level Alarm	Double-Wall System Interstitial Monitoring?	SPCC Drainage Log
T-102	CCR Material Handling Area Kerosene Tank	Fuel-#1 Fuel Oil (Kerosene)	Outside-Not Covered	500	500	Gallons	1	AST - Double Walled - Steel	Direct Read	EE-Environmental Equivalent Measures	Yes	No
T-103	Equipment Refueling - Kerosene	Fuel-#1 Fuel Oil (Kerosene)	Outside-Not Covered	500	500	Gallons	1	AST - Double Walled - Steel	Direct Read	EE-Environmental Equivalent Measures	Yes	No
T-105	West Mobile Equipment Fuel Tank	Fuel- Diesel (#2 Fuel Oil On Road)	Outside-Not Covered	550	550	Gallons	1	AST - Double Walled - Steel	Direct Read	EE-Environmental Equivalent Measures	Yes	No

Appendix M

Compliance Topics Information Sheets

Appendix M Discussion – Containment Example(s) Information Sheets

Information sheets associates with equipment commonly included in SPCC plans (e.g., bulk storage tanks, portable containers, transformers, etc.) were developed to assist the Person Designated for SPCC Plan implementation in SPCC compliance at the point of use. The information sheets can be placed in plastic sleeves and posted to remind Station personnel of the compliance requirements associates with various bulk storage tanks and oil filled equipment. The Station is encouraged to make copies of these information sheets and locate one in close proximity to all SPCC local points of compliance.

Shop Built Bulk Storage Container Requirements

(e.g., petroleum fuels, used oil, mineral oil, etc.)

***Shop built bulk storage containers are generally less than 20,000-gallons in size.**

Do

- ✓ **Label** to indicate contents.
- ✓ **Provide** specifically sized secondary containment for the tank contents plus precipitation and freeboard.
- ✓ **Provide** with level sensing and overfill prevention.(1)
- ✓ **Secure** master flow or drain valves. For fuel dispensers, secure pump.(1)
- ✓ **Maintain** containment valve in the closed position.
- ✓ **Use** SPCC approved procedure for transferring liquids into or out of container.
- ✓ **Check** containment for the presence of oil before draining precipitation.
- ✓ **Document** the drainage of precipitation from containment structures on form provided by facility.
- ✓ **Immediately** clean up any small spills.







Don't

- ✘ **Leave** container unattended during oil transfers.
- ✘ **Smoke**, use a cell phone or have an open flame present during oil transfers.
- ✘ **Leave** dispenser or a tank drainage valve unsecured.
- ✘ **Fail** to drain precipitation from containment**.**
- ✘ **Leave** the containment valve in the open position.
- ✘ **Fail** to follow the SPCC provided spill procedures in the event of an oil release.





If… Then

- ➤ **If** you spill a small amount of oil during an oil transfer, **then** use spill kit material to absorb the release.
- ➤ **If** a spill occurs outside of the secondary containment system, **then** attempt to prevent the spill from reaching floor drains, storm water ditches or structures that may convey spill to navigable water.
- ➤ **If** a large spill occurs, request spill response help immediately.

Factsheet Checklist

- ☐ Is bulk storage container is located within containment?
- ☐ Observe container for weeps/seeps/leaks.
- ☐ Is fuel transfer dispenser or pump maintained in a secure position?
- ☐ If tank is not equipped with an overfill prevention system, does staff understand the environmental equivalence procedure?
- ☐ That containment is free of oil or and water.
- ☐ Containment valve is maintained in the closed position.
- ☐ That site lighting and security are operational.

Materials & Waste Management

- ▶ Contact the Plant Environmental Coordinator for proper disposal directions of spill kit materials.

Training

- ▶ Personnel should be trained on oil container handling and spill prevention when assigned to a position and annually **thereafter**.

Relevant Environmental Programs

- ● SPCC
- ● BMP
- ● GWPP
- ○ Waste Management

Environmental Reference

- ▶ 40 CFR Part 112

(1) Some requirements of the SPCC regulations may be met by using an environmental equivalence (EE), per the direction of the certifying Professional Engineer (PE). Carefully read the SPCC Plan to determine whether the PE has indicated that an EE is allowable for the specific storage container in question.

Oil Tote Storage Requirements

(e.g., mineral oil, petroleum fuels, used oil, etc.)

Do

- ✓ Store totes in a containment area, on a containment pallet or on properly sized containment platforms.
- ✓ Keep totes elevated of floor so they don't require integrity testing.
- ✓ Use an overspill funnel when filling totes.
- ✓ Keep tote fill ports (bung holes) sealed when not is use.
- ✓ Label totes with proper contents.
- ✓ Immediately clean up any small spills.
- ✓ Use proper personnel protective equipment when adding or removing liquids or when handling totes.
- ✓ Totes stored outside require secondary containment and should be protected from precipitation accumulation.
- ✓ Store empty totes within a secondary containment area.









Don't

- ✘ Fail to notify Supervisor if you observe a spill or leaking tote.
- ✘ Store tote in direct contact with soil or on the floor.
- ✘ Store totes outside of secondary containment.



If… Then

- ➤ **If** you spill a small amount of oil during tote filling or oil transfer, **then** use spill kit material to absorb the release.
- ➤ **If** a spill occurs outside of the secondary containment system, **then** attempt to prevent the spill from reaching floor drains, storm water ditches or structures that may convey spill to navigable water.

Factsheet Checklist

- ☐ Check that totes are within secondary containment.
- ☐ Check for precipitation in containment area.
- ☐ Check that totes are elevated off the ground to assist in leak detection.
- ☐ Check that tote fill ports are closed when not in use.
- ☐ Observe totes for any weeps/seeps/leaks.

Materials & Waste Management

- ▶ Contact the Plant Environmental Coordinator for proper disposal directions of spill kit materials.

Training

- ▶ Personnel should be trained on oil container handling and spill prevention when assigned to a position and annually **thereafter**.

Relevant Environmental Programs

- ● SPCC
- ● BMP
- ● GWPP
- ○ Waste Management

Environmental Reference

- ▶ 40 CFR Part 112

55-Gallon Oil Drum Storage Requirements

(e.g., mineral oil, petroleum fuels, used oil, etc.)

Do

- ✓ **Use** only closed top drums for the storage of liquids**.**
- ✓ **Store** 55-gallon drums in a containment area, on a containment pallet or on properly sized containment platforms.
- ✓ **Store** Portable drums, on drum carriers, within containment structures, when not attended.
- ✓ **Use** an overspill funnel when filling drums.
- ✓ **Seal** drum fill ports (bung holes) when not is use.
- ✓ **Label** drums with proper contents.
- ✓ **Use** a drum handler, drum dolly, portable lift or forklift when moving drums.
- ✓ **Immediately** clean up any small spills.
- ✓ **Use** proper personnel protective equipment when handling drums.
- ✓ **Protect** outdoor drum containment from precipitation.
- ✓ **Store** empty closed top oil drums within a secondary containment area.













Don't

- ✗ **Use** open head drums for the storage of liquids.
- ✗ **Fail** to take appropriate actions if you observe a spill or leaking drum.
- ✗ **Store** drums in direct contact with soil or outside of some form of secondary containment.

If… Then

- ➤ **If** you spill a small amount of oil during drum filling or oil transfer, **then** use spill kit material to absorb the release.
- ➤ **If** a spill occurs outside of the secondary containment system, **then** implement the procedures in the SPCC Plan (e.g., attempt to prevent the spill from reaching floor drains, storm water ditches or structures if safe to do so).

Factsheet Checklist

- ☐ Check that fluids are only stored in closed topped drums.
- ☐ Check that drums are provided secondary containment.
- ☐ Check for precipitation in containment area; if present, follow the appropriate procedure for documenting and drain the structure.
- ☐ Check that drums ports are closed when not in use.
- ☐ Check drums for any weeps/seeps/leaks.
- ☐ Check that drum is labeled.
- ☐ New (unused) oil drums can be stored outside containment until brought into service.

Materials & Waste Management

- ▶ Contact the facility Environmental Coordinator or Environmental Affairs for proper disposal of spill kit materials.

Training

- ▶ Personnel should be trained on oil container handling and spill prevention when assigned to a position and annually thereafter.

Relevant Environmental Programs

- ● SPCC
- ● BMP
- ● GPP
- ○ other

Environmental Reference

- ▶ 40 CFR Part 112

Electrical Equipment Requirements
(e.g., transformers, switches, capacitors, etc.)

Electrical equipment can achieve regulatory compliance by:

a. being provided general secondary containment, or
b. through an inspection, monitoring, and contingency plan process at Qualified Facilities.

Make sure, per your SPCC Plan, that you know which method applies to your equipment.

Do

- ✓ **Review** your site's SPCC Plan.
- ✓ **Understand** which method of compliance is used for electrical equipment at your facility.
- ✓ **Inspect** equipment for signs of weeps/seeps/leaks.
- ✓ **Repair** minor leaks before they become major leaks.
- ✓ **Clean up** spilled oil in accordance with the SPCC plan.
- ✓ **Plug** maintenance valves and drains to discourage vandalism or accidental oil releases.
- ✓ **Remove** oil from salvaged equipment to prevent releases.
- ✓ **Inspect** containment areas, if utilizes, for accumulated rain water.
- ✓ **Inspect** and replace CI Agent, if used, as necessary.






Don't

- ✘ **Assume** that electrical equipment does not require some form of containment (active, passive, or a contingency plan) for SPCC compliance**.**
- ✘ **Assume** that stored electrical equipment is exempt from containment requirements.
- ✘ **Store** electrical equipment in close proximity to storm water systems (e.g., storm sewers, floor drains that discharge into the storm sewer, storm water drainage ditches, etc.)
- ✘ **Forget** to perform required inspections.




If… Then

- ➤ **If** electrical equipment has a release of a small amount of oil, **then** use spill kit material to absorb the release.
- ➤ **If** electrical equipment has a major oil release (e.g., lightening strike) which threatens to enter navigable water, **then** implement the procedures in the SPCC Plan (e.g., attempt to prevent the spill from reaching floor drains, storm water ditches or structures if safe to do so).
- ➤ **If** a fire suppression system is engaged**, then** make sure the oily water is managed without creating a release.

Fact sheet Checklist

- ☐ Check the SPCC Plan and identify methods for electrical equipment compliance.
- ☐ For passive containment, check to see if spill materials are sized appropriately for the potential release.
- ☐ For active containment, check that spill response equipment is located closely enough to rapidly respond in an emergency.
- ☐ For both, perform required inspections.
- ☐ Check site security to discourage potential oil releases (e.g. secure drains and discharge valves) from acts of vandalism.
- ☐ For sites using a 109 plan, periodically review the contingency plan in case of an emergency.

Materials & Waste Management

- ▶ Contact the Plant Environmental Coordinator for proper disposal of spill kit materials.

Training

- ▶ Personnel should be trained on oil container handling and spill prevention when assigned to a position and annually **thereafter**.

Appendix N

Tank Testing Results

Appendix N Discussion – Tank Testing Results

During the preparation of the SPCC document, attempts were made to obtain and review integrity testing results for tanks, and as applicable, buried piping (if applicable), and new or modified piping. The purpose of reviewing this information was to document that baseline or periodic integrity inspections by a certified inspector had been performed and determine whether the certified inspector established a more conservative inspection schedule than the schedule included in the applicable tank testing standard (e.g., STI SP-001, SPI-653, etc.). If, due to corrosion or other factors, the certified inspector determines a frequency greater than the one identified in the referenced standard, this more conservative frequency was used to establish the integrity testing schedule included in the SPCC plan.

As new or additional integrity tests are performed, the inspection reports should be reviewed and the new suggested integrity testing schedule established for the tank(s) and equipment tested.

In all instances, the recommendations from the certified integrity test results will supersede the schedule established in this plan.

Tank T-001
442,250-Gallon Main Fuel Oil Tank

PROJECT NUMBER: 2022-03519

KU-LG&E

TANK T-1

INSPECTION DATE(S): 08/09/2022



DATE	PREPARED BY	APPROVED BY:	APPROVER SIGNATURE
9/14/2022	William Stout	Brian O'Leary	

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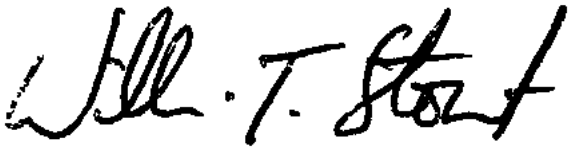
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1.0 INTRODUCTION

On 08/09/2022, Gecko Robotics performed an in-service inspection of Tank T-1 at the KU-LG&E Plant, located in Ghent, KY. The results of this inspection were used to provide an evaluation per the applicable criteria of API 653, Fifth Edition, Addendum 1 April 2018, Addendum 2 May 2020 standard.

Gecko Robotics Personnel for Project:



William Stout, API 653. Certification 25296

Additional NDT Technicians

Kelly Keil

2.0 TANK DESCRIPTION

Customer	KU-LGE	**Location**	Ghent, KY
Tank	Tank 1	**Project**	2022-03519

GENERAL TANK INFORMATION	
Manufacturer (Repair/Altered)	Caldwell Tanks, Inc.
Design Standard	API STD 650
Product	Diesel Fuel
Cathodic Protection	No
Data Plate	Yes
DOT Regulated Tank	No
TANK DIMENSIONS	
Tank Diameter	48.0
Height	40.0
Nominal Capacity	12,500 Bbls
Safe Fill Height	30'-9" (per tank markings)
Product Height During Inspection	18'-0" (per ATG board)
TANK DESIGN DETAILS	
Foundation Type	Earthen
Bottom Type	Unknown
Shell Type	Butt Welded, Carbon Steel, Unknown Grade
Fixed Roof Type	Supported Cone, Lap Welded CS
Floating Roof Type	Unknown
DATES	
Year Built / Reconstructed	1974
Tank Bottom Replacement	N/A
Previous Inspection	November 2017
Date of Internal Coating	Unknown
Data of External Coating	Unknown
TANK ACCESS	
Stairway	Fixed ladder, vertical, w/ safety cage at top
TANK COATING	
Bottom	Unknown
Shell (External)	Thin film epoxy, beige
Shell (Internal)	Unknown
Fixed Roof (External)	Thin film epoxy, beige
Fixed Roof (Internal)	Unknown

3.0 INSPECTION INTERVALS

In-Service Inspection Intervals	
Shell External Visual Inspection	5 years – August 2027
Shell Ultrasonic Thickness Survey	15 years – August 2037

Out-of-Service Inspection Interval	
Next Out-of-Service Interval	1/19/2026*
Bottom Repair	--

Note – Out-of-Service Inspection Interval based upon the previous Internal inspection report. The tank is on a 10 year inspection cycle.

4.0 RECOMMENDATIONS OF INSPECTION FINDINGS

External Shell and Appurtenances	
1. The reinforcing plate at shell nozzle N4 did not meet current weld space requirements relative to adjacent shell welds. Consider replacing reinforcing plate with larger to meet weld space requirements at the next out-of-service inspection and repair cycle, or sooner if a change in condition occurs.	
2. The reinforcing plate at shell nozzle N1 was provided with a telltale hole in accordance with API Standard 650. However, the telltale has been plugged with a threaded plug, and coating applied over it. Recommend removing the threaded plug and packing the telltale with white lithium general purpose grease. This will prevent water from entering the tell and allow for visual leak detection.	
	
1. Shell Nozzle N4 Reinforcing Plate	2. Shell Nozzle N1 Reinforcing Plate Telltale.

5.0 SHELL THICKNESS CALCULATION

The minimum acceptable shell thickness for tanks with a diameter equal to or less than two hundred (200) feet is calculated utilizing API 653, Para. 4.3.3.1:

$$t_{min} = \frac{2.6(H-1)DG}{SE}$$

where

t_{min} = minimum acceptable thickness, but not less than 0.1 (in.)
D = nominal diameter of tank (ft)
H = height from bottom of the shell course under consideration to max liquid level (ft)
G = highest specific gravity of contents
S = maximum allowable stress (PSI)
= smaller of 0.80Y or 0.429T for first two courses
= smaller of 0.88Y or 0.472T for all other courses
Y = specified minimum yield strength of plate; 30,000 if unknown (PSI)
T = smaller of specified minimum tensile strength of the plate or 80,000; use 55,000 if unknown (PSI)
E = original joint efficiency for the tank from Table 4.2

Diameter	**(D)**	48.00	ft
Max Liquid Level	**(H)**	30.00	ft
Specific Gravity	**(G)**	0.87	
Joint Efficiency	**(E)**	0.70	
Minimum yield	**(Y)**	30,000	PSI
Minimum Tensile Strength	**(T)**	55,000	PSI

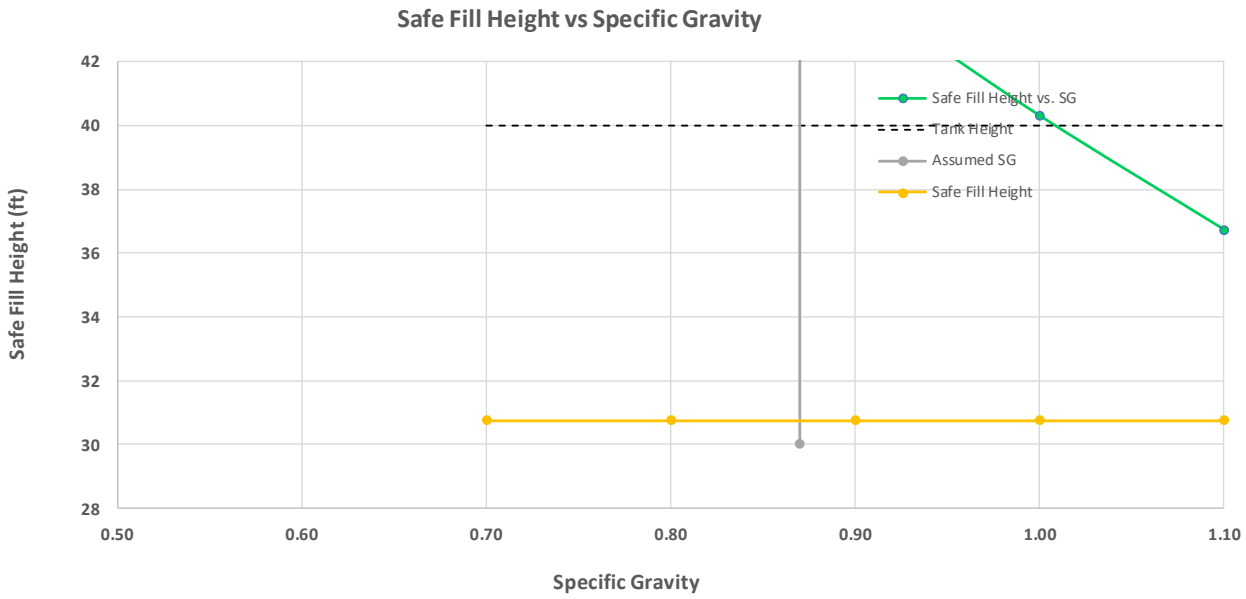
Product Conditions

Course Number	Course Height	Course Height	Product Height	Allowable Stress (S)	Min. Acceptable Thickness (t_{min})	Min. Measured Thickness	Acceptable
	(in)	(ft)	(ft)	(PSI)	(in)	(in)	
5	96.0000	8.00	8.000	25,960	0.100	0.171	Yes
4	96.0000	8.00	16.000	25,960	0.100	0.172	Yes
3	96.0000	8.00	24.000	25,960	0.137	0.168	Yes
2	96.0000	8.00	32.000	23,595	0.204	0.246	Yes
1	96.0000	8.00	40.000	23,595	0.256	0.297	Yes

Hydrotest Conditions

Course Number	Course Height	Course Height	Product Height	Allowable Stress (S)	Min. Acceptable Thickness (tmin)	Min. Measured Thickness	Acceptable
	(in)	(ft)	(ft)	(PSI)	(in)	(in)	
5	36.0000	8.00	8.000	27,000	0.100	0.171	Yes
4	60.0000	8.00	16.000	27,000	0.100	0.172	Yes
3	60.0000	8.00	24.000	27,000	0.100	0.168	Yes
2	60.0000	8.00	32.000	25,960	0.100	0.246	Yes
1	60.0000	8.00	40.000	25,960	0.100	0.297	Yes

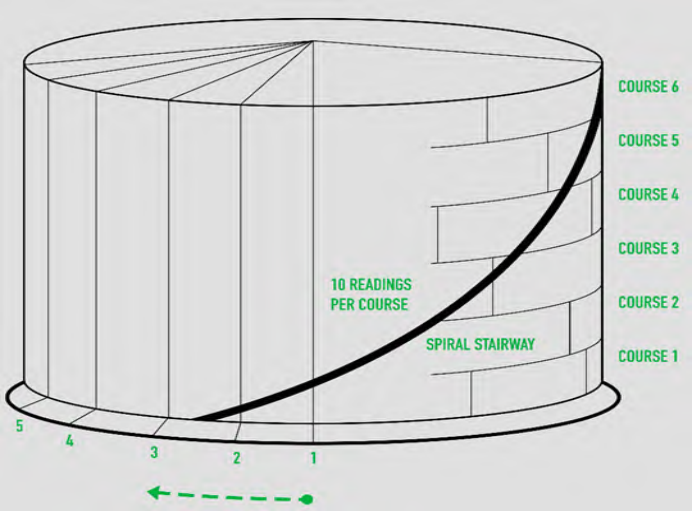
6.0 SHELL THICKNESS CALCULATION CHART



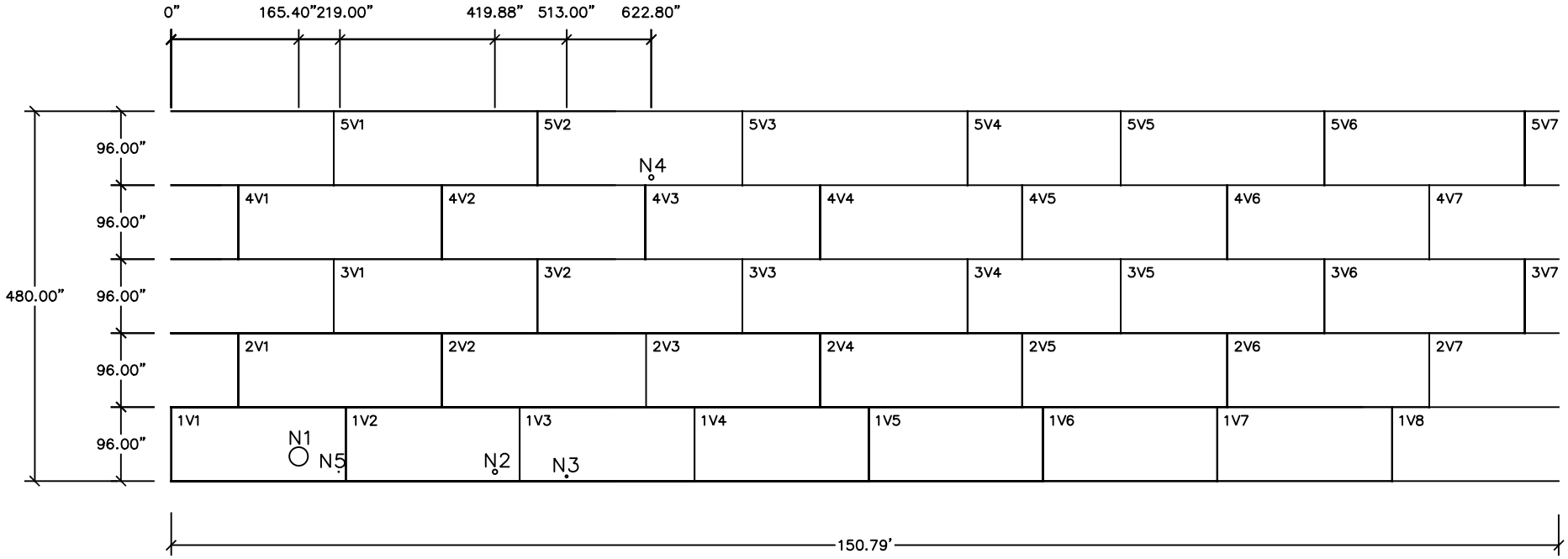
Shell thickness calculations indicate the safe fill height of 30.75 feet can be utilized with product specific gravities up to 1.00 (API 653, Para. 4.3.3.1). These calculations do not consider operational restrictions imposed by such items as any high-level alarms, piping, vents, etc.

Course Number	Original Assumed Wall Thickness	Min Measured Wall Thickness	Measured Corrosion Rate (CR)	Corrosion Allowed (CA)	Remaining Life (CA/CR)	External Insp. Interval (CA/4CR)	UT Insp. Interval (CA/2CR)
	(in)	(in)	(in/yr)	(in)	(yrs)	(yrs)	(yrs)
5	0.188	0.171	0.000344	0.071	175	44	87
4	0.188	0.172	0.000323	0.072	177	44	89
3	0.188	0.168	0.000406	0.031	75	19	38
2	0.250	0.246	0.000083	0.042	104	26	52
1	0.313	0.297	0.000323	0.041	100	25	50
Maximum Corrosion Rate			**0.000406**	**Maximum Interval**		**5**	**15**

7.0 SHELL THICKNESS READINGS



UT Readings	Course 1	Course 2	Course 3	Course 4	Course 5
	[inches]	[inches]	[inches]	[inches]	[inches]
1	0.305	0.254	0.173	0.174	0.174
2	0.304	0.254	0.176	0.177	0.176
3	0.304	0.254	0.176	0.179	0.178
4	0.304	0.255	0.178	0.179	0.178
5	0.304	0.254	0.178	0.177	0.180
6	0.305	0.255	0.178	0.179	0.180
7	0.305	0.256	0.179	0.178	0.181
8	0.305	0.255	0.179	0.177	0.181
9	0.304	0.253	0.178	0.174	0.180
10	0.305	0.252	0.177	0.172	0.179
Minimum	**0.304**	**0.252**	**0.173**	**0.172**	**0.174**
Maximum	**0.305**	**0.256**	**0.179**	**0.179**	**0.181**
Average	**0.305**	**0.254**	**0.177**	**0.177**	**0.179**



SHELL ROLLOUT
NTS

NOZZLE SCHEDULE

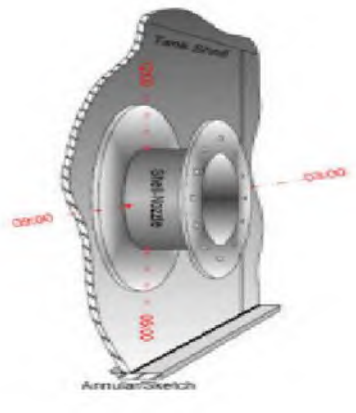
ID	SIZE
N-1	24"Ø
N-2	6"Ø
N-3	3"Ø
N-4	6"Ø
N-5	1.25"Ø

DRAWN BY: AUSTIN ALVIS	DATE INSPECTED: 08/09/2022	EQ. NUMBER: TANK T-1	CLIENT NAME: KU-LG&E	gecko robotics
DATE DRAWN: 09/15/2022	INSPECTOR: WILLIAM STOUT	EQ. NAME -	CLIENT LOCATION: GHENT STATION, GHENT, KY	GECKO ROBOTICS 100 S. COMMONS, SUITE 145 PITTSBURGH, PA 15212
FILE NO. -	DRAWING: 1 OF 1			

9.0 NOZZLE AND APPURTENANCES TABLE **

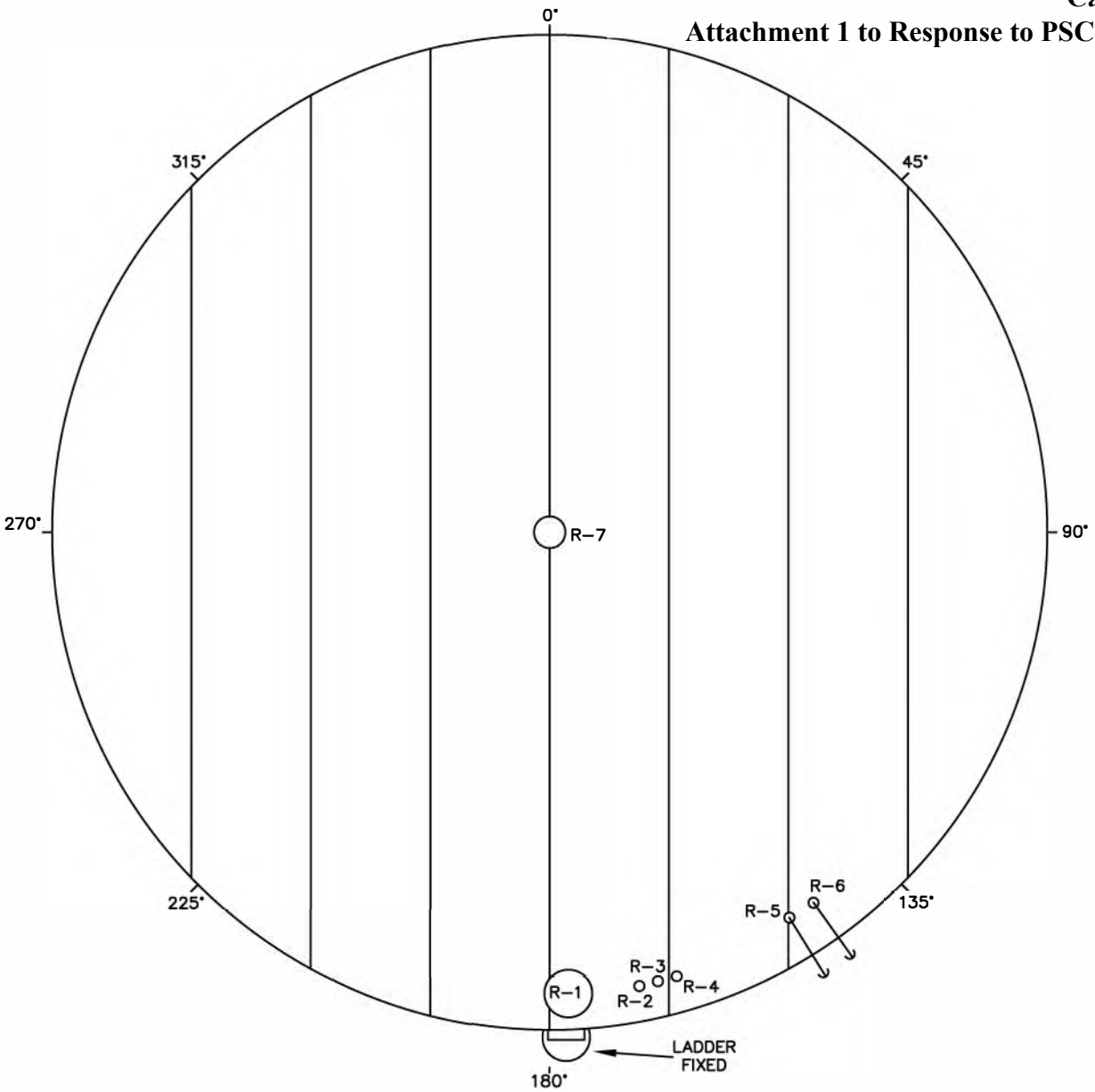
Nozzle Description				Reinforcing Plate				Measurements						Comments
Item	Description	Pipe Size [in]	Station [ft]	Width [in]	Height [in]	WT [in]	Shape	Neck WT [in]	Flange WT [in]	Cover WT [in]	Tell-Tale Y/N	CL [in]	WS [in]	
N-1	Manway	24	13.79	64.00	55.00	0.307	J	0.241	-	-	Yes	32.00	4.50	Telltale plugged
N-2	Suction line / Outlet	6	34.75	20.00	20.00	0.309	B	0.294	-	-	No	12.00	1.50	Weld spacing relative to corner weld does not comply with current weld space requirements.
N-3	Tank Drain	3	42.75	-	-	-	-	-	-	-	-	6.00	4.50	Threaded nozzle
N-4	Shell overflow	6	51.92	14.00	-	-	-	-	-	-	-	391.00	384.00	Weld spacing relative to adjacent shell circumferential and vertical welds does not comply with current weld space requirements.
N-5	Threaded nozzle, plugged.	1.25	18.29	-	-	-	-	-	-	-	-	12.00	10.75	

9.1 APPURTENANCES SUPPLEMENTAL ULTRASONIC NECK THICKNESS**



Nozzle ID	Clock Position [inches]				
Item	12:00	3:00	6:00	9:00	Average
N1	0.241	0.242	0.241	0.241	0.241
N2	0.294	0.286	0.294	0.300	0.294
N3	-	-	-	-	-
N4	-	-	-	-	-
N5	-	-	-	-	-
N6	-	-	-	-	-

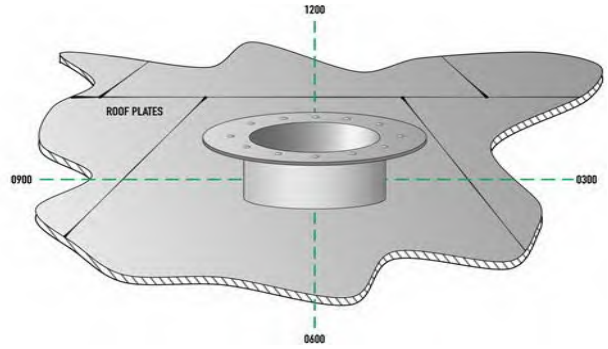
**Note: Red readings denote thickness below API 650, Table 5-6b, Column 3*



T–1 FIXED ROOF LAYOUT
NTS

DRAWN BY: AUSTIN ALVIS	DATE INSPECTED: 08/10/2021	EQ. NUMBER: TANK T-1	CLIENT NAME: KU-LG&E	gecko robotics
DATE DRAWN: 08/10/2022	INSPECTOR: WILLIAM STOUT	EQ. NAME -	CLIENT LOCATION: GHENT STATION, GHENT, KY	GECKO ROBOTICS 100 S. COMMONS, SUITE 145 PITTSBURGH, PA 15212
FILE NO. 2022-03519	DRAWING: 1 OF 1			

11.0 FIXED ROOF NOZZLE TABLE**



ID	Description	Nozzle Neck					Flange	Reinforcing Plate	
		Nozzle Size [in]	12:00 [in]	3:00 [in]	6:00 [in]	9:00 [in]	WT [in]	WT [in]	Diameter [in]
R-1	Manway	20	-	-	-	-	-	-	-
R-2	Float guide wire	1.25	-	-	-	-	-	-	-
R-3	Tape guide	1.5	-	-	-	-	-	-	-
R-4	Float guide	1.25	-	-	-	-	-	-	-
R-5	Inlet	6	-	-	-	-	-	-	-
R-6	Nozzle	4	-	-	-	-	-	-	-
R-7	Center Circulation Vent	12	-	-	-	-	-	-	-

**Note: Access to the fixed roof was limited to visual from the manlift only.*

gecko robotics

Roof
Ultrasonic Readings

Year Inspected	2022
Year Built	1974
Years in Service	48

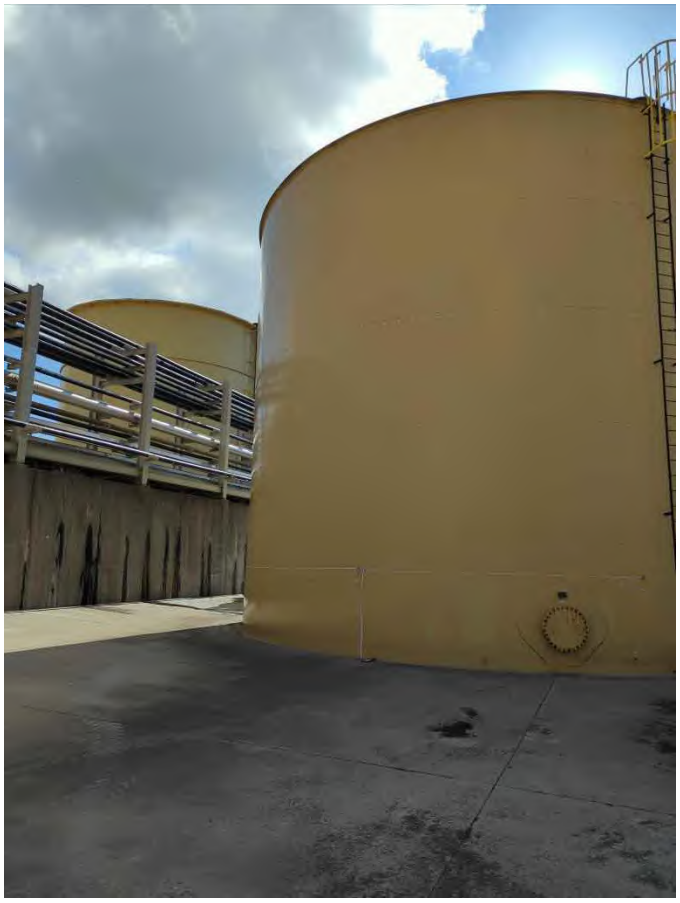
0.200	0.195	0.186	0.188
0.195	0.196	0.187	0.187
0.195	0.196	0.186	0.187

as measured	tavg [in]	0.192
as measured	tmin [in]	0.186
assumed	tnom [in]	0.250
per API 653	tmin [in]	0.090
calculated	CR [in/yr]	0.0013
calculated	RL [yrs]	72

13.0 INSPECTION CHECKLIST

OVERVIEW TANK ENTRY SAFETY AND INSPECTION READINESS	Completed	Acceptable
a) Check that the tank been cleaned, gas free, and safe for entry:	N/A	--
b) Check that the tank is completely isolated from product lines, all electrical power, and steam lines:	N/A	--
c) Check that the roof is adequately supported, including fixed roof structure and floating roof legs:	N/A	--
d) Check for presence of falling object hazards, such as corroded-through roof rafters, asphalt stalactites, and trapped hydrocarbons in unopen or plugged equipment or appurtenances, ledges, etc.:	N/A	--
e) Inspect for slipping hazards on bottom and roof decks.	Yes	Yes
f) Inspect structural welds on accessways and clips.	Yes	Yes
g) Check surfaces needing inspection which need further cleaning for the proper inspection.	Yes	Yes
Observation:		
Inspector found no notable issues preventing inspection of the tank.		

1.0 Foundation	Completed	Acceptable
Measure foundation levelness and bottom elevations (see Annex B for extent of measurements)	Yes	Yes
Settlement Survey found the tank to be level.	Yes	Yes
Observation:		
Inspector found no notable issues at the time of inspection.		
Photos:		



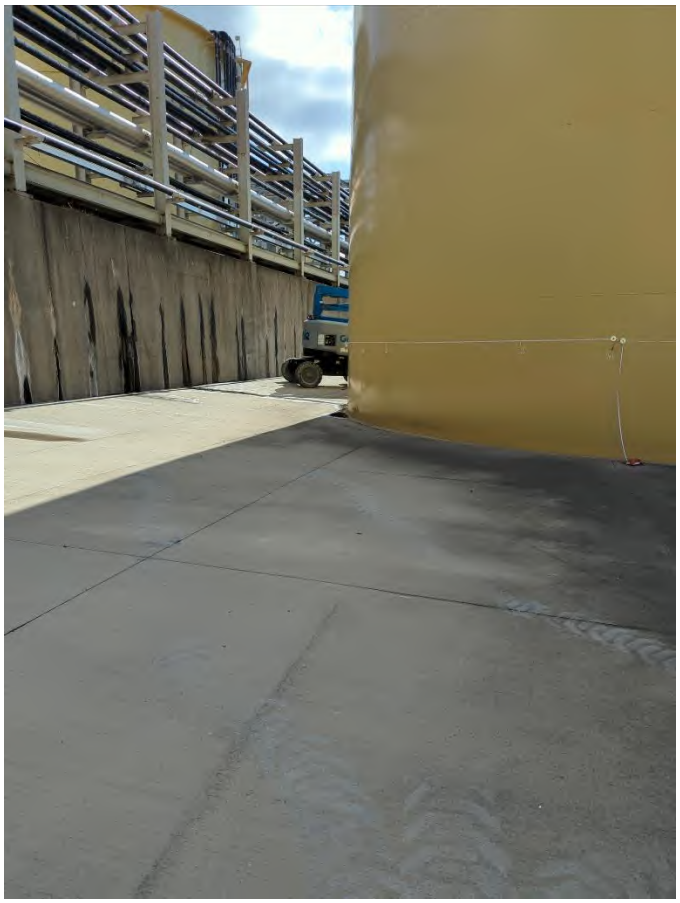


1.5 Site Drainage	Completed	Acceptable
a) Check site for drainage away from the tank and associated piping and manifolds.	Yes	Yes
b) Check operating condition of the dike drains.	Yes	--

Observation:

Some standing water present, client drained through containment drain. System functions as intended.

Photos:





1.6 Housekeeping	Completed	Acceptable
Inspect the area for buildup of trash, vegetation, and other flammables buildup.	Yes	Yes

Observation:

Inspector found no notable issues at the time of inspection.

Photos:






Link-Belt

1.8 Miscellaneous Items	Completed	Acceptable
a) Inspect for indications of tank bottom leakage.	Yes	Yes
b) Check for presence of a moisture barrier.	Yes	Yes
c) Inspect tank anchorage if present. Record sizes, spacing between anchors, and condition.	N/A	--
Observation:		
Inspector found no notable issues at the time of inspection.		

3.0 External Visual Inspection	Completed	Acceptable
a) Visually inspect for grooving, corrosion, pitting, and coating failures.	Yes	Yes
b) Clean off the bottom angle area and inspect for corrosion and thinning on plate and weld.	Yes	Yes
d) Inspect shell insulation for damage and proper sealing.	N/A	--

Observation:

UTT of the external bottom plate projection were obstructed at the time of inspection. Inspector found no indications of corrosion or other deterioration.

Photos:









4.1 Shell-Mounted Overflows	Completed	Acceptable
a) Inspect overflow for corrosion and adequate screening.	Yes	Ye
b) Check for location of overflow that it is not above any tank valves or equipment.	Yes	Yes
c) Are Screens Present.	Yes	Yes

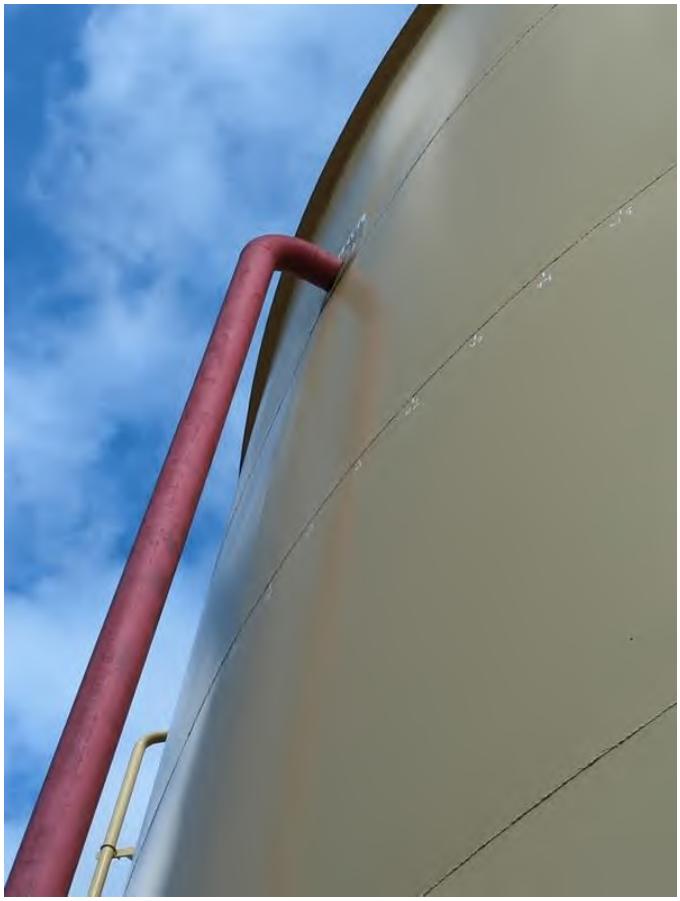
Observation:

Reinforcing plate installed at shell penetration does not meet current weld space requirements relative to shell circumferential and vertical welds.

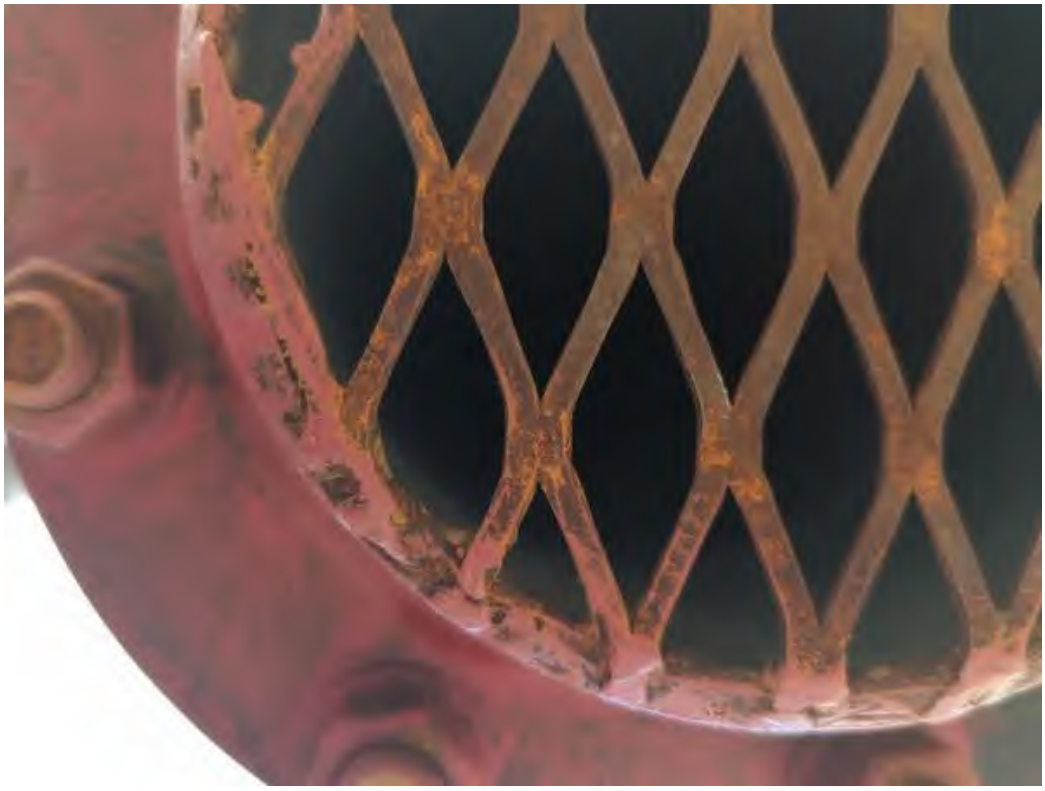
Photos:



Shell mounted overflow



Shell mounted overflow weld spacing relative to shell circumferential and vertical welds



Shell mounted overflow screen

5.0 Manways and Nozzles	Completed	Acceptable
a) Inspect for cracks or signs of leakage on weld joint to nozzles, manways, and reinforcing plates.	Yes	Yes
b) Inspect for shell plate dimpling around nozzles.	Yes	Yes
c) Inspect for flange leaks and leaks around bolting.	Yes	Yes
d) Check for inadequate manway flange and cover thickness on mixer manways.	N/A	--
e) Check that the Nozzles have adequate neck thickness per API 650 Table 5.6b.	Yes	No
f) Check the Nozzle have adequate centerlines per API 650 Table 5.6b.	Yes	Yes
Observation:		
Shell nozzles do not meet minimum thickness requirements found in API 650, Table 5.6b.		
Photos:		
*See Photolog		

5.1 Tank Piping Manifolds	Completed	Acceptable
a) Inspect manifold piping, flanges, and valves for leaks.	Yes	Yes
b) Inspect fire-fighting system components.	N/A	--
c) Check for anchored piping which would be hazardous to the tank shell or bottom connections during earth movement.	Yes	Yes
d) Check for adequate thermal pressure relief of piping to the tank.	N/A	--
e) Check for operation of regulators for tanks with purge gas systems.	N/A	--
f) Check sample connects for leaks and for proper valve operation.	N/A	--
g) Check for damage and test the accuracy of temperature indicators.	N/A	--
h) Check welds on shell-mounted davit clips.	N/A	--
Observations:		
Inspector found no notable issues at the time of inspection.		

7.1 Deck Plates External Corrosion	Completed	Acceptable
a). Visually inspect for paint failure, holes, pitting, corrosion, and/or product on the roof.	Yes	Yes

Observation:

Access to the fixed roof was limited to visual from the manlift. However, Inspector found no notable issues at the time of inspection.

Photos:





7.3 Roof Deck Drainage	Completed	Acceptable
a). Look for areas of standing water or staining.	Yes	Yes
Observation:		
Inspector found no notable issues at the time of inspection.		

7.12 Breathers and Vents	Completed	Acceptable
a) Inspect condition of breather vent.	No	-
Observation		
Access to the fixed roof was limited to visual from the manlift.		
Photos:		



8.6 Autogauge System and Alarms	Completed	Acceptable
a) Check freedom of movement of tape through autogauge tape guide.	Yes	Yes
b) Test operation checker	N/A	-
c) Inspect tape and tape cable for twisting and fraying.	Yes	Yes
d) Check float for leakage.	N/A	--
e) Inspect float wells for thinning and/ pitting.	N/A	--
f) Check that automatic gauge is firmly attached to float.	N/A	--
g) Inspect board-type indicators for legibility and freedom of movement.	Yes	Yes

Observation:

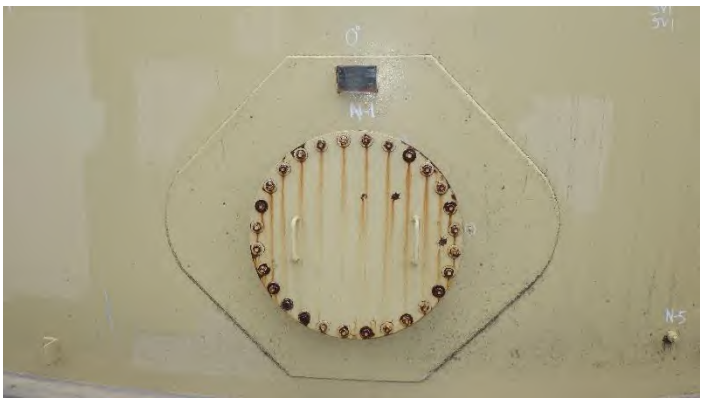
ATG was a board-type indicator. Inspector found no notable issues at the time of inspection.

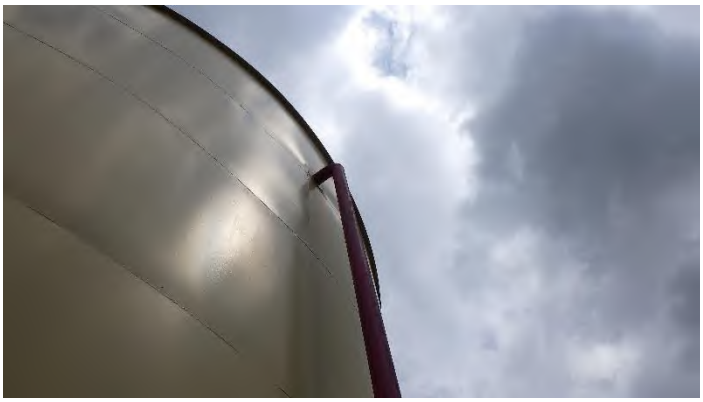
Photos:





14.0 TANK PHOTOS

	
Tank Name Plate	Tank Elevation View
	
Shell Nozzle N1 (left elevation)	Shell Nozzle N1 (front)
	
Shell Nozzle N1 (right elevation)	Shell Nozzle N2 (left elevation)

	
Shell Nozzle N2 (top)	Shell Nozzle N2 (right elevation)
	
Shell Nozzle N3 (left elevation)	Shell Nozzle N3 (front)
	
Shell Nozzle N3 (right elevation)	Shell Nozzle N4

	
Shell Nozzle N4 Screen	Shell Nozzle N4
	
Shell Nozzle N5	Shell Nozzle N5
	
Grounding Cable	Grounding Cable

	
Fixed Ladder base with fall arrest system	Fixed Ladder with safety cage and fall arrest system.
	
Board-type ATG	Tank Shell

— INTEGRITY TESTING & INSPECTION —

KU
Ghent, KY

T1
Diesel Storage

External Visual Inspection

April, 2021

TABLE OF CONTENTS

1. **Inspection Summary**
2. **Inspection Report**
3. **Inspection Photos**

Inspection Summary

3800 Vincent Station Drive
Owensboro, KY 42303
Tele: (270) 689-9980
Fax: (270) 689-9660

INTEGRITY TESTING & INSPECTION

Date: 5/3/2021

Inspection Summary Diesel Storage T1

On April 13, 2021 an external visual inspection was performed. Inspection was performed on diesel storage tank T1 located at KU - Ghent station in Ghent, Kentucky.

During the external visual inspection the following item was noted on the tank:

- Cracking of concrete pad noted around tank drain.
- Vegetative growth noted on floor projection plate to concrete pad seal and containment area walls.
- Annular ring seal is cracking.
- New concreate containment area floor is 1/16” to 1/8” above existing tank foundation pad.
- Telltale hole in manway reinforcing plate plugged and no telltale holes in any other reinforcing plates.
- Man way cover on roof is bent upward and could let foreign objects enter.
- No screen noted on overflow piping.
- Reinforcement plate on overflow nozzle is too close to shell weld and was not installed per API 653.

RECOMMENDATIONS

- Recommend repair cracking of original concrete pad around tank drain.
- Clean up vegetation in containment area.
- Recommend remove floor projection plate to concrete pad seal and install new seal per applicable code/industry standards to prevent water from seeping under tank.
- Recommend resurface containment area floor below original concrete support pad and slope it away from tank toward sump/drain area.
- Seal up containment wall areas that are leaking into the containment area to prevent any additional water and debris buildup.
- Recommend telltale hole in manway should be unplugged and all reinforcing plates should have telltale holes installed per applicable code/industry standard.

3867 Valicent Station Drive
Owensboro, KY 42303
Tele: (270) 689-9980
Fax: (270) 689-9660

INTEGRITY TESTING & INSPECTION

RECOMMENDATIONS CONTINUED

- Recommend repair or replace manway cover to prevent entry from foreign objects.
- Recommend installing screen on overflow piping to prevent entry from foreign objects.
- Recommend monitoring of overflow reinforcement plate and surrounding areas.



Richard Ramsey
API 653 Inspector
Cert # 48072

Inspection Report

INTEGRITY TESTING AND INSPECTION — VESSEL VISUAL INSPECTION CHECK LIST

BASIC DATA

PLANT: KU
LOCATION: Ghent, KY
EQUIPMENT NO: T1
DESCRIPTION: Diesel storage
DATE OF EXAMINATION: 4/13/2021

INSPECTOR: Richard Ramsey
INSPECTION TYPE:
☐ INTERNAL
☑ EXTERNAL
☐ OTHER INSTRUCTIONS
Description:

DESIGN DATA

DATA PLATE ATTACHED? ☑ YES ☐ NO
IS DATA PLATE LEGIBLE? ☑ YES ☐ NO
MANUFACTURER: Caldwell Tank Inc.
YEAR BUILT: 1974
MFG. SERIAL NUMBER:
NAT. BD./ IN ID NO:
STRUCTURE: ☑ VERT. ☐ HOR.
OTHER
CAPACITY: 442,250 Gal (New) / 12,500 Barrels (design)
FILL HEIGHT: 30'
PRODUCT (IF APPLICABLE): Diesel
% CONCENTRATION:
SPECIFIC GRAVITY:

PRESSURE VESSEL: ☐ YES ☑ NO
SHELL
DESIGN PRESSURE: Atmos
DESIGN TEMP:
☑ WELDED ☐ RIVETED ☐ LAPPED ☐ OTHER
LINING: N/A
MATERIAL: C/S
CONTAINMENT? ☑ YES ☐ NO
TYPE: Concrete Dyke
HEIGHT/ LENGTH: 40'
DIAMETER: 48'

NFPA PLACARD? ☐ Y ☑ N ____ FIRE(RED) ____ HEALTH(BLUE) ____ REACTIVITY(YEL.) - SPECIFIC HAZARD

A. LADDERS/ STAIRS/ PLATFORMS/ WALKWAYS

1. IS THIS SECTION APPLICABLE? ☑ Y ☐ N
2. CORRODED OR BROKEN PARTS? ☐ Y ☑ N
3. CONDITION OF PAINT: Good
4. WEAR OF RUNGS/ TREADS? ☐ Y ☑ N
5. HANDRAILS SECURE: ☑ Y ☐ N
6. CONDITION OF FLOORING ON PLATFORMS/ WALKWAYS: Serviceable
7. OTHER:

REPAIRS RECOMMENDED: ☐ IMMEDIATELY ☐ WITHIN 60 DAYS ☐ WITHIN 1 YEAR ☐ MONITORING ONLY

B. SUPPORTS/ FOUNDATIONS

1. HOW IS THE VESSEL/ TANK SUPPORTED?
   ☐ FOUNDATION - ☐ CRUSHED ROCK ☑ CONCRETE PAD ☐ SOIL
   ☐ SKIRT
   ☐ STRUCTURAL STEEL TYPE:
   ☐ OTHER TYPE TYPE:

2. CORROSION/ WEAR?	☐ Y	☑ N	
3. CRACKING?	☑ Y	☐ N	See Summary
4. SETTLING?	☐ Y	☑ N	
5. LOOSE/ MISSING BOLTS?	☐ Y	☐ N	N/A
6. VEGETATION GROWTH?	☑ Y	☐ N	See Summary
7. OTHER?	☑ Y	☐ N	See Summary

REPAIRS RECOMMENDED: ☑ IMMEDIATELY ☐ WITHIN 60 DAYS ☐ WITHIN 1 YEAR ☐ MONITORING ONLY
COMMENTS:

INTEGRITY TESTING AND INSPECTION VESSEL VISUAL INSPECTION CHECK LIST

C. GROUNDING CONNECTIONS

1. IS GROUNDING IN PLACE? ☑ Y ☐ N
2. CORROSION/ WEAR? ☐ Y ☑ N
3. CONTINUITY CHECK? ☐ Y ☑ N
   Ohms: _____ Must be Less than 05 Ohms. Refer to site grounding policy S10.0

REPAIRS RECOMMENDED: ☐ IMMEDIATELY ☐ WITHIN 60 DAYS ☐ WITHIN 1 YEAR ☐ MONITORING ONLY

COMMENTS:

NOTE: ALL VESSELS AND TANKS BUILT AFTER JULY 1, 1993 AND LOCATED INSIDE MUST HAVE AT LEAST (1) GROUNDING LOCATION. ALL VESSELS AND TANKS BUILT AFTER JULY 1, 1993 AND LOCATED OUTSIDE MUST HAVE AT LEAST (2) GROUNDING LOCATIONS APPROXIMATELY 180° APART. **EXCEPTION- ALL BPA TANKS MUST BE GROUNDED.

D. COATINGS

1. COATED/ PAINT? ☑ Y ☐ N
2. CONDITIONS OF COATING/ PAINT?
   a. PEELING? ☐ Y ☑ N
   b. DETERIORATION? ☐ Y ☑ N
   c. BLISTERING? ☐ Y ☑ N
   d. OTHER IND.? ☐ Y ☑ N

REPAIRS RECOMMENDED: ☐ IMMEDIATELY ☐ WITHIN 60 DAYS ☐ WITHIN 1 YEAR ☐ MONITORING ONLY

E. INSULATION

1. IS VESSEL INSULATED? ☐ Y ☑ N
2. CONDITION OF INSULATION:
   a. DEFORMED? ☐ Y ☐ N
   b. WET? ☐ Y ☐ N
   c. LOOSE? ☐ Y ☐ N
   d. DAMAGED/ PENETRATIONS? ☐ Y ☐ N
   e. OTHER DETERIORATIONS? ☐ Y ☐ N

REPAIRS RECOMMENDED: ☐ IMMEDIATELY ☐ WITHIN 60 DAYS ☐ WITHIN 1 YEAR ☐ MONITORING ONLY

F. MANWAYS/ NOZZLES/ FLANGES

1. CRACKS OR SIGNS OF LEAKAGE ON WELD JOINTS AT NOZZLES, MANWAYS, AND REINFORCEMENT? ☐ Y ☑ N
2. FLANGE LEAKING/ LEAKED AROUND BOLTS? ☐ Y ☑ N
3. SIGNS OF CORROSION? ☐ Y ☑ N
4. ATMOSPHERIC VESSEL VENTED? ☑ Y ☐ N
5. OTHER DAMAGE? ☑ Y ☐ N See Summary

REPAIRS RECOMMENDED: ☐ IMMEDIATELY ☐ WITHIN 60 DAYS ☑ WITHIN 1 YEAR ☐ MONITORING ONLY

G. SHELL/ HEADS/ FLOOR/ ROOF

1. PITTING DAMAGE? ☐ Y ☑ N
2. CRACKING? ☐ Y ☑ N
3. GENERAL CORROSION? ☐ Y ☑ N
4. GENERAL EXFOLIATION? ☐ Y ☑ N
5. PEAKING OR BANDING? ☐ Y ☑ N
6. SETTLING? ☐ Y ☑ N
7. CORROSION ON BOTTOM ANGLE, INSUL. SUPPORTS, OR VACUUM RINGS? ☐ Y ☑ N
8. OTHER DAMAGE? ☐ Y ☑ N

REPAIRS RECOMMENDED: ☐ IMMEDIATELY ☐ WITHIN 60 DAYS ☐ WITHIN 1 YEAR ☐ MONITORING ONLY

INTEGRITY TESTING AND INSPECTION VESSEL VISUAL INSPECTION CHECK LIST

H. WELDS

1. LEAKS?	☐ Y	☑ N	
2. CRACKING?	☐ Y	☑ N	
3. CORROSION?	☐ Y	☑ N	
4. EXFOLIATION?	☐ Y	☑ N	
5. PITTING?	☐ Y	☑ N	
6. POROSITY?	☐ Y	☑ N	
7. OTHER DAMAGE?	☐ Y	☑ N	

REPAIRS RECOMMENDED: ☐ IMMEDIATELY ☐ WITHIN 60 DAYS ☐ WITHIN 1 YEAR ☐ MONITORING ONLY

COMMENTS:

I. TRIM/ GAUGES

1. CORROSION?	☐ Y	☑ N	
2. CRACKING?	☐ Y	☑ N	
3. OPERATING CORRECTLY?	☑ Y	☐ N	
5. OTHER?	☐ Y	☑ N	

REPAIRS RECOMMENDED: ☐ IMMEDIATELY ☐ WITHIN 60 DAYS ☐ WITHIN 1 YEAR ☐ MONITORING ONLY

J. PRESSURE RELIEF VALVES

1. IS THIS SECTION APPLICABLE?	☐ Y	☑ N	
2. ARE LEAD SEALS IN PLACE?	☐ Y	☐ N	
3. IS SET PRESSURE EQUAL OR LOWER THAN VESSEL MAWP?	☐ Y	☐ N	
4. IS THERE ANY SIGN OF LEAKAGE THROUGH THE VALVE?	☐ Y	☐ N	
5. HAS IT BEEN REPAIRED OR IS THE DATE STAMPED WITHIN THE LAST 10 DAYS?	☐ Y	☐ N	
6. IF A TELL-TALE DEVICE IS INSTALLED, DOES IT APPEAR TO BE READING CORRECTLY?	☐ N/A	☐ Y	☐ N
7. IF VALVES ARE LOCATED ON EITHER SIDE OF THE DEVICE, ARE THEY CAR-SEALED PROPERLY?	☐ N/A	☐ Y	☐ N

REPAIRS RECOMMENDED: ☐ IMMEDIATELY ☐ WITHIN 60 DAYS ☐ WITHIN 1 YEAR ☐ MONITORING ONLY

K. OTHER

1. ANY REPAIRS NOT MADE TO CODE?	☑ Y	☐ N	See F5 below.
2. ANY REPAIRS MADE TO VESSEL SINCE LAST INSPECTION?	☐ Y	☐ N	Unknown

REPAIRS RECOMMENDED: ☐ IMMEDIATELY ☐ WITHIN 60 DAYS ☐ WITHIN 1 YEAR ☑ MONITORING ONLY

COMMENTS:

INTEGRITY TESTING AND INSPECTION VESSEL VISUAL INSPECTION CHECK LIST

FINAL COMMENTS:

B3: Cracking of concrete pad noted around tank drain.

B6: Vegetative growth noted on floor projection plate seal.

B7: Floor projection plate seal is cracking and needs to be replaced. New concrete around tank is above existing concrete pad and needs to be resurfaced below original tank support pad and sloped away from tank toward sump/drain.

F5: Man way on roof is bent upward and could let foreign objects enter. Weep hole in man way re-pad is plugged, and no weep holes found in any of the other re-pads. No screen noted on overflow piping. Reinforcement plate on overflow nozzle is to close to shell weld and is out of code.

RECOMMENDED REPAIRS AND REPAIR CODE RATINGS:

B3: Repair cracking of original concrete foundation pad around tank drain.

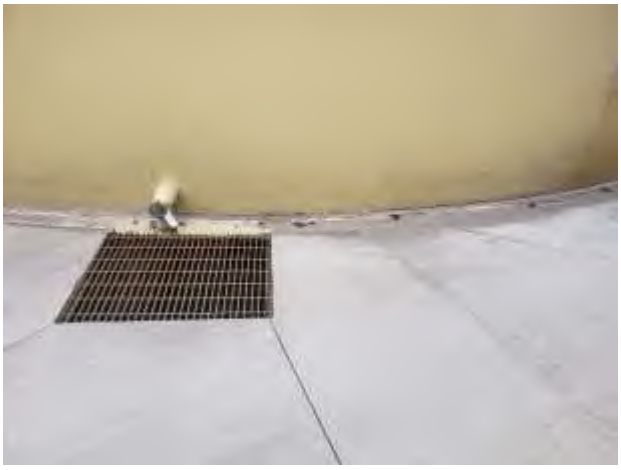
B6, B7: Remove old floor projection plate seal and vegetation and install new seal to prevent water from seeping under tank.

B7: Resurface containment area floor below original concrete support pad and slope it away from tank toward sump/drain area. Remove water and debris from containment area after every rain storm. Seal up containment wall areas that are leaking into the containment area to prevent unnecessary additional water and debris buildup.

F5: Repair man way cover on roof per applicable code or industry standards. Remove weep hole plug to monitor for leaks behind re-pad. Recommend installing a screen on overflow nozzle. Recommend monitor overflow reinforcement plate and surround areas.

Inspection Photos





Tank containment area and tank drain



Tank containment area and tank overflow outlet



Tank overflow support



Tank overflow nozzle



Tank overflow and containment area




Tank Containment area




Tank containment area




Tank containment area




Tank containment area




Tank containment area




Tank containment area



Standing water in containment area



Tank containment area



Tank containment area and access ladder



Tank ID tag





Tank Data Plate





Tank support floor projection plate area



Tank Overview




Roof man way condition




Roof nozzles condition




Roof overview condition



Roof condition



Roof man way overview



Roof condition





Roof condition




Roof support condition




Roof and latter support condition




Floor projection plate seal condition





Associated piping and containment wall penetration



Associated piping



Tank foundation cracking around drain

— INTEGRITY TESTING & INSPECTION —

KU
Ghent, KY

T1
Diesel Storage

External Inspection

November, 2017

TABLE OF CONTENTS

1. Inspection Summary
2. Inspection Reports
3. Inspection Drawings
4. Inspection Photos

Inspection Summary

5887 Vincent Station Drive
Owensboro, KY 42303
Tele: (270) 689-9980
Fax: (270) 689-9660

INTEGRITY TESTING & INSPECTION

Date: 1/5/2018

Inspection Summary Diesel Storage T1

On November 28, 2017 an ultrasonic survey of the shell, roof and all accessible nozzles was performed along with an external visual inspection. Calculations where ran for the shell and head based on a .85 joint efficiency and unknown material for the stress calculations. The required minimum thickness and actual thickness for the shell and roof are listed in the attached API calculation sheet. This information was based off of data collected during the inspection. See attached reports for results and locations of all inspections.

During the external visual inspection the following item was noted on the tank:

- Vegetation and trash in containment area.
- Telltale hole in manway reinforcing plate plugged and no telltale holes in any other reinforcing plates.
- Previous leak was noticed in gate valve.

RECOMMENDATIONS

- Clean up vegetation and trash in containment area.
- Telltale hole in manway should be unplugged and all reinforcing plates should have telltale holes installed in accordance with API 650.
- Monitor possible leak in gate valve.

Richard Ramsey
API 653 Inspector

Integrity Testing Inspection 1/4/2018

API 653 Minimum Acceptable Wall Thickness Calculations

TANK DATA

TANK NAME:	T1	**DATE:**	11/28/2017
EQUIPMENT NUMBER:		**MAX. LIQUID LEVEL:**	24
DESIGN CODE:	API	**JOINT EFFICIENCY:**	0.85
CONTENTS/PRODUCT:	Diesel	**SPECIFIC GRAVITY:**	0.85
OUTSIDE DIAMETER:	48	**SHELL MATERIAL:**	Unknown
INSPECTOR:	Richard Ramsey	**DATE OF SERVICE:**	01/01/74

DEFINITIONS

H= HEIGHT IN FT. FROM THE BOTTOM OF THE CORRODED AREA (L) OR THE TEST ELEVATION TO THE MAXIMUM DESIGN LIQUID LEVEL.
G = HIGHEST SPECIFIC GRAVITY OF CONTENTS
S = ALLOWABLE STRESS
E = JOINT EFFICIENCY
Previous T = LAST RECORDED THICKNESS (NOMINAL IF NO PREVIOUS ULTRASONIC THICKNESS DATA)
Governing T = LOWEST GOVERNING THICKNESS (AVERAGE THICKNESS OVER L) FOR LOCATION (See API 653, 2.3.2)
Estimated RCA = ESTIMATED REMAINING CORROSION ALLOWANCE

FORMULA(S)

$$t_{min}\ (in) = \frac{2.6D(H-1)G}{S \times E}$$ Ref. - API 653, Dec. 1995, 2.3.3.1

Corrosion Rate (in/yr) = ("t" Nom. - "t" Meas.) / Years in Operation (Estimated) Ref. - API 510, Sup. 1, March 1992, 4.3

Estimated RCA = ("t" Meas. - "t" Min.) Ref. - API 510, Sup. 1, March 1992, 4.3

Remaining Life = RCA / Corr. Rate

STRESS CALCULATIONS

	TENSILE	k	S1	YIELD	k	S2	S
1st & 2nd COURSE	55000	0.429	23595	30000	0.8	24000	23595
ALL OTHER COURSES	55000	0.472	25960	30000	0.88	26400	25960

**NOTE: UTILIZE THE SMALLER OF THE TWO "S" VALUES FOR MINIMUM WALL CALCULATIONS.*

SHELL PLATES

Elevation (ft)	Course	(H-1)	S	API T Minimum	Previous T	Governing T	Estimated Corr. Rate	Estimated RCA
0.20	1	22.80	23595	0.121	0.375	0.323	0.001	0.202
4.00	1	19.00	23595	0.100	0.375	0.321	0.001	0.221
7.80	1	15.20	23595	0.100	0.375	0.325	0.001	0.225
8.20	2	14.80	23595	0.100	0.375	0.269	0.002	0.169
12.00	2	11.00	23595	0.100	0.375	0.278	0.002	0.178
15.80	2	7.20	23595	0.100	0.375	0.278	0.002	0.178
16.20	3	6.80	25960	0.100	0.250	0.200	0.001	0.100
20.00	3	3.00	25960	0.100	0.250	0.205	0.001	0.105
23.80	3	0.00	25960	0.100	0.250	0.208	0.001	0.108
24.20	4	0.00	25960	0.100	0.250	0.195	0.001	0.095
28.00	4	0.00	25960	0.100	0.250	0.204	0.001	0.104
31.80	4	0.00	25960	0.100	0.250	0.211	0.001	0.111
32.20	5	0.00	25960	0.100	0.250	0.203	0.001	0.103
36.00	5	0.00	25960	0.100	0.250	0.202	0.001	0.102
39.00	5	0.00	25960	0.100	0.250	0.205	0.001	0.105

The lowest (governing) remaining corrosion allowance for the shell is: **0.095** ***in.***

Anticipated remaining life of the shell is: **70.2** ***yrs.***

NOTE: Review all thickness readings to ensure that none are below 60% of T min (Ignore localized pitting)

ABSOLUTE MINIMUM FOR ANY SHELL PLATE IS 0.100"

ROOF PLATES

UT Thickness Readings over 100 sq. in. grid of most severely corroded area (or single lowest t over 0.090")

0.224	0.230	0.231	0.238	0.246
0.226	0.216	0.218	0.239	0.249
0.224	0.213	0.225	0.236	0.243
0.233	0.236	0.220		
0.234	0.230	0.180		

Roof Nominal T = 0.250 in.

Average thickness of grid: **0.228** ***in.***

Corresponding RCA for the roof is : **0.138** ***in.***

MINIMUM FOR ROOF PLATES IS 0.090" IN ANY 100 SQUARE INCHES OF PLATE (ANY HOLES MUST BE REPAIRED).

FLOOR PLATES

Does tank bottom/foundation design provide means for detection and containment of a bottom leak? (Yes/No) _____

Does tank incorporate a reinforced bottom lining, >0.05 in. thick, in accordance with API RP 652? (Yes/No) _____

Minimum acceptable bottom plate thickness: **0.100** **in.**

NOTE: Refer to API-653 for Next Floor Inspection Interval

Next Floor Inspection **N/A** ***yr(s).***

SUMMARY

The next formal external visual inspection should be scheduled at an interval no greater than **5.0** years.
The next external ultrasonic thickness inspection should be scheduled at an interval no greater than **15.0** *years.*
The next internal or on-stream inspection should be scheduled at an interval no greater than **20.0** *years.*

Inspection Reports

INTEGRITY TESTING AND INSPECTION — VESSEL VISUAL INSPECTION CHECK LIST

BASIC DATA

PLANT: KU
LOCATION: Ghent, KY
EQUIPMENT NO: T1
DESCRIPTION: Diesel storage
DATE OF EXAMINATION: 11/28/2017
INSPECTOR: Todd Lawson
INSPECTION TYPE:
☐ INTERNAL
☑ EXTERNAL
☑ OTHER INSTRUCTIONS
Description: UT Thickness

DESIGN DATA

DATA PLATE ATTACHED? ☑ YES ☐ NO
IS DATA PLATE LEGIBLE? ☑ YES ☐ NO
MANUFACTURER: Caldwell Tank Inc.
YEAR BUILT: 1974
MFG. SERIAL NUMBER:
NAT. BD./ IN ID NO:
STRUCTURE: ☑ VERT. ☐ HOR.
OTHER
CAPACITY: 12,500 Barrels
FILL HEIGHT: 24'
PRODUCT (IF APPLICABLE): Diesel
% CONCENTRATION:
SPECIFIC GRAVITY:

PRESSURE VESSEL: ☐ YES ☑ NO
SHELL
DESIGN PRESSURE:
DESIGN TEMP:
☑ WELDED ☐ RIVETED ☐ LAPPED ☐ OTHER

LINING: N/A
MATERIAL: C/S
CONTAINMENT? ☑ YES ☐ NO
TYPE: Concrete Dyke
HEIGHT/ LENGTH: 40'
DIAMETER: 48'

NFPA PLACARD? ☐ Y ☑ N | FIRE(RED) | HEALTH(BLUE) | REACTIVITY(YEL.) - | SPECIFIC HAZARD

A. LADDERS/ STAIRS/ PLATFORMS/ WALKWAYS

1. IS THIS SECTION APPLICABLE? ☑ Y ☐ N
2. CORRODED OR BROKEN PARTS? ☐ Y ☑ N
3. CONDITION OF PAINT: Good
4. WEAR OF RUNGS/ TREADS? ☐ Y ☑ N
5. HANDRAILS SECURE: ☑ Y ☐ N
6. CONDITION OF FLOORING ON PLATFORMS/ WALKWAYS: N/A
7. OTHER:

REPAIRS RECOMMENDED: ☐ IMMEDIATELY ☐ WITHIN 60 DAYS ☐ WITHIN 1 YEAR ☐ MONITORING ONLY

B. SUPPORTS/ FOUNDATIONS

1. HOW IS THE VESSEL/ TANK SUPPORTED?
☐ FOUNDATION - ☐ CRUSHED ROCK ☑ CONCRETE PAD ☐ SOIL
☐ SKIRT
☐ STRUCTURAL STEEL TYPE:
☐ OTHER TYPE TYPE:

2. CORROSION/ WEAR? ☐ Y ☑ N
3. CRACKING? ☐ Y ☑ N
4. SETTLING? ☐ Y ☑ N
5. LOOSE/ MISSING BOLTS? ☐ Y ☑ N
6. VEGETATION GROWTH? ☑ Y ☐ N See Summary
7. OTHER? ☑ Y ☐ N Trash

REPAIRS RECOMMENDED: ☐ IMMEDIATELY ☑ WITHIN 60 DAYS ☐ WITHIN 1 YEAR ☐ MONITORING ONLY
COMMENTS:

INTEGRITY TESTING AND INSPECTION — VESSEL VISUAL INSPECTION CHECK LIST

C. GROUNDING CONNECTIONS

1. IS GROUNDING IN PLACE? ☑ Y ☐ N
2. CORROSION/ WEAR? ☐ Y ☑ N
3. CONTINUITY CHECK? ☐ Y ☑ N
   Ohms: _____ Must be Less than 05 Ohms. Refer to site grounding policy S10.0

REPAIRS RECOMMENDED: ☐ IMMEDIATELY ☐ WITHIN 60 DAYS ☐ WITHIN 1 YEAR ☐ MONITORING ONLY

COMMENTS:

NOTE: ALL VESSELS AND TANKS BUILT AFTER JULY 1, 1993 AND LOCATED INSIDE MUST HAVE AT LEAST (1) GROUNDING LOCATION. ALL VESSELS AND TANKS BUILT AFTER JULY 1, 1993 AND LOCATED OUTSIDE MUST HAVE AT LEAST (2) GROUNDING LOCATIONS APPROXIMATELY 180° APART. **EXCEPTION- ALL BPA TANKS MUST BE GROUNDED.

D. COATINGS

1. COATED/ PAINT? ☑ Y ☐ N
2. CONDITIONS OF COATING/ PAINT?
   a. PEELING? ☐ Y ☑ N
   b. DETERIORATION? ☐ Y ☑ N
   c. BLISTERING? ☐ Y ☑ N
   d. OTHER IND.? ☐ Y ☑ N

REPAIRS RECOMMENDED: ☐ IMMEDIATELY ☐ WITHIN 60 DAYS ☐ WITHIN 1 YEAR ☐ MONITORING ONLY

E. INSULATION

1. IS VESSEL INSULATED? ☐ Y ☑ N
2. CONDITION OF INSULATION:
   a. DEFORMED? ☐ Y ☐ N
   b. WET? ☐ Y ☐ N
   c. LOOSE? ☐ Y ☐ N
   d. DAMAGED/ PENETRATIONS? ☐ Y ☐ N
   e. OTHER DETERIORATIONS? ☐ Y ☐ N

REPAIRS RECOMMENDED: ☐ IMMEDIATELY ☐ WITHIN 60 DAYS ☐ WITHIN 1 YEAR ☐ MONITORING ONLY

F. MANWAYS/ NOZZLES/ FLANGES

1. CRACKS OR SIGNS OF LEAKAGE ON WELD JOINTS AT NOZZLES, MANWAYS, AND REINFORCEMENT? ☐ Y ☑ N
2. FLANGE LEAKING/ LEAKED AROUND BOLTS? ☐ Y ☑ N
3. SIGNS OF CORROSION? ☐ Y ☑ N
4. ATMOSPHERIC VESSEL VENTED? ☑ Y ☐ N
5. OTHER DAMAGE? ☑ Y ☐ N Weep holes

REPAIRS RECOMMENDED: ☐ IMMEDIATELY ☐ WITHIN 60 DAYS ☑ WITHIN 1 YEAR ☐ MONITORING ONLY

G. SHELL/ HEADS/ FLOOR/ ROOF

1. PITTING DAMAGE? ☐ Y ☑ N
2. CRACKING? ☐ Y ☑ N
3. GENERAL CORROSION? ☐ Y ☑ N
4. GENERAL EXFOLIATION? ☐ Y ☑ N
5. PEAKING OR BANDING? ☐ Y ☑ N
6. SETTLING? ☐ Y ☑ N
7. CORROSION ON BOTTOM ANGLE, INSUL. SUPPORTS, OR VACUUM RINGS? ☐ Y ☑ N
8. OTHER DAMAGE? ☐ Y ☑ N

REPAIRS RECOMMENDED: ☐ IMMEDIATELY ☐ WITHIN 60 DAYS ☐ WITHIN 1 YEAR ☐ MONITORING ONLY

H. WELDS

1. LEAKS?	☐ Y ☑ N	
2. CRACKING?	☐ Y ☑ N	
3. CORROSION?	☐ Y ☑ N	
4. EXFOLIATION?	☐ Y ☑ N	
5. PITTING?	☐ Y ☑ N	
6. POROSITY?	☐ Y ☑ N	
7. OTHER DAMAGE?	☐ Y ☑ N	

REPAIRS RECOMMENDED: ☐ IMMEDIATELY ☐ WITHIN 60 DAYS ☐ WITHIN 1 YEAR ☐ MONITORING ONLY

COMMENTS:

I. TRIM/ GAUGES

1. CORROSION?	☐ Y ☑ N	
2. CRACKING?	☐ Y ☑ N	
3. OPERATING CORRECTLY?	☐ Y ☑ N	
5. OTHER?	☐ Y ☑ N	

REPAIRS RECOMMENDED: ☐ IMMEDIATELY ☐ WITHIN 60 DAYS ☐ WITHIN 1 YEAR ☐ MONITORING ONLY

J. PRESSURE RELIEF VALVES

1. IS THIS SECTION APPLICABLE?	☐ Y ☑ N	
2. ARE LEAD SEALS IN PLACE?	☐ Y ☐ N	
3. IS SET PRESSURE EQUAL OR LOWER THAN VESSEL MAWP?	☐ Y ☐ N	
4. IS THERE ANY SIGN OF LEAKAGE THROUGH THE VALVE?	☐ Y ☐ N	
5. HAS IT BEEN REPAIRED OR IS THE DATE STAMPED WITHIN THE LAST 10 DAYS?	☐ Y ☐ N	
6. IF A TELL-TALE DEVICE IS INSTALLED, DOES IT APPEAR TO BE READING CORRECTLY?	☐ N/A ☐ Y ☐ N	
7. IF VALVES ARE LOCATED ON EITHER SIDE OF THE DEVICE, ARE THEY CAR-SEALED PROPERLY?	☐ N/A ☐ Y ☐ N	
8. IS THE GE No. ON THE VALVE?	☐ Y ☐ N	
9. DOES IT AGREE WITH THE P&ID?	☐ Y ☐ N	

REPAIRS RECOMMENDED: ☐ IMMEDIATELY ☐ WITHIN 60 DAYS ☐ WITHIN 1 YEAR ☐ MONITORING ONLY

K. OTHER

1. ANY REPAIRS NOT MADE TO CODE?	☐ Y ☐ N	Unknown
2. ANY REPAIRS MADE TO VESSEL SINCE LAST INSPECTION?	☐ Y ☐ N	Unknown

REPAIRS RECOMMENDED: ☐ IMMEDIATELY ☐ WITHIN 60 DAYS ☐ WITHIN 1 YEAR ☐ MONITORING ONLY

COMMENTS:

INTEGRITY TESTING AND INSPECTION VESSEL VISUAL INSPECTION CHECK LIST

FINAL COMMENTS:

B6, B7: Vegetative growth and trash in containment area needs to be removed.

F5: Weep hole in manway repad is plugged, and no weep holes found in any of the other repads.

A previous leak was noticed in gate valve.

RECOMMENDED REPAIRS AND REPAIR CODE RATINGS:

F5: Tell tale hole in manway should be unplugged and all reinforcing plates should have tell tale holes installed in accordance with API 650.

Imber
3861 Vincent Station Dr.
Owensboro, KY 42303
Phone: (270) 689-9980
Fax: (270) 689-9660

— INTEGRITY TESTING & INSPECTION —

ULTRASONIC EXAMINATION REPORT

☐ Nuclear ☑ Non-Nuclear

To: KU Ghent		From: T.Lawson	Date: 11/28/2017
Project: T1 Main fuel storage tank 500,000 Gal.			
Purchase Order No.: 635240		Integrity Testing Job No.: K17-0163	

Item	Weld ☐	Structural ☐	Casting ☐	Machinery ☐	Mach. Parts ☐	Pipe ☐	N/A ☑	Other: N/A
	Non-Weld ☐	Plate ☑	Pipe ☐	Bar ☐	Casting ☐	Mach. Parts ☐	N/A ☐	Other: N/A

Material	Size: 48'D x40' H	No. of Pieces: 1 tank	Type of Base Metal: C/S	Type of Filler Material: N/A	Weld: ☑ N/A ☐ Smooth ☐ As Welded
Location	Ghent KY- East of unit 1			System: Diesel storage	
Acceptance Standards	API 653			Procedure: QCP-620 REV 0	

Type of Inspection

Soundness ☐ Thickness ☑ Bond ☐

Pulse Echo ☐ Angle-Beam ☐ Other ☐

UT Equipment/Model: GE DMS 2

Transducer: ☐ Single Crystal ☑ Dual Crystal

Frequency	Size	Angle	Couplant
7 mhz	0.25"	Straight	Sona Gel

Flat	Concave	Convex
☑	☐	☐

Standard	Material	Notch Depth	Serial No.
N/A	N/A	N/A	N/A

Step Wedge	Material	Thickness Range	Serial No.
☑	C/S	0.100"-0.500"	08-7792
Tube Wedge ☐			

Reference: Summary ☑ See Attachment

Results of Inspection:
An ultrasonic thickness inspection was performed per API 653 requirements. Readings were taken in 8 quadrants around the tank, and 3 readings per shell coarse. A UT scan was performed in the vapor space (24') of tank as well, scan included a 1' vertical scan every 1' around tank. See attached drawings and reader sheets for locations and results of inspection.

Copy To:

Requested By: Danielle Ballard	Reported By (Technician): Todd Lawson
☑ Customer Specifications ☐ Accept ☐ Reject	NDT Supervisor: Rolan Coleman

NOTICE:

THIS EXAMINATION REPORT IS A REPORT OF THE RESULTS OF THE NDT PROCEDURE ACTUALLY PERFORMED BY THIS COMPANY IT IS SUBJECT TO THE LIMITATIONS OF THE TESTING SPECIFICATIONS AND PROCEDURES WHICH WERE UTILIZED. BY FURNISHING THIS REPORT, ***INTEGRITY TESTING & INSPECTION*** DOES NOT GUARANTEE ANY CONDITION OF THE TESTED SPECIMEN.

— INTEGRITY TESTING & INSPECTION —

Company: KU
Address: Ghent Ky
Description: T1 Diesel storage tank
Technician: T.Lawson/P.Nunamaker
Date: 11/28/2017

Location	0°	45°	90°	135°	180°	225°	270°	315°				
SC1 +2	0.344	0.329	0.323	0.334	0.339	0.348	0.342	0.323				
C	0.335	0.322	0.328	0.331	0.326	0.349	0.339	0.321				
-2	0.333	0.325	0.329	0.341	0.344	0.348	0.342	0.332				
SC2 +2	0.285	0.281	0.269	0.292	0.348	0.282	0.286	0.281				
C	0.283	0.278	0.286	0.282	0.301	0.279	0.285	0.284				
-2	0.282	0.285	0.279	0.278	0.301	0.286	0.289	0.279				
SC3 +2	0.200	0.205	0.213	0.232	0.207	0.218	0.203	0.211				
C	0.206	0.224	0.211	0.229	0.213	0.209	0.212	0.205				
-2	0.208	0.224	0.215	0.226	0.219	0.224	0.211	0.208				
SC4 +2	0.195	0.218	0.205	0.218	0.211	0.220	0.217	0.211				
C	0.204	0.212	0.214	0.226	0.215	0.218	0.222	0.213				
-2	0.211	0.212	0.215	0.220	0.222	0.211	0.224	0.214				
SC5 +2	0.203	0.210	0.220	0.224	0.220	0.203	0.221	0.217				
C	0.202	0.210	0.208	0.228	0.213	0.209	0.209	0.213				
-2	0.219	0.221	0.207	0.225	0.205	0.238	0.205	0.227				
ROOF +4"	0.224	0.230	N/A	0.231	0.238	0.246	0.233	0.230				
1'	0.226	0.216	N/A	0.218	0.239	0.249	0.234	0.220				
2'	0.224	0.213	N/A	0.225	0.236	0.243	0.236	0.180				
	12	3	6	9								
N1	0.351	0.356	0.358	0.358								
NS1	N/A	N/A	N/A	N/A								
N2	0.369	0.350	0.321	0.339								
NS2	N/A	N/A	N/A	N/A								
N3	N/A	N/A	N/A	N/A								
NS3	0.351	0.347	0.360	0.352								
N4	0.276	0.278	0.273	0.295								
NS4	N/A	N/A	N/A	N/A								
MW	0.298	0.298	0.281	0.287								
MWS	N/A	N/A	N/A	N/A								

Comments:

— INTEGRITY TESTING & INSPECTION —

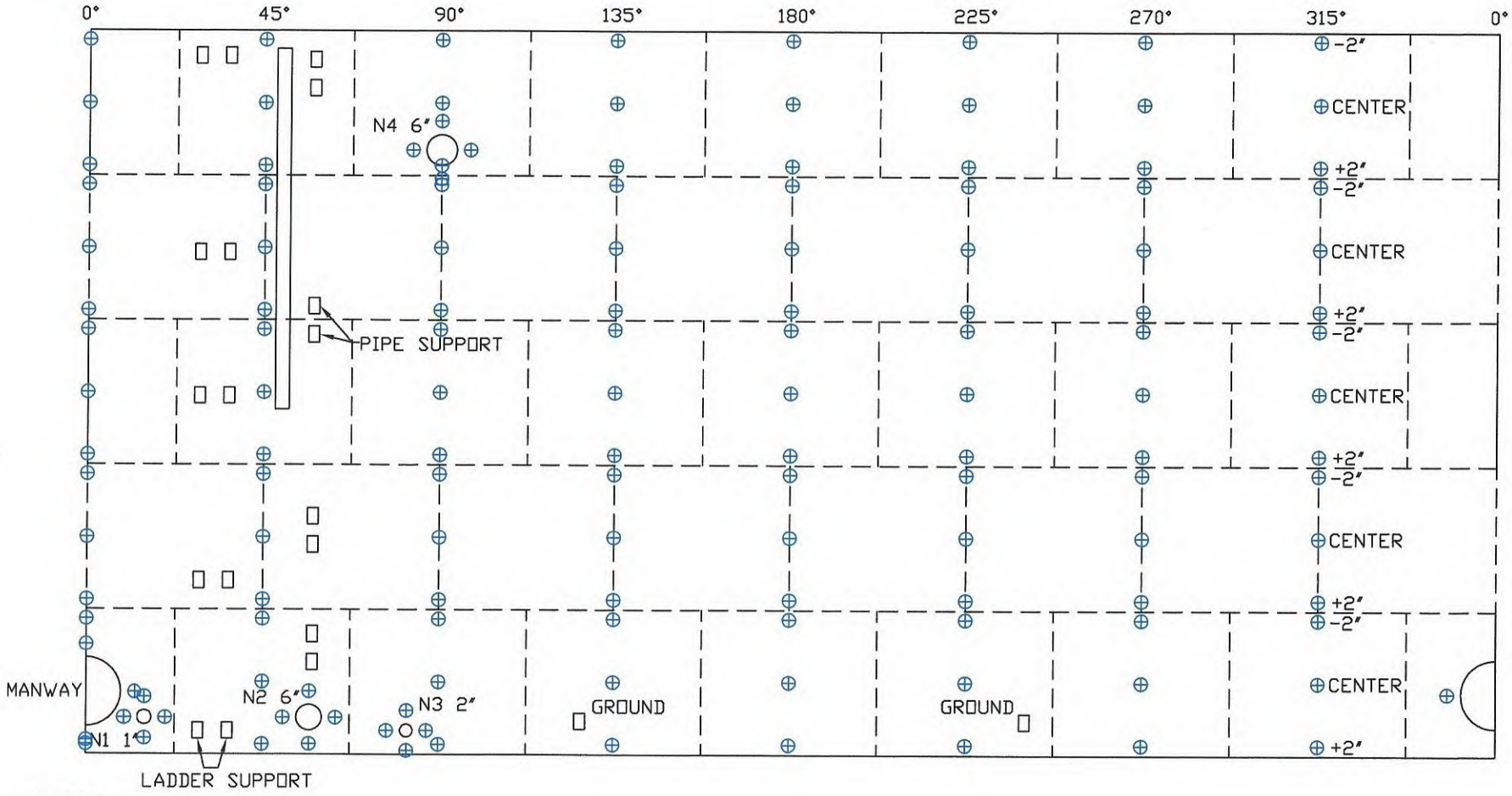
Company: KU
Address: Ghent Ky
Description: Diesel storage vapor space scan at 24'
Technician: T.Lawson/P.Nunamaker

Vapor Space		30	0.203	61	0.203	92	0.213	123	0.207	
0 - 0°	0.191	31	0.205	62	0.206	93	0.210	124	0.198	
1	0.196	32	0.205	63	0.203	94	0.218	125	0.199	
2	0.194	33	0.201	64	0.211	95	0.210	126	0.201	
3	0.195	34	0.207	65	0.207	96	0.215	127	0.201	
4	0.189	35	0.204	66	0.213	97	0.207	128	0.204	
5	0.192	36	0.207	67	0.215	98	0.208	129	0.204	
6	0.199	37	0.205	68	0.209	99	0.210	130	0.204	
7	0.203	38 - 90°	0.232	69	0.209	100	0.204	131	0.210	
8	0.195	39	0.220	70	0.208	101	0.224	132	0.205	
9	0.202	40	0.221	71	0.215	102	0.215	133	0.208	
10	0.195	41	0.218	72	0.213	103	0.218	134	0.209	
11	0.196	42	0.222	73	0.230	104	0.212	135	0.210	
12	0.195	43	0.218	74	0.217	105	0.211	136	0.204	
13	0.198	44	0.213	75	0.228	106	0.212	137	0.210	
14	0.198	45	0.207	76	0.218	107	0.211	138	0.212	
15	0.194	46	0.212	77 - 180°	0.212	108	0.212	139	0.208	
16	0.203	47	0.215	78	0.206	109	0.219	140	0.206	
17	0.202	48	0.213	79	0.222	110	0.215	141	0.206	
18	0.205	49	0.219	80	0.218	111	0.217	142	0.208	
19	0.214	50	0.217	81	0.210	112	0.218	143	0.204	
20	0.205	51	0.213	82	0.211	113	0.220	144	0.202	
21	0.203	52	0.216	83	0.211	114	0.217	145	0.203	
22	0.210	53	0.220	84	0.208	115 - 270°	0.220	146	0.206	
23	0.201	54	0.218	85	0.209	116	0.214	147	0.203	
24	0.201	55	0.216	86	0.211	117	0.217	148	0.202	
25	0.203	56	0.218	87	0.207	118	0.211	149	0.204	
26	0.204	57	0.215	88	0.210	119	0.215	150	0.198	
27	0.202	58	0.206	89	0.208	120	0.211	151	0.201	
28	0.205	59	0.205	90	0.210	121	0.211	152	0.205	
29	0.203	60	0.204	91	0.217	122	0.210	153	0.202	

Comments:

Inspection Drawings

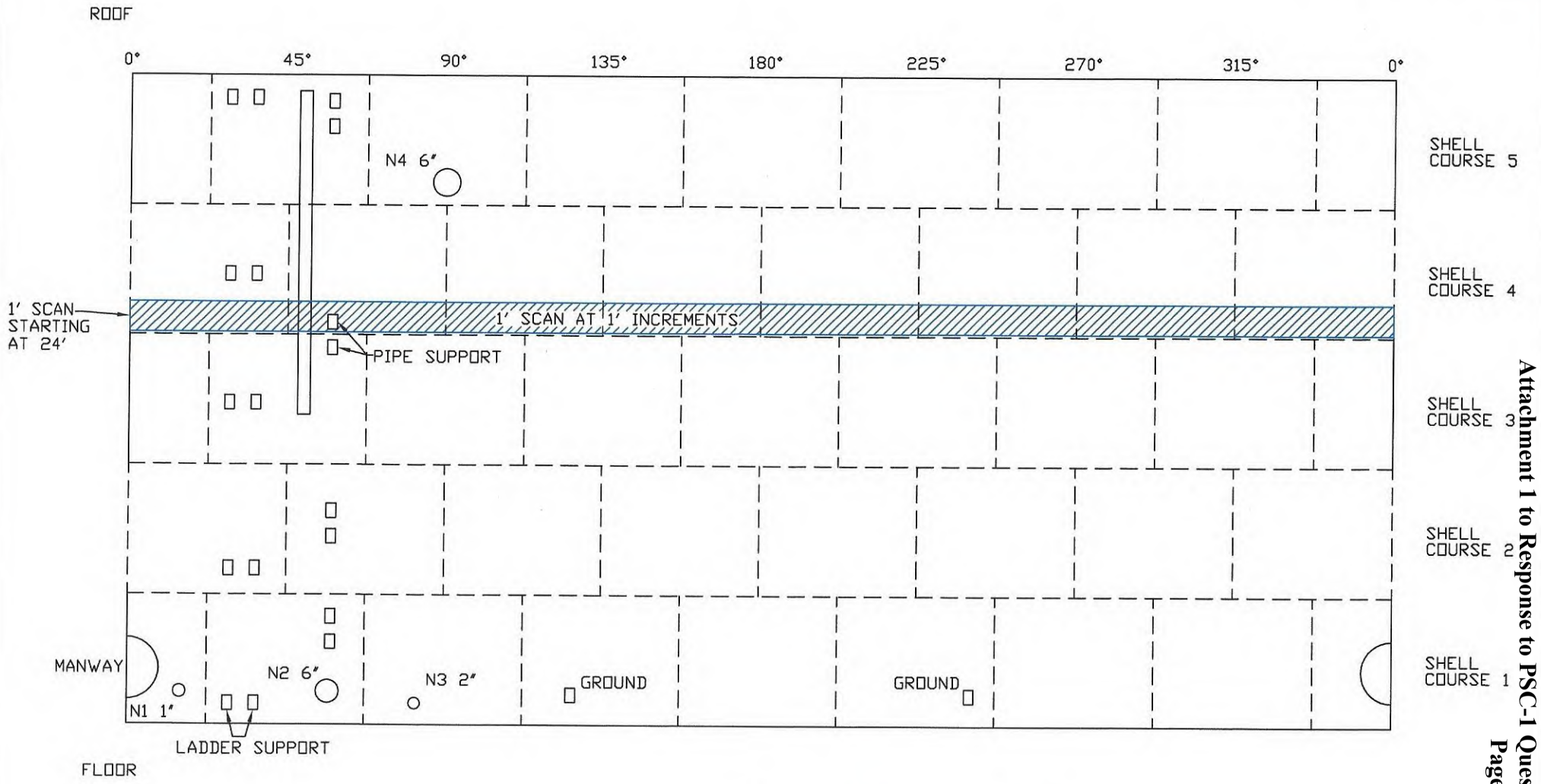
NOTE: UT THICKNESS READINGS ARE INDICATED IN BLUE FOR LOCATION OF INSPECTION. ⊕



— INTEGRITY TESTING & INSPECTION —

LOCATION: KU – GENT, KY				
DESCRIPTION: TI – DIESEL STORAGE TANK				
DRAWN BY: T. LAWSON	SCALE: NTS	DATE: 11-28-2017	TECHNICIANS: TL / PN	DRAWING NAME: SHELL 1

NOTE: UT THICKNESS READINGS ARE INDICATED IN BLUE FOR LOCATION OF INSPECTION. ⊕



— INTEGRITY TESTING & INSPECTION —

LOCATION: KU – GENT, KY				
DESCRIPTION: TI – DIESEL STORAGE TANK				
DRAWN BY: T. LAWSON	SCALE: NTS	DATE: 11-28-2017	TECHNICIANS: TL / PN	DRAWING NAME: SHELL 2

Attachment 1 to Response to PSC-1 Question No. 61
Page 273 of 620
Imber

Case No. 2025-00045

NOTE: UT THICKNESS READINGS ARE INDICATED IN BLUE FOR LOCATION OF INSPECTION. ⊕

LOCATION:
KU – GENT, KY

DESCRIPTION:
TI – DIESEL STORAGE TANK

DRAWN BY:	SCALE:	DATE:	TECHNICIANS:	DRAWING NAME:
T. LAWSON	NTS	11-28-2017	TL / PN	ROOF 1

— INTEGRITY TESTING & INSPECTION —

Inspection Photos



Photo 1: Tank Label



Photo 2: Data Plate



Photo 3: Manway



Photo 4: Plug in weep hole

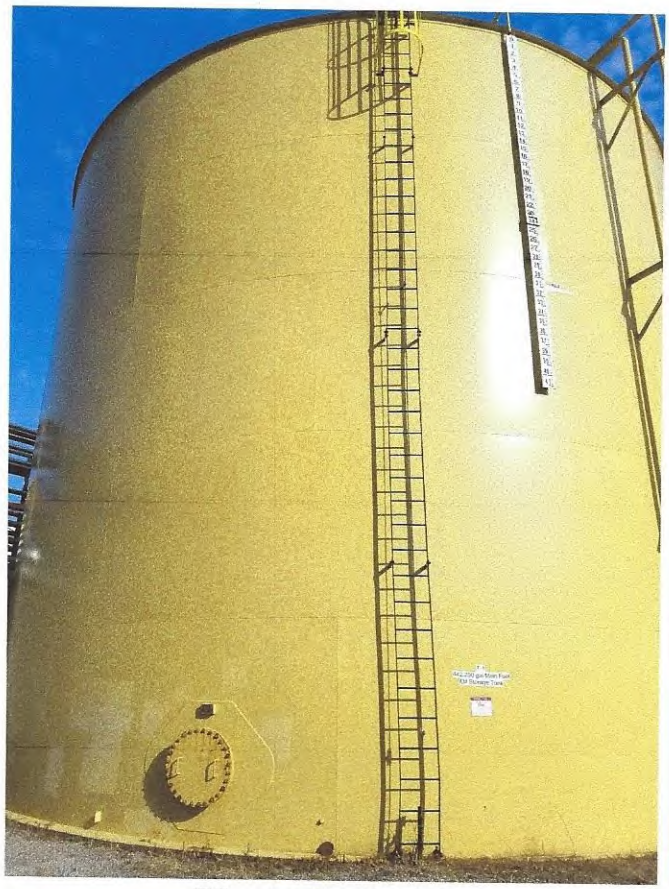


Photo 5: Ladder

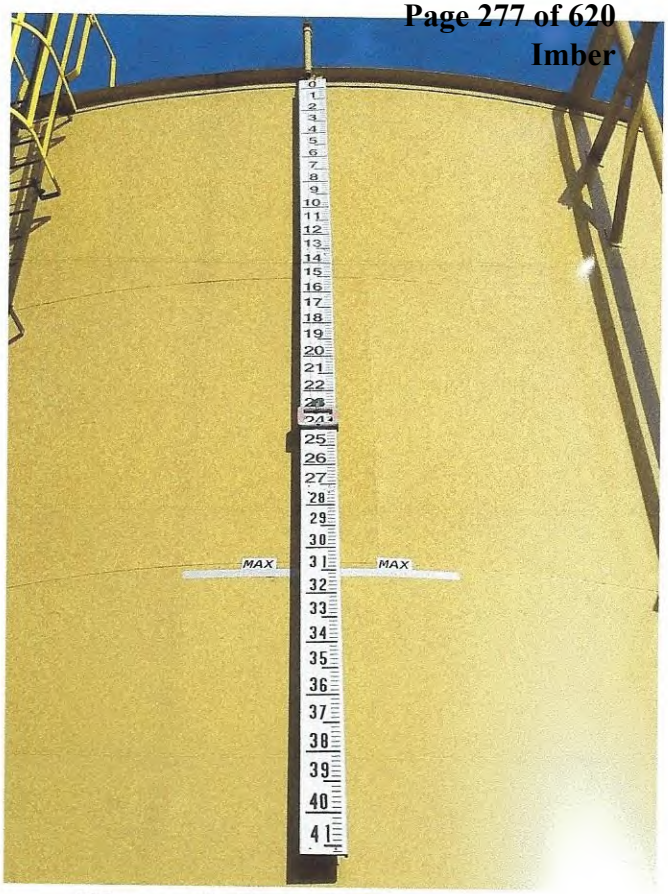
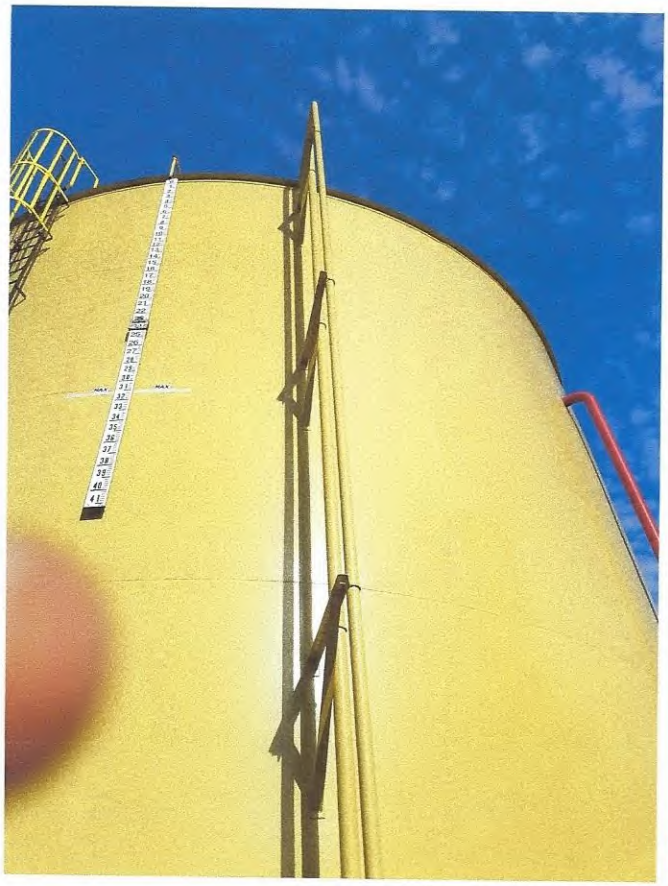


Photo 6: Level Gauge



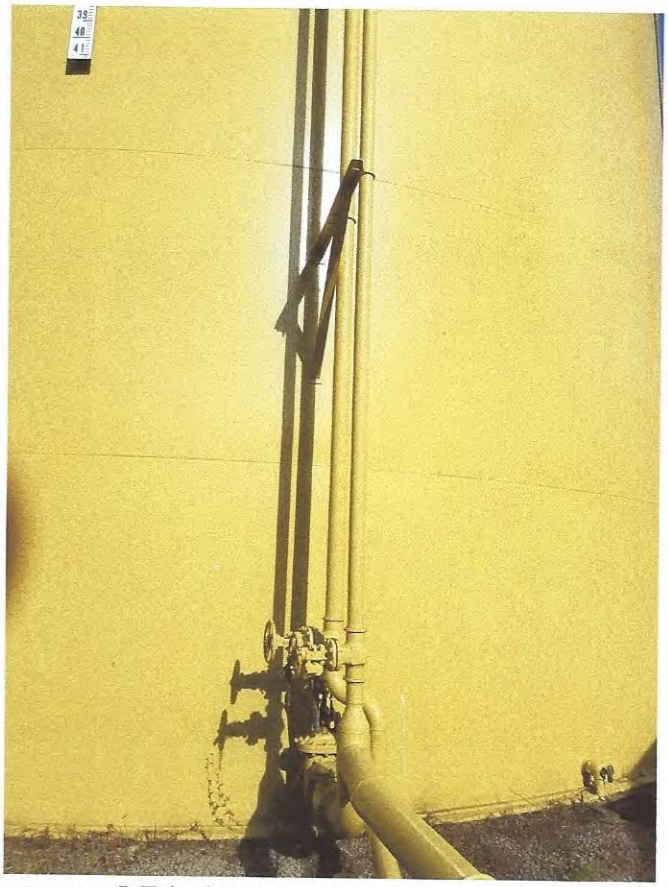


Photo 7 & 8: External Piping



Photo 9: 90° Side of tank

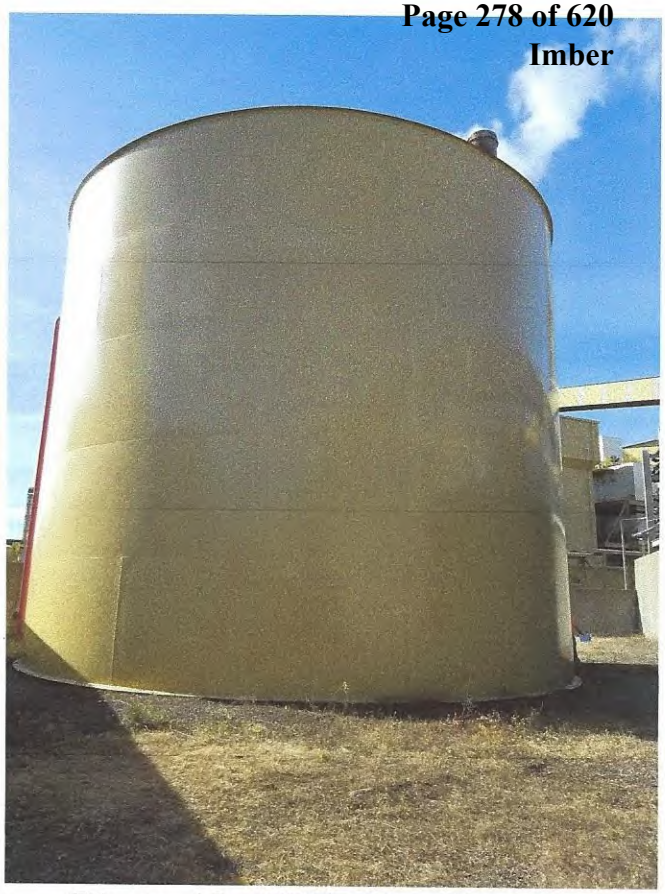


Photo 10: 180° side of tank





Photo 11 & 12: Vegetation and trash



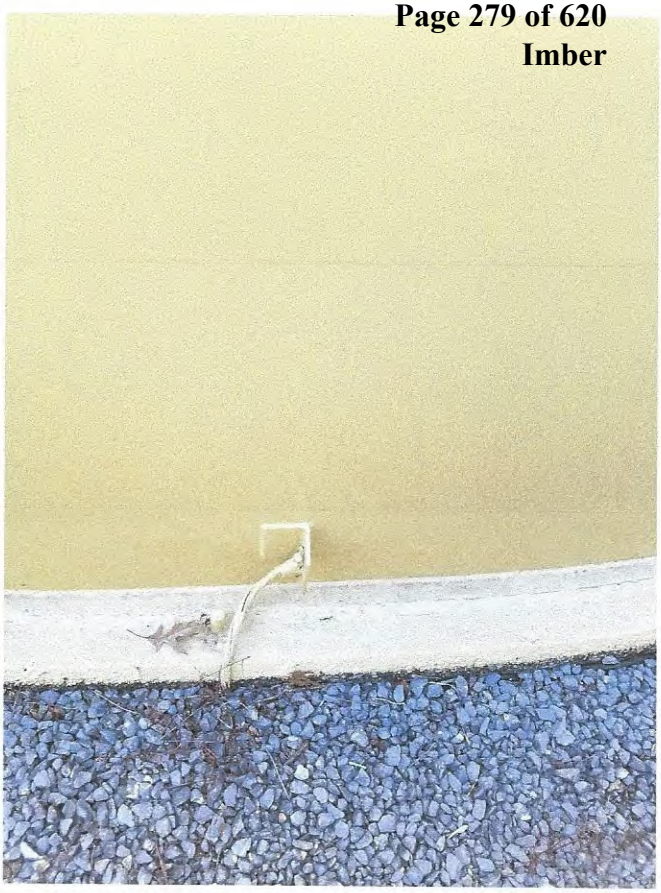


Photo 13 & 14: Grounding connections





Photo 15 & 16: Roof nozzles

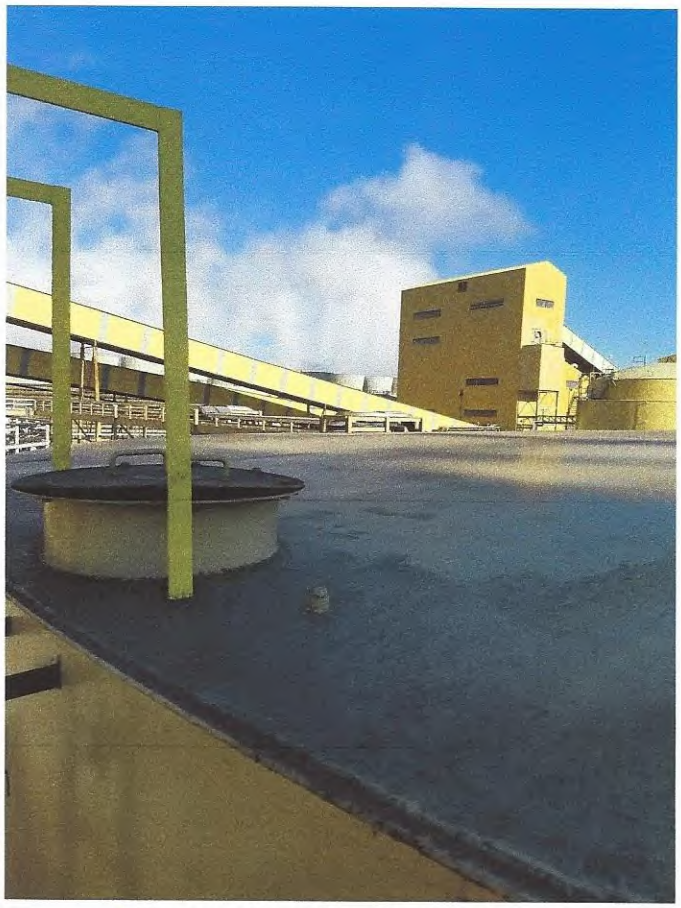


Photo 17: Roof manway

INSPECTION SUMMARY

GENERAL:	An internal visual, MFE floor scan, and Ultrasonic thickness measurements were performed on a diesel storage tank in accordance to API 653. This vessel was visually inspected for service induced deficiencies/deteriorations. The vessel's internal condition was found to be in satisfactory condition (visually) for continued service.
FOUNDATION:	No external inspection was performed during this inspection cycle.
INSULATION:	N/A
EXTERNAL:	No external inspection was performed during this inspection cycle.
INTERNAL:	The vessel's internal condition was found to be in satisfactory condition with no major deficiencies observed. Minor surface corrosion and pitting was observed on the floor. Pitting was measured at 0.0625" and less in depth. Pitting was observed to be superficial and was observed to be scattered about.

REPAIRS RECOMMENDED FOR TANK (SEE OBSERVATIONS / RECOMMENDATIONS)

[ ] YES - ASAP - PRIOR TO RETURNING TO SERVICE [ ] YES- IN A TIMELY MANNER [X] NONE

NEXT INSPECTION DATE:

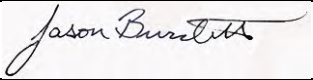
EXTERNAL: ** (*5 YEARS OR ¼ THE REMAINING LIFE, WHICHEVER IS LESS)

INTERNAL: **1-19-2026** (*20 YEARS MAXIMUM)

**BASED ON NORMAL OPERATING CONDITIONS*

*** Should be schedule within a 5 year window maximum from time of installation/in-service date.*

INSPECTOR: *Jason Burchett* DATE: *1-19-2016*

SIGNATURE:  API 653 NO: *40683*

OBSERVATIONS	RECOMMENDATIONS
Internal visual observed scattered areas of pitting. Pitting was measured at 0.0625" and less in depth.	No recommendations at this time.
Minor shell distortions were observed primarily at the 3rd and 4th course, however this distortion appears to be caused by fabrication and not service induced.	
New installed nozzle was observed to be welded from the outside only. Not a full penetration weld / no weld reinforcement noted on the inside.	Consider replacing with a full penetration weld or at a minimum add weld reinforcement *(fillet)* to the I.D of the new nozzle. This nozzle was added to provide an overflow, to prevent the tank from being filled above a certain level. If a leak is detected then follow above consideration.
Pressure relief data of this form was left intentionally blank, as the external visual was not performed during this inspection cycle.	
Visual & MFE floor scan was performed by Jason Burchett API 653.	
Ultrasonic inspection was performed by Tracy Hunter UTT Level II.	

Design Data

Year Built: *1974* Service Date: *NS* Fabricator: *Caldwell Tanks, INC*

Tank Type: ☐ Horizontal ☒ Vertical ☐ Jacketed ☐ Insulated Service/Product: *Diesel Fuel*

Tank Height / Length: *40'* ☐ SS ☐ T/T ☐ Overall Tank Diameter: *48'*

Name Plate Verified: Yes ☒ No ☐ N/A ☐ Drawing / Documentation Available: Yes ☐ No ☒

		Design		*Operating*	
Specific Gravity: *NS*	Design & Operating Press./Temp.:	*NS* psig	*NS* °F	/ *NS* psig	*NS* °F

Roof / Head Type : ☐ Elliptical ☐ ASME F & D ☐ Domed ☐ Conical ☒ Flat ☐ Pan
Crown Radius *NS* Knuckle Radius *NS* Head Ratio *NS* Joint Efficiency *NS*

Bottom / Head Type: ☐ Elliptical ☐ ASME F & D ☐ Domed ☐ Conical ☒ Flat ☐ Pan
Crown Radius *NS* Knuckle Radius *NS* Head Ratio *NS* Joint Efficiency *NS*

Nom. Roof / Head Thickness: *NS* Nom. Bottom / Head Thickness: *NS* Nom. Shell Thickness: *NS*

Shell Joint Construction Type: ☒ Butt Welded ☐ Single Lap Welded ☐ Double Lap Welded
Roof / Head Joint Construction Type: ☐ Butt Welded ☐ Single Lap Welded ☐ Double Lap Welded
Bottom / Head Joint Construction Type: ☐ Butt Welded ☐ Single Lap Welded ☐ Double Lap Welded
Other i.e. Riveted :
Corrosion Allowance: Head "A" *0* Head "B" *0* Shell *0*

	Min. Yield	Min. Tensile
Shell Material: Specification / Grade / Type	*NS*	

"A" Head Material: Specification /Grade / Type *NS*

"B" Head Material: Specification /Grade / Type *NS*

Pressure Relief Device

Pressure / Vacuum Breaker: ☐ Yes ☐ No ☐ N/A Set Pressure: _____ psig or in / Hg
Flame Arrestor: ☐ Yes ☐ No ☐ N/A Condition: _____

Relief Valves: ☐ Located ☐ Not Located ☐ N/A Condition: _____
Valve Tag: ☐ Located ☐ Not Located Test Date: _____ Set Pressure: _____ psig
Within 5 Years: ☐ Yes ☐ No ☐ Same as Rupture Disc Rating ☐ Higher

Rupture Disc: Temp.: _____ °F Pressure: _____ psig ☐ N/A Condition: _____

UT Calibration Data

Equipment Make: *Olympus* Model # : *38 DL+* Serial # : *151143407*
Calibration Block Material : ☒ C/S Serial # : *3218* ☐ S/S Serial # : _____
Transducer Serial # : *D-7908* Size : *0.250"* Frequency: *7.5* MHZ
UT Couplant Type: *SONIX UT* Batch # : *36-07*

NS – Not Supplied

Internal Visual Inspection Results						
Item No.	**Item**	**Good**	**Fair**	**Poor**	**N/A**	
1	**Shell**	X				Satisfactory condition. Minor shell distortions were observed primarily at the 3rd and 4th course, however this distortion appears to be caused by fabrication and not service induced.
2	**Floor / Bottom Head**	X				Satisfactory condition with scattered pitting as documented above.
3	**Roof / Top Head**	X				See Below.
4	**Shell Welds**	X				See Below.
5	**Shell Nozzle Welds**	X				Satisfactory condition.
6	**Floor Welds**	X				Satisfactory condition.
7	**Roof Welds**				X	No access to inspect welds related to the roof.
8	**Trays**				X	
9	**Tray Supports**				X	
10	**Caps & Risers**				X	
11	**Downcomers**				X	
12	**Weirs & Seal pans**				X	
13	**Bolting, Bars & Clips**				X	
14	**Piping, Baffles, & Sprays**				X	
15	**Manway & Flange Seats**	X				
16	**Demister Pad**				X	
17	**Decoalescer Pads**				X	
18	**Coil Pipe**				X	
19	**Coil Supports / Welds**				X	
20	**Coil to Shell Welds**				X	
21	**Dip Pipes**				X	
22	**Agitator Shaft**				X	
23	**Agitator Blades**				X	
24	**Agitator Bolting**				X	
25	**Agitator Seal**				X	
26	**Roof Support Structure**	X				Satisfactory condition.
27	**Roof Column Base Plates**	X				Satisfactory condition.

		Yes	**No**		
28	**Lining/Coatings**		X	**Type:**	**% Lined** :
29	**Hydro, Test**		X	**Test Pressure:**	**PSIG** **Result** :
30	**Corrosion**		X	**Location:**	**Depth** **Size**
31	**NDT Used**	X		**Type**: MFE, & Ultrasonic Thickness	

Notes or Comments:

Inspection of the roof was limited to a remote visual due to “no access”. The roof support beams were observed to be in satisfactory condition with no evidence of distortions. Inspection of the shell welds was limited to the floor and the 1st shell course due to limited access. Inspected welds were observed to be in satisfactory condition.

External Visual Inspection Results						
Item No.	**Item**	**Good**	**Fair**	**Poor**	**N/A**	
1	**Shell**				X	No external inspection was performed during this inspection cycle.
2	**Floor / Bottom Head**				X	
3	**Roof / Top Head**				X	
4	**Nozzles and Fasteners**				X	
5	**Piping and Components**				X	
6	**Valves and Components**				X	
7	**Welds and Seams**				X	
8	**Davits**				X	
9	**Manways & Fasteners**				X	
10	**Stiffner Rings**				X	
11	**Gauges**				X	
12	**Sight Glass**				X	
13	**Platforms/Handrails**				X	
14	**Ladders/Cages/Stairs**				X	
15	**Grating/Treads**				X	
16	**Insulation or Coating**				X	
17	**Weather Jacket**				X	
18	**Supports/Base plates**				X	**Type:**
19	**Anchors/Support bolts**				X	
20	**Foundation (Spalling, etc.)**				X	
21	**Grouting**				X	

		Yes	**No**	**COMMENTS**
22	**Corrosion (Location)**	N/A	N/A	
23	**Name Plate Attached**	N/A	N/A	
24	**Visible Leaks**	N/A	N/A	
25	**Ground Wire**	N/A	N/A	
26	**Visible Distortion**	N/A	N/A	
27	**Weep Holes Okay**	N/A	N/A	
28	**Blistering**	N/A	N/A	
29	**Other**	N/A	N/A	

Notes or Comments:

No external inspection was performed during this inspection cycle.

MFE INSPECTION

NDE Performed: MFE Internal Floor Scan

Inspection of the floor includes a 3 pass minimum *(forward/back/forward)* to ensure that any indications were not missed or overlooked. All plates *(17 Total)* were inspected, no indications were found that suggest the presence of underside corrosion that warrants any concern.

Equipment Information:

Manufacturer: MFE MK3 MANUAL SCANNER
Serial #: 11150108

Ultrasonic Thickness Data

	NORTH	NORTH EAST	EAST	SOUTH EAST	SOUTH	SOUTH WEST	WEST	NORTH WEST
1	0.252	0.253	0.251	0.256	0.264	0.262	0.260	0.257
2	0.263	0.260	0.255	0.256	0.258	0.262	0.261	0.261
3	0.255	0.256	0.258	0.257	0.258	0.297	0.266	0.269
4	0.310	0.361	0.339	0.329	0.318	0.304	0.313	0.324
5	0.318	0.331	0.340	0.335	0.318	0.306	0.316	0.325
6	0.323	0.348	0.322	0.324	0.351	0.310	0.318	0.330
7	0.314	0.357	0.324	0.330	0.315	0.312	0.323	0.325
8	0.311	0.372	0.322	0.333	0.324	0.303	0.326	0.330

UT Thickness was performed on 8 quadrants of the tank, North, North East, etc, etc.

Thickness Point 1 – Taken 6” from the corner weld (floor)

Thickness Point 2 – Taken 3” from the corner weld (floor)

Thickness Point 3 – Taken 1” from the corner weld (floor)

Thickness Point 4 – Taken 1” from the corner weld (wall/shell)

Thickness Point 5 – Taken 3” from the corner weld (wall/shell)

Thickness Point 6 – Taken 6” from the corner weld (wall/shell)

Thickness Point 7 – Taken at the center point of the wall/shell

Thickness Point 8 – Taken 6” from the 1st to 2nd course weld seam

Average Wall Reading – 0.326”

Ultrasonic Thickness Data Cont.

1	0.254	**11**	0.264	**21**	0.259	**31**	0.251
2	0.256	**12**	0.260	**22**	0.262	**32**	0.259
3	0.257	**13**	0.264	**23**	0.269	**33**	0.268
4	0.256	**14**	0.260	**24**	0.272	**34**	0.242
5	0.257	**15**	0.261	**25**	0.243	**35**	0.242
6	0.257	**16**	0.257	**26**	0.263	**36**	0.242
7	0.255	**17**	0.262	**27**	0.246	**37**	0.242
8	0.255	**18**	0.272	**28**	0.266	**38**	0.246
9	0.270	**19**	0.261	**29**	0.249	**39**	0.247
10	0.266	**20**	0.262	**30**	0.247	**40**	0.235

41	0.245	**51**	0.260	**61**	0.262	**71**	0.257
42	0.244	**52**	0.272	**62**	0.263	**72**	0.258
43	0.246	**53**	0.263	**63**	0.256	**73**	0.256
44	0.258	**54**	0.289	**64**	0.255	**74**	0.266
45	0.252	**55**	0.264	**65**	0.256	**75**	0.296
46	0.254	**56**	0.262	**66**	0.280	**76**	0.297
47	0.246	**57**	0.257	**67**	0.260	**77**	0.298
48	0.254	**58**	0.258	**68**	0.253	**78**	0.262
49	0.249	**59**	0.258	**69**	0.256		
50	0.287	**60**	0.274	**70**	0.267		

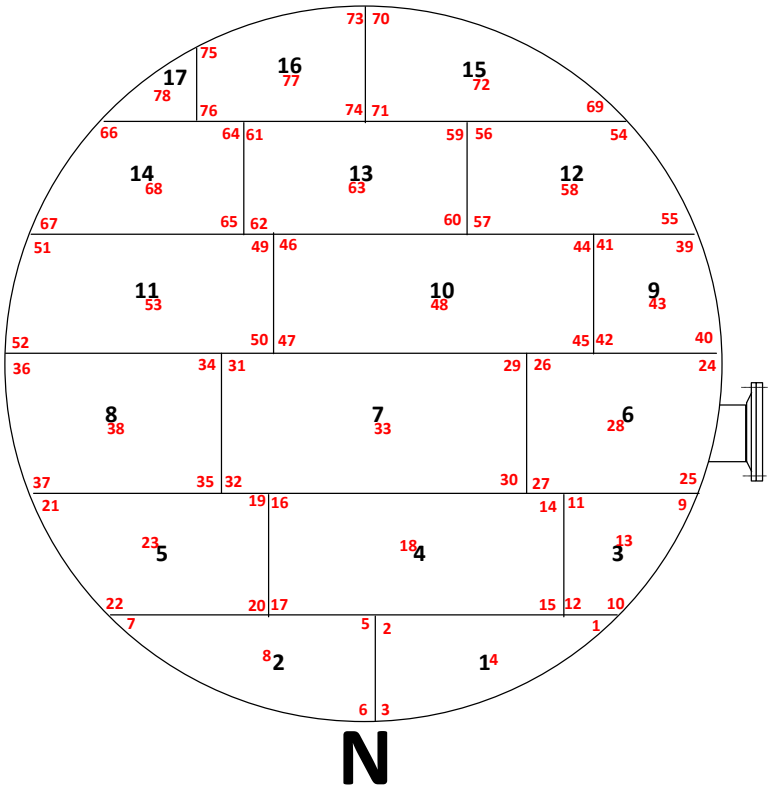
UT Thickness was performed on all 17 floor plates. Typical point locations are 1 at each corner of the plate and 1 in the center. Please refer to the sketch below for reference.

Average Floor Reading – 0.260”

FLOOR REF.

Black #'s – Assigned Plate #

Red #'s – UT Data Point



TEAM Industrial Services, Inc.

Description -	MFE Floor Scan *& UTT Layout*	**Equipment I.D -**	442,250 gal. Main Fuel Oil Storage Tank	**Plant -**	Ghent
M.O.C - Carbon Steel		**Insulated – YES** ☐ **NO** ☑ **PARTIAL** ☐		**PAGE** 1 **of** 1	

<table>
<tr><td> 
</td><td>  </td></tr>
<tr><td>Image #1: Data Plate</td><td>Image #2: New Installed Nozzle
(Not a full Penetration Weld)</td></tr>
<tr><td>  </td><td>  </td></tr>
<tr><td>Image #3: Example of Corner Welds</td><td>Image #4: Example of Floor Plate Welds</td></tr>
</table>

	
Image #5: Example of Nozzle Welds	Image #6: Example of T – Junction Welds
	
Image #7: Example of Shell Welds (Vertical)	Image #8: Example of Floor to Shell

	
Image #9: Example of Shell Over All Condition	Image #10: Example of Floor Condition
	
Image #11: Example of Manway Weld	Image #12: Example of Support Column Base



Roof & Supports



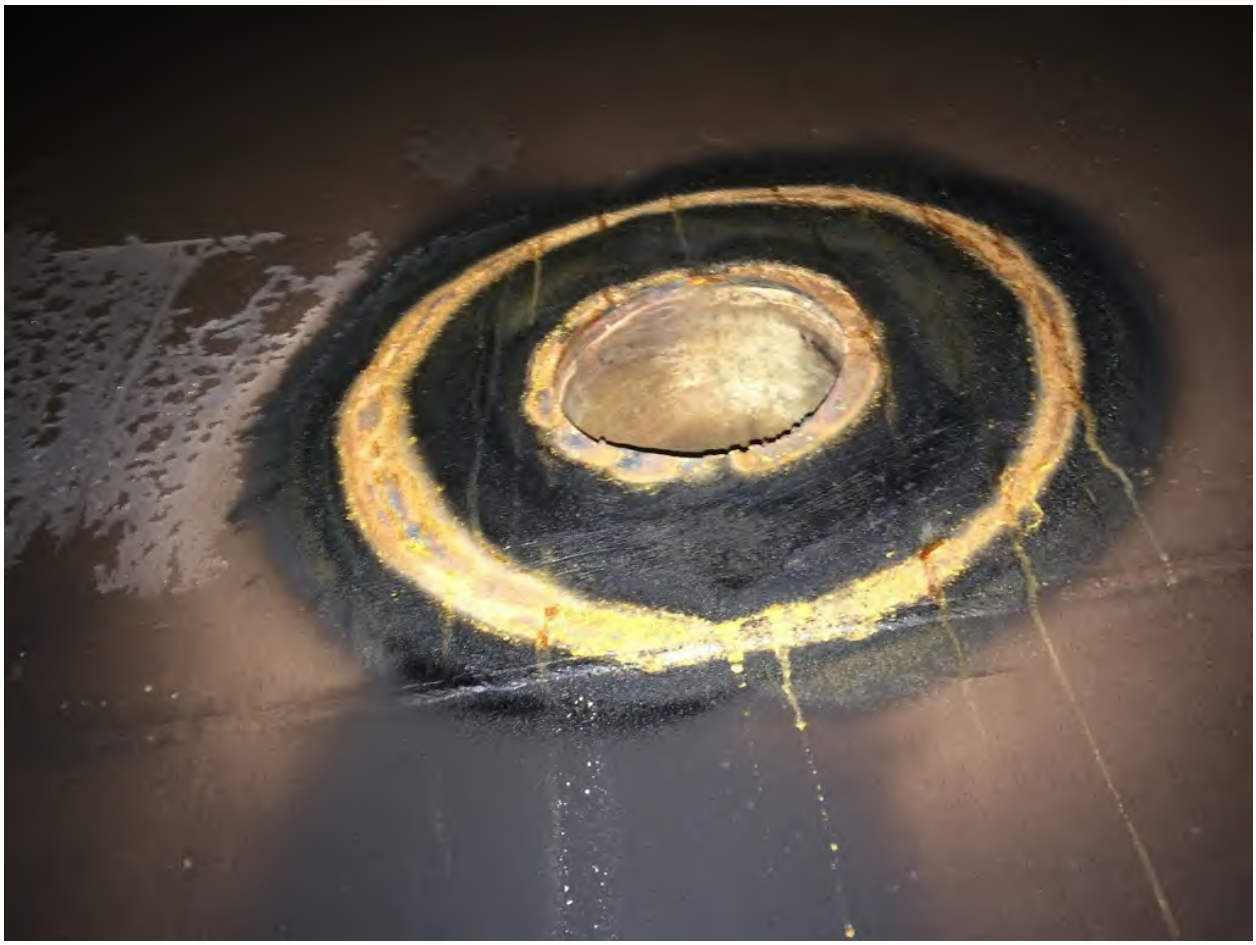
Floor Condition / Pitting Observed

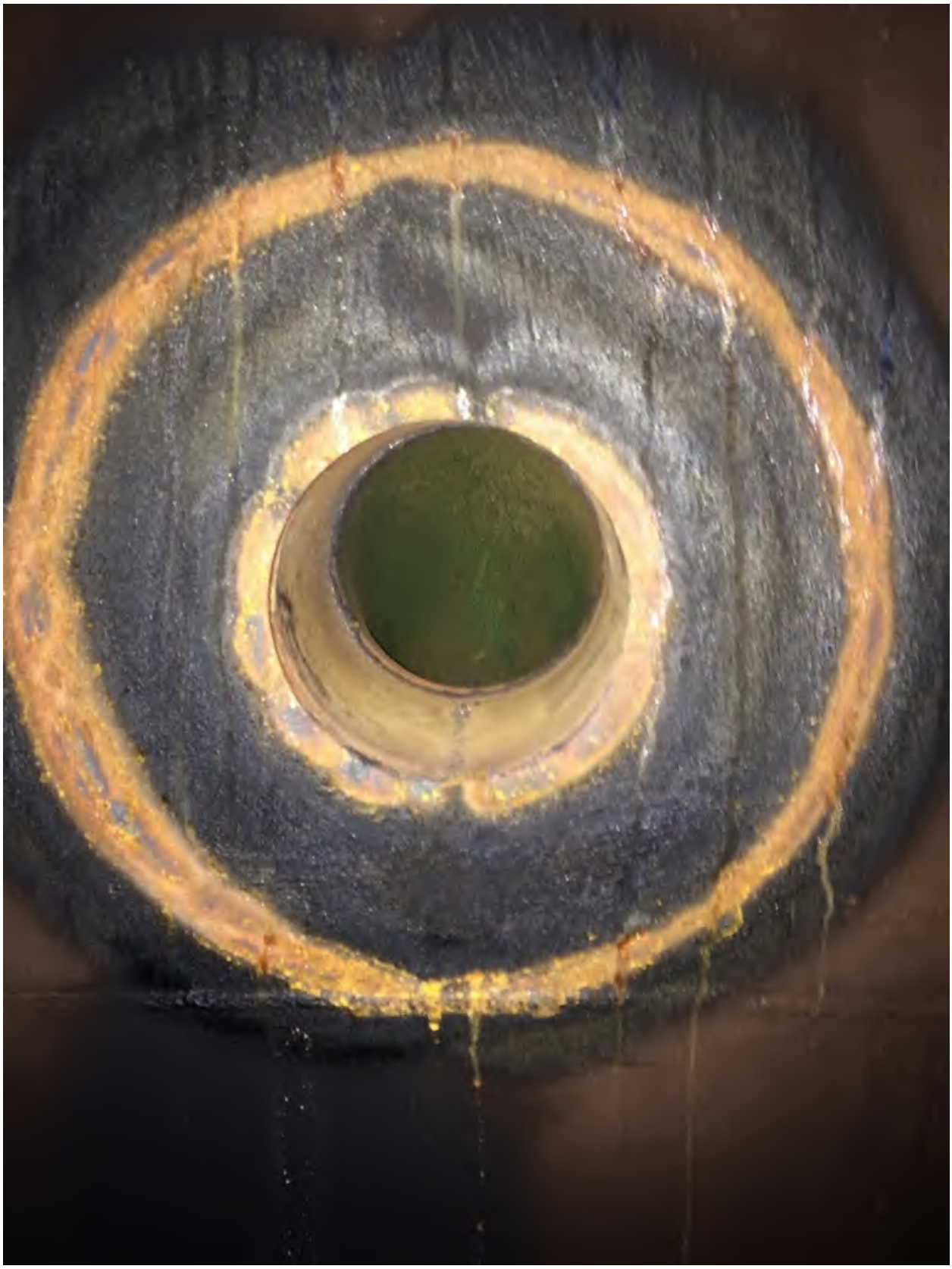


Sump

NOTE – Below are larger and additional pictures (without description)















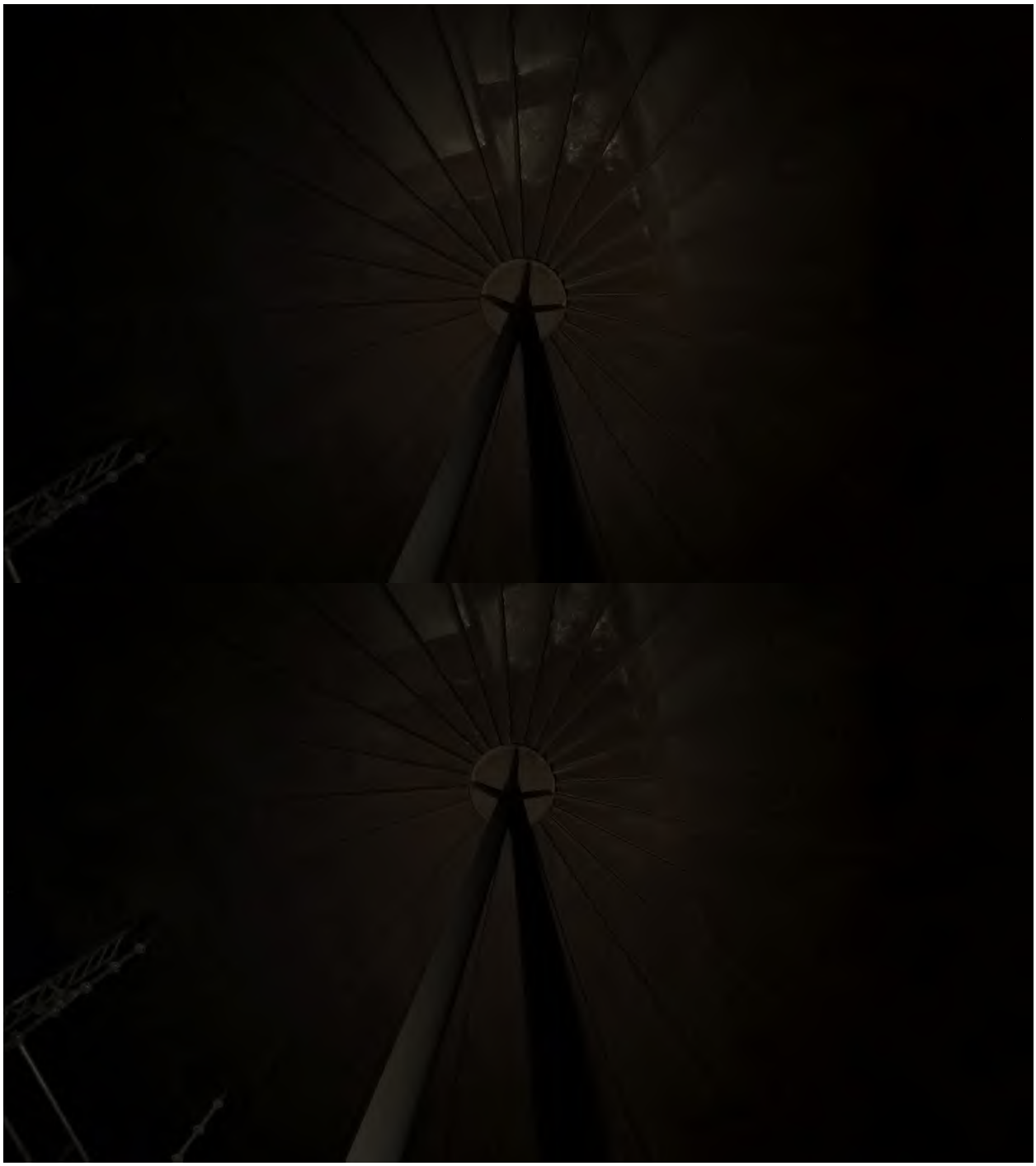













API STD 650
YEAR
1974
NOMINAL DIAMETER
48'0"
NOMINAL HEIGHT
40'0"
NOMINAL CAPACITY
12,500
BARRELS (42 GAL.)
FABRICATED BY
CALDWELL TANKS, INC
CERTIFICATE OF AUTHORITY NO.
67
CALDWELL TANKS, INC

TANK INSPECTION REPORT

Owner: Kentucky Utility

Date: 05/17/04

Location: Ghent , Kentucky

Ht.40'-0"X Dia. 48'-0"

Service: Fuel Oil Tank

Code: API- 650

Year Built: 1974

Orig. Thickness: .350

Material: unknown

Eq. No. fuel oil tank

Other applicable codes: API-650 API-653

On May 17 th. 2004 the Fuel Oil Storage tank owned and operated by Kentucky Utilities was internally and externally inspected by an API-653 Certified Inspector. The Fuel Oil Tank located in Ghent, Kentucky was removed from service and pressure washed for this inspection. A visual inspection as well as ultrasonic thickness readings were collected and are contained in this report. The ultrasonic thickness readings are recorded on the shell rollout map and also on the drawing for the tank floor. All thickness readings are well above retirement values. There were no thin spots indicated during this inspection. The tank floor has good contours with no sign of unusual settlement indicating a foundation problem. This tank was erected on a concrete ring wall extending above the berm of the dike floor. The chime area shows signs of failure of the paint and the sealer between the tank chime and the ring wall. Counter clockwise facing the manway and between 1v5 and 1v6 shell verts, there is an area in the weld that appears to be a small pin hole.

The shell appears to be in good condition and suited for continued service. There are no indications of misalignment or peaking and banding. The shell paint is in good condition except in the chime area as noted. All tank grounds are in good condition and have been properly attached with grounding lugs. The center column roof support is welded to the floor and does not have a mouse hole at the base. (The mouse hole keeps the center column from becoming filled with product which makes it next to impossible to drain safely). The shell nozzles and manway welds all appear sound and no leaks were noted. The repad on the manway has been plugged. This weep hole is to aid in monitoring the condition of the shell to nozzle welds and should only be plugged if this weld leaks. The repad thickness is consistent with the first shell ring plate thickness.

The upper shell rings all have good alignment and the welds have good contours. There were no indications of misalignment or areas that were repaired during the erection of this tank. The ladder attachments all are in good condition and the ladder has a safety line attachment to allow access to the roof. The roof plates show no signs of settlement in the tank shell or foundation. There are, however, several areas where water has been ponding and causing the paint to fail. The roof manway is located at the top of the exterior ladder and above the shell manway. The center roof vent has bird screen in the opening. The roof inspection access was limited to observation from the access ladder.

SUMMARY

1. Consider removing failed paint and caulk from the chime area by power brushing. Replace sealing caulk with GE-RTV-108 or similar caulk. Prime and paint the chime area and closely monitor the area of suspected pin hole.

2. Install a mouse hole in the base of center column to allow product to drain from the I.D. .

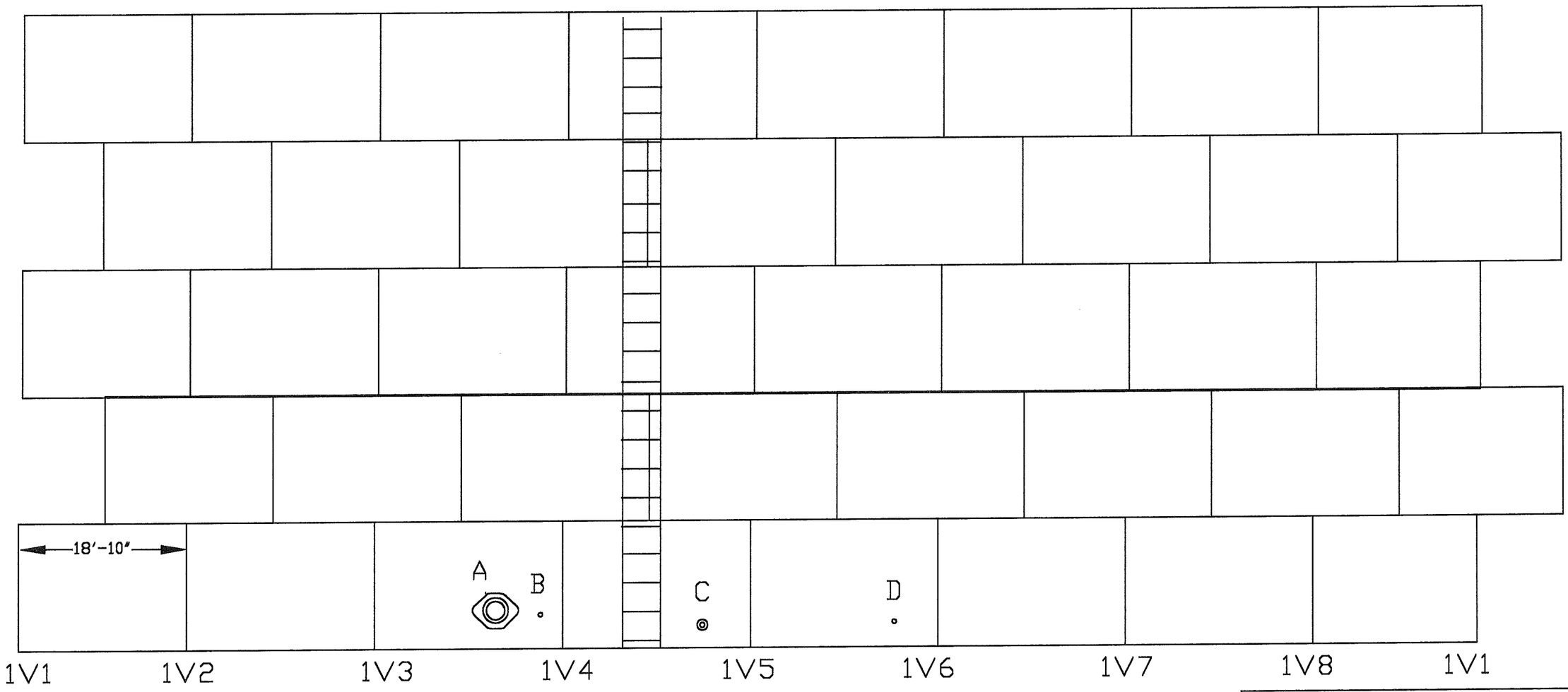
3. Remove failed paint from low areas on the roof and prime and paint.

4. Remove trees and bushes in the immediate area of the shell.

Date: May 17, 2004 Lic. No. 0250

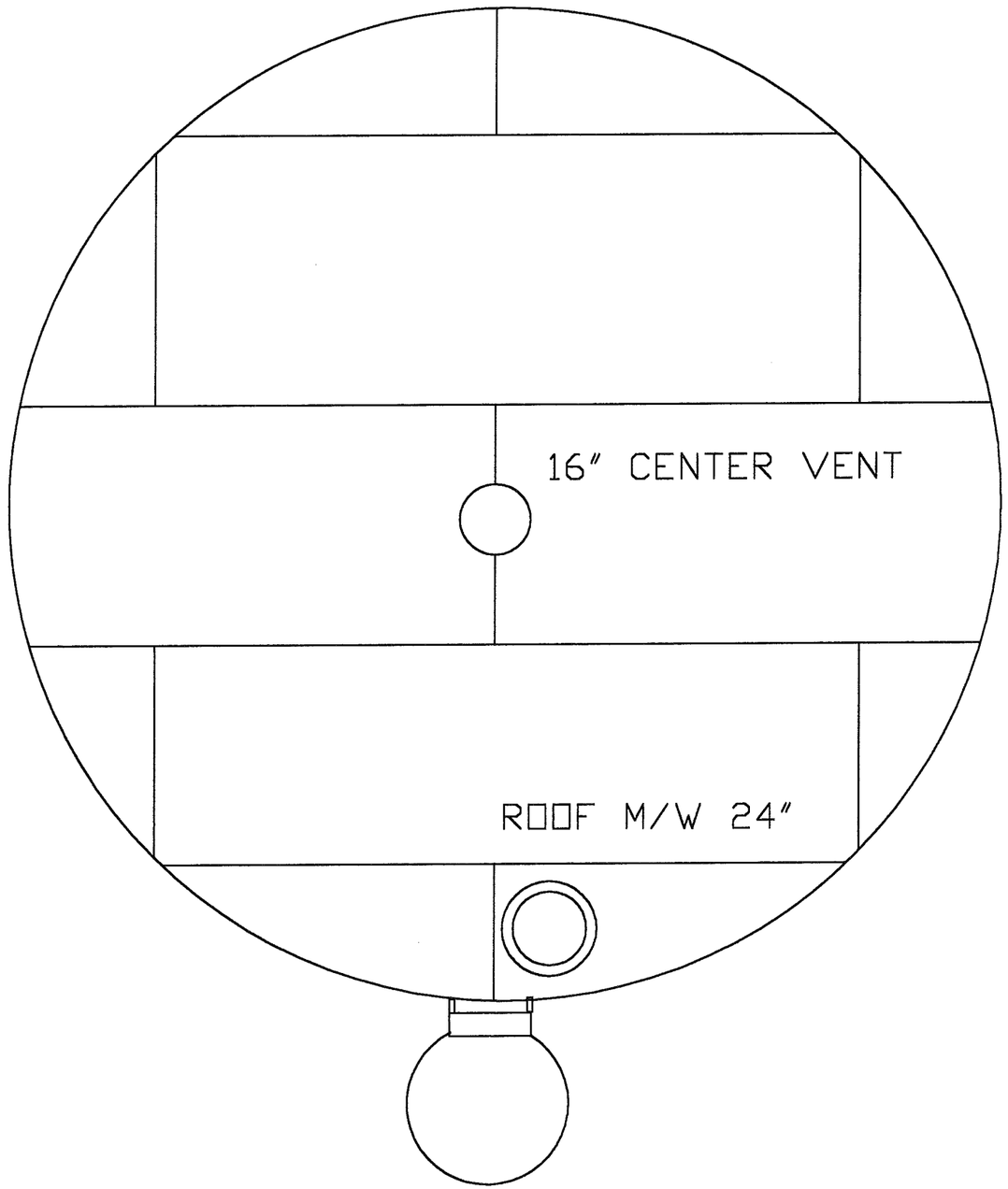
A.P.I. Inspector Mike Drees Exp.Date 10/20/04

EVERGREEN GROUP



CLIENT: KENTUCKY UTILITY
LOCATION: GHENT, KENTUCKY
EQ. No. FUEL OIL TANK
HEIGHT 48'-0" DIA. 40'-0"
EQ. NAME: No. 2 FUEL STORAGE
DATE: 5-18-04
YEAR BUILT: 1974

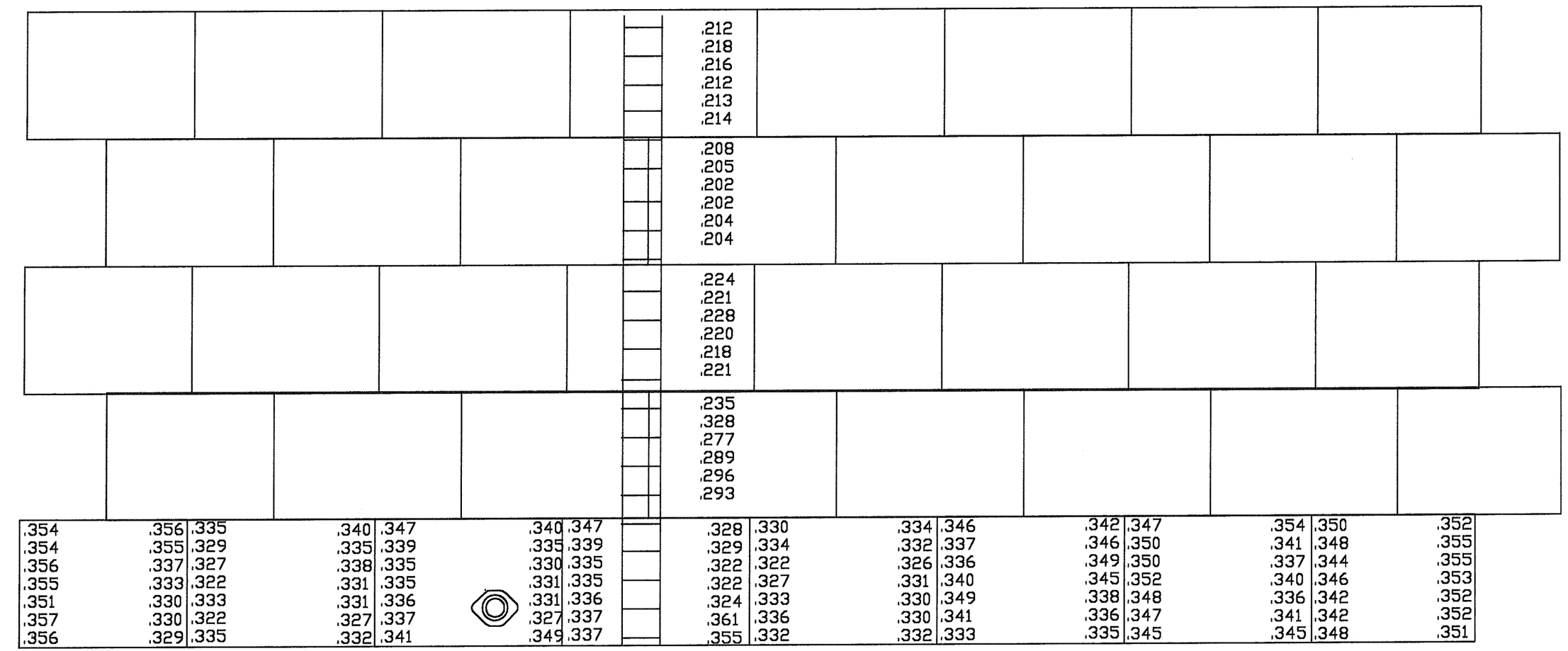
EVERGREEN GROUP



ROOF ORIENTATION
24" MANWAY
16" CENTER ROOF VENT

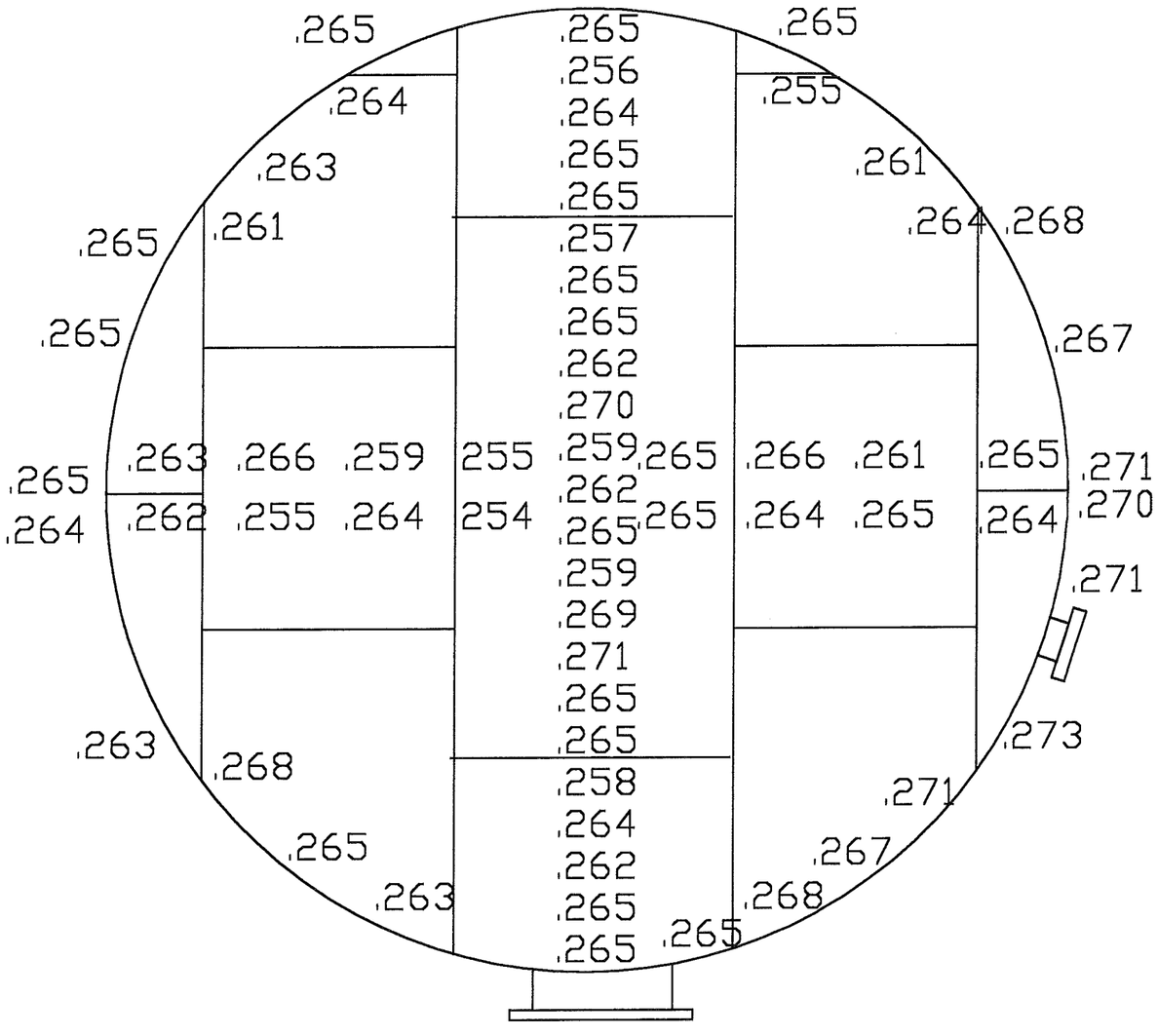
CLIENT: KENTUCKY UTILITY
LOCATION: GHENT, KENTUCKY
EQ. No. FUEL OIL TANK
HEIGHT 48'-0" DIA. 40'-0"
EQ. NAME: No. 2 FUEL STORAGE
DATE: 5-18-04
YEAR BUILT: 1974

EVERGREEN GROUP



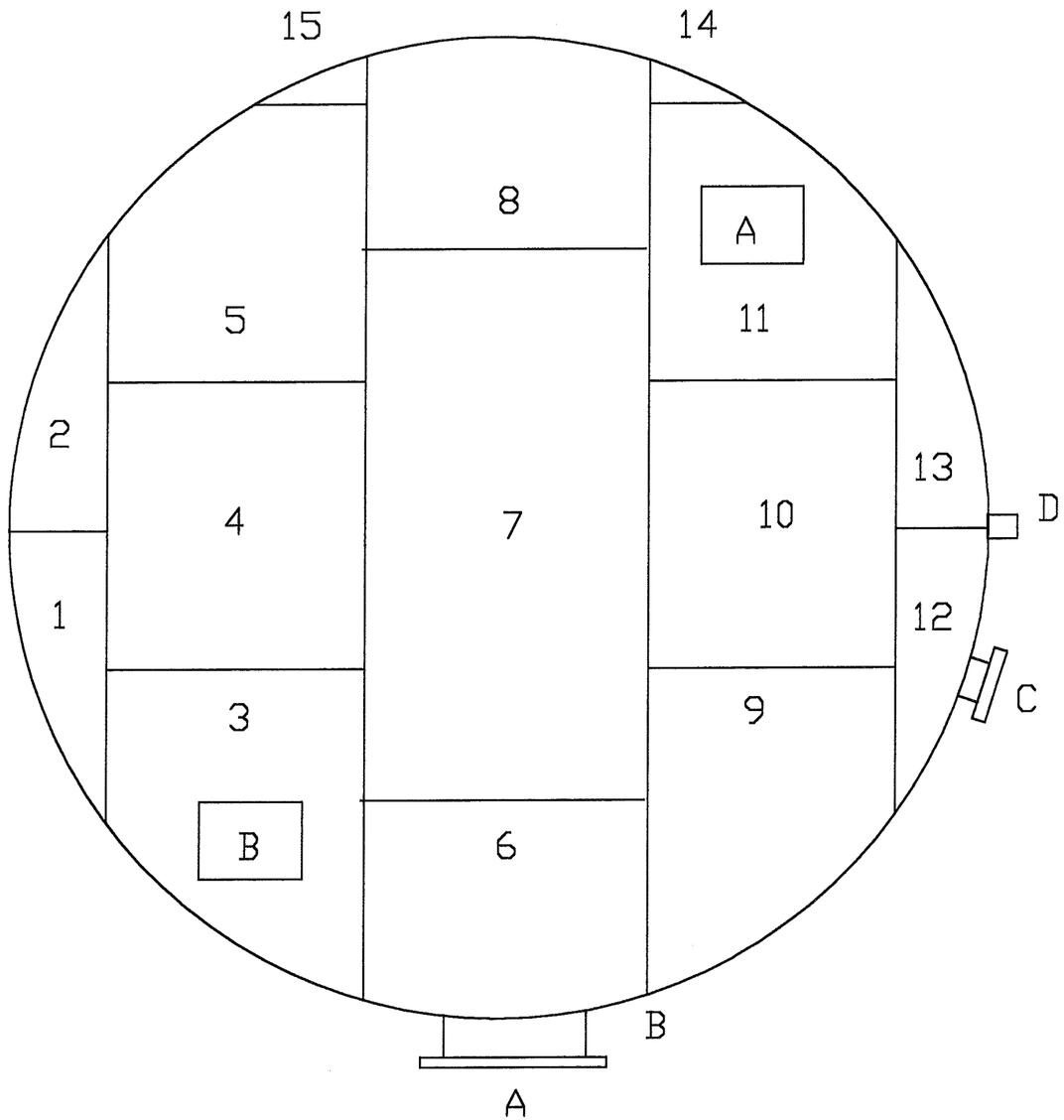
CLIENT: KENTUCKY UTILITY
LOCATION: GHENT, KENTUCKY
EQ. No. FUEL OIL TANK
HEIGHT 48'-0" DIA. 40'-0"
EQ. NAME: No. 2 FUEL STORAGE
DATE: 5-18-04
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EVERGREEN GROUP



CLIENT: KENTUCKY UTILITY
LOCATION: GHENT, KENTUCKY
EQ. No. FUEL OIL TANK
HEIGHT 48'-0" DIA. 40'-0"
EQ. NAME: No. 2 FUEL STORAGE
DATE: 5-18-04
YEAR BUILT: 1974

EVERGREEN GROUP



FLOOR PLATE LAYOUT AND
LOCATION OF GRID U/T
READINGS IN TWO AREAS,

A= 24" MANWAY
B= 1" PLUGGED COUPLING
C= 6"FILL/SUCTION NOZL
D= 3" WATER DRAW NOZL

CLIENT: KENTUCKY UTILITY
LOCATION: GHENT, KENTUCKY
EQ. No. FUEL OIL TANK
HEIGHT 48'-0" DIA. 40'-0"
EQ. NAME: No. 2 FUEL STORAGE
DATE: 5-18-04
YEAR BUILT: 1974

EVERGREEN GROUP

ULTRASONIC THICKNESS READINGS TAKEN AT TWO INCH SPACING FROM TWO FLOOR PLATES. SEEFLOOR PLATE LAYOUT FOR SHEET LOCATIONS.

.265	.267	.267	.268	.265
.266	.268	.266	.267	.269
.265	.265	.266	.267	.269
.265	.264	.267	.265	.269
.269	.271	.265	.263	.265
.265	.264	.269	.268	.265
.265	.264	.266	.265	.265
.266	.265	.263	.265	.265

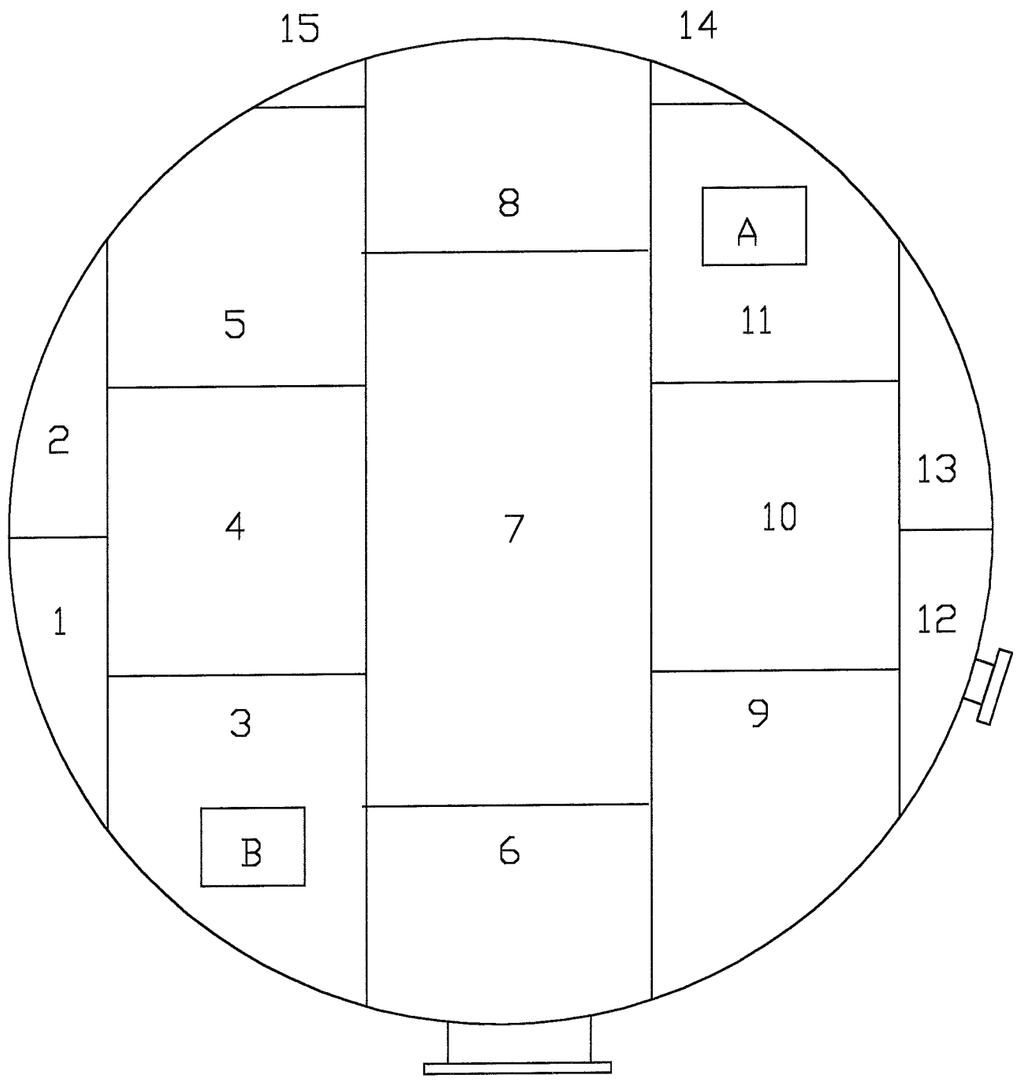
A

.267	.261	.265	.258	.262
.265	.263	.265	.268	.265
.265	.263	.264	.265	.264
.266	.261	.269	.265	.265
.268	.265	.263	.265	.265
.268	.265	.025	.266	.268
.265	.269	.265	.269	.295
.266	.263	.265	.264	.265

B

CLIENT: KENTUCKY UTILITY
LOCATION: GHENT, KENTUCKY
EQ. No. FUEL OIL TANK
HEIGHT 48'-0" DIA. 40'-0"
EQ. NAME: No. 2 FUEL STORAGE
DATE: 5-18-04
YEAR BUILT: 1974

EVERGREEN GROUP



FLOOR PLATE LAYOUT AND
LOCATION OF GRID U/T
READINGS IN TWO AREAS,

CLIENT: KENTUCKY UTILITY
LOCATION: GHENT, KENTUCKY
EQ. No. FUEL OIL TANK
HEIGHT 48'-0" DIA. 40'-0"
EQ. NAME: No. 2 FUEL STORAGE
DATE: 5-18-04
YEAR BUILT: 1974

Tank T-002
100,000-Gallon Units 1 & 2 Fuel Oil Tank

PROJECT NUMBER: 2022-03519

KU-LG&E

TANK T-2

INSPECTION DATE(S): 08/09/2022



DATE	PREPARED BY	APPROVED BY:	APPROVER SIGNATURE
9/14/2022	William Stout	Brian O'Leary	

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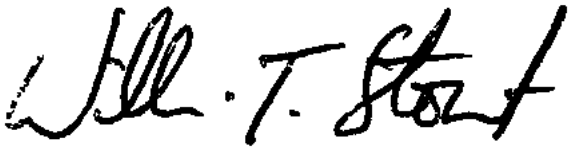
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1.0 INTRODUCTION

On 08/09/2022, Gecko Robotics performed an in-service inspection of Tank T-2 at the KU-LG&E Plant, located in Ghent, KY. The results of this inspection were used to provide an evaluation per the applicable criteria of API 653, Fifth Edition, Addendum 1 April 2018, Addendum 2 May 2020 standard.

Gecko Robotics Personnel for Project:



William Stout, API 653. Certification 25296

Additional NDT Technicians

Kelly Keil

2.0 TANK DESCRIPTION

Customer	KU-LGE	**Location**	Ghent, KY
Tank	Tank 2	**Project**	2022-03519

GENERAL TANK INFORMATION	
Manufacturer (Repair/Altered)	Unknown
Design Standard	API STD 650 (assumed
Product	Diesel Fuel
Cathodic Protection	No
Data Plate	No
DOT Regulated Tank	No
TANK DIMENSIONS	
Tank Diameter	27.0
Height	24.0
Nominal Capacity	2,447 Bbls
Safe Fill Height	24.0
Product Height During Inspection	15'-1" (per ATG board)
TANK DESIGN DETAILS	
Foundation Type	Concrete Slab / Pedestal
Bottom Type	Unknown
Shell Type	Butt Welded, Carbon Steel, Unknown Grade
Fixed Roof Type	Self-Supported Cone, Lap Welded CS, Unknown Grade
Floating Roof Type	N/A
DATES	
Year Built / Reconstructed	1972
Tank Bottom Replacement	N/A
Previous Inspection	August 2018
Date of Internal Coating	Unknown
Data of External Coating	Unknown
TANK ACCESS	
Stairway	Fixed ladder, vertical
TANK COATING	
Bottom	Unknown
Shell (External)	Thin film epoxy, beige
Shell (Internal)	Unknown
Fixed Roof (External)	Thin film epoxy, beige
Fixed Roof (Internal)	Unknown

3.0 INSPECTION INTERVALS

In-Service Inspection Intervals	
Shell External Visual Inspection	5 years – August 2027
Shell Ultrasonic Thickness Survey	15 years – August 2037*

Out-of-Service Inspection Interval	
Next Out-of-Service Interval	8/23/2028*
Bottom Repair	--

Note – Out-of-Service Inspection Interval based upon the previous Internal inspection report. The tank is on a 10 year inspection cycle. Ultrasonic thickness survey of the shell can be completed at the same time as the out-of-service inspection to bring them in line but are unnecessary until 2037 per the calculated corrosion rate.

4.0 RECOMMENDATIONS OF INSPECTION FINDINGS

External Shell and Appurtenances

1. The shell penetrations at nozzles N1, N2, N4, N5, and N6 were not provided with a reinforcing plates. Recommend installation of a nozzle reinforcing plate at the next out-of-service inspection and repair cycle, or sooner if a change in condition occurs. See API STD 650 Table 5.6b for guidance on shell nozzle reinforcing plates.








2. There was evidence of a product weep through the gasket in the lower half of the flange at nozzle N1. Recommend tightening the fastening hardware to the correct torque.





3. Tank was not provided with a nameplate. Recommend installation of a nameplate at the next out-of-service inspection and repair cycle. Refer to API STD 653, Section 13 Marking and Recordkeeping for guidance.

External Roof and Appurtenances

1. Access to the fixed roof was limited to visual from the manlift. The center circulation vent opening did not appear to have a screen protecting the opening. Recommend installation of a screen to prevent wildlife from entering the space.





2. The roof manway cover, nozzle R1, was not secured with fastening hardware. Recommend installation of fastening hardware.



Tank Containment

1. Inspector noted cracking in the containment area adjacent to drain basin structures and tank foundation slab. Recommend crack repair and sealing to restore containment integrity.







5.0 SHELL THICKNESS CALCULATION

The minimum acceptable shell thickness for tanks with a diameter equal to or less than two hundred (200) feet is calculated utilizing API 653, Para. 4.3.3.1:

$$t_{min} = \frac{2.6(H-1)DG}{SE}$$

where

t_{min}	=	minimum acceptable thickness, but not less than 0.1 (in.)
D	=	nominal diameter of tank (ft)
H	=	height from bottom of the shell course under consideration to max liquid level (ft)
G	=	highest specific gravity of contents
S	=	maximum allowable stress (PSI)
	=	smaller of 0.80Y or 0.429T for first two courses
	=	smaller of 0.88Y or 0.472T for all other courses
Y	=	specified minimum yield strength of plate; 30,000 if unknown (PSI)
T	=	smaller of specified minimum tensile strength of the plate or 80,000; use 55,000 if unknown (PSI)
E	=	original joint efficiency for the tank from Table 4.2

Diameter	**(D)**	27.00	ft
Max Liquid Level	**(H)**	24.00	ft
Specific Gravity	**(G)**	0.87	
Joint Efficiency	**(E)**	0.70	
Minimum yield	**(Y)**	30,000	PSI
Minimum Tensile Strength	**(T)**	55,000	PSI

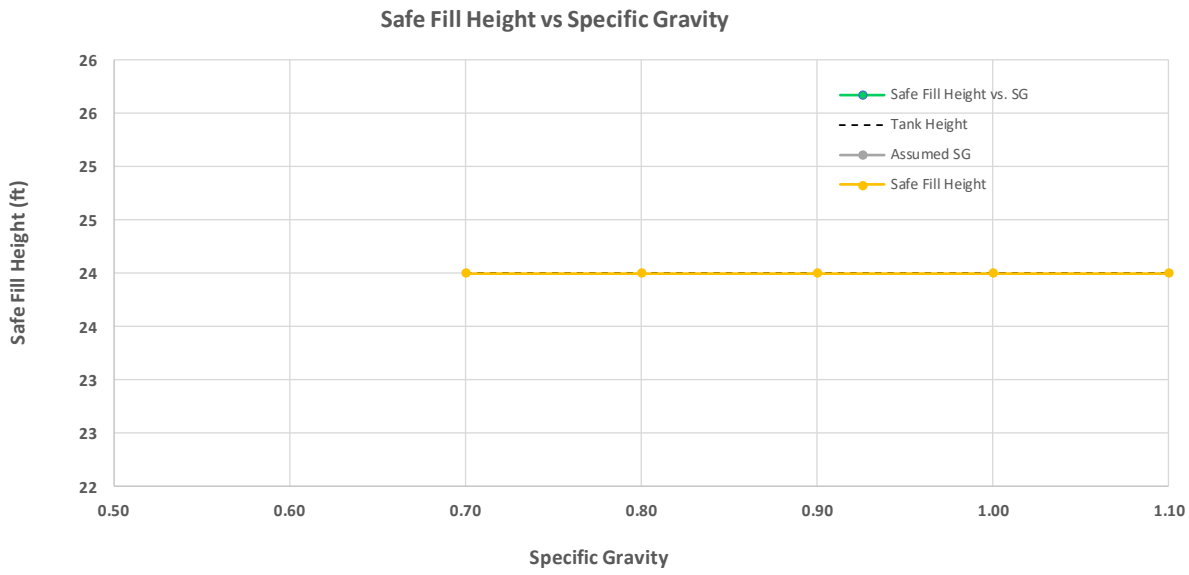
Product Conditions

Course Number	Course Height	Course Height	Product Height	Allowable Stress (S)	Min. Acceptable Thickness (t_{min})	Min. Measured Thickness	Acceptable
	(in)	(ft)	(ft)	(PSI)	(in)	(in)	
3	96.0000	8.00	8.000	25,960	0.100	0.246	Yes
2	96.0000	8.00	16.000	23,595	0.100	0.248	Yes
1	96.0000	8.00	24.000	23,595	0.100	0.249	Yes

Hydrotest Conditions

Course Number	Course Height	Course Height	Product Height	Allowable Stress (S)	Min. Acceptable Thickness (tmin)	Min. Measured Thickness	Acceptable
	(in)	(ft)	(ft)	(PSI)	(in)	(in)	
3	96.0000	8.00	8.000	27,000	0.100	0.246	Yes
2	96.0000	8.00	16.000	25,960	0.100	0.248	Yes
1	96.0000	8.00	24.000	25,960	0.100	0.249	Yes

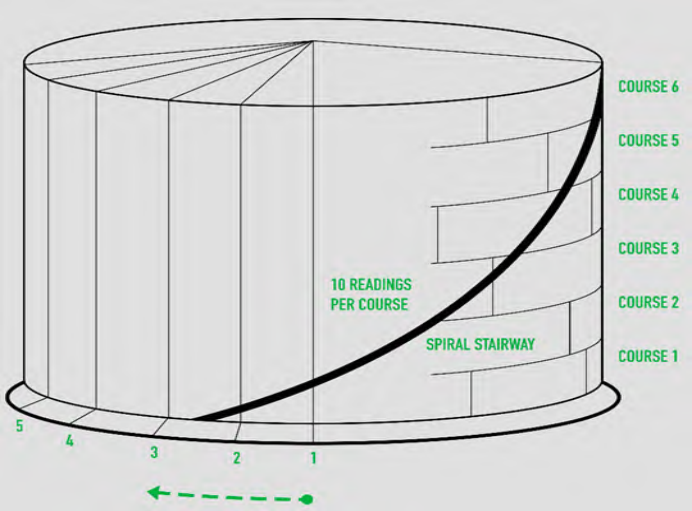
6.0 SHELL THICKNESS CALCULATION CHART



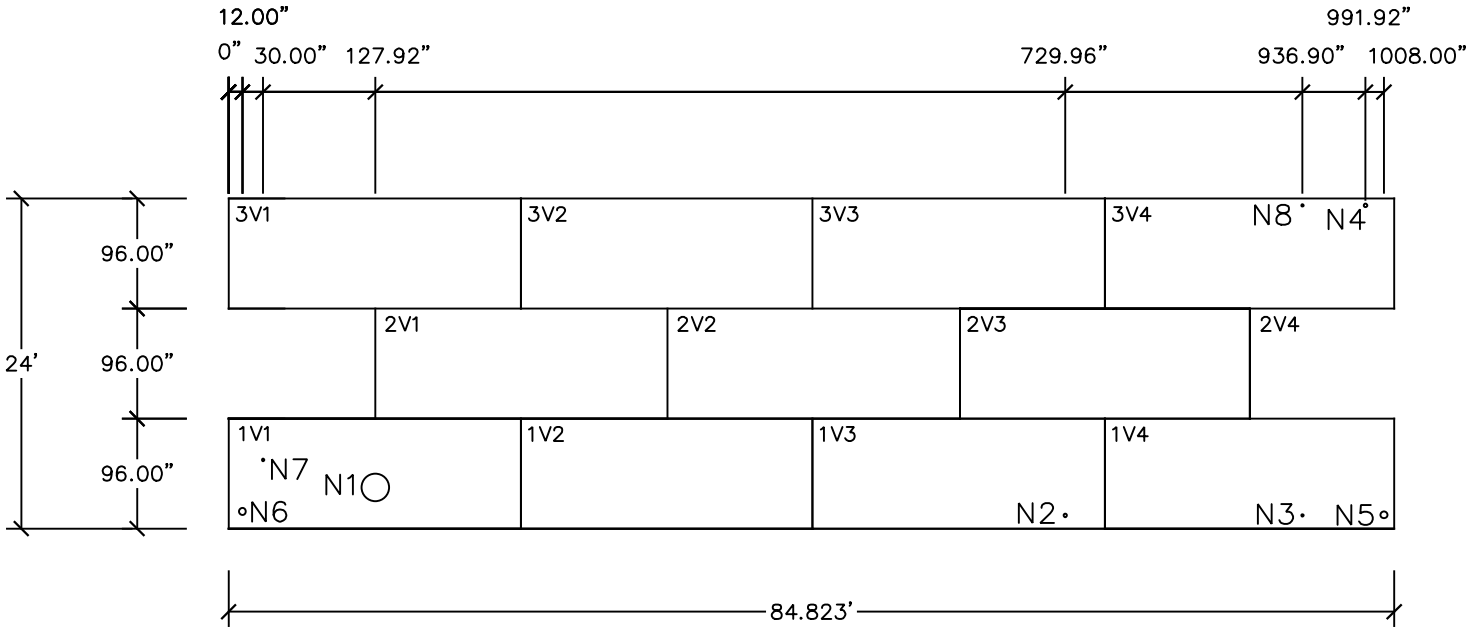
Shell thickness calculations indicate the safe fill height of 30.75 feet can be utilized with product specific gravities up to 1.00 (API 653, Para. 4.3.3.1). These calculations do not consider operational restrictions imposed by such items as any high-level alarms, piping, vents, etc.

Course Number	Original Assumed Wall Thickness	Min Measured Wall Thickness	Measured Corrosion Rate (CR)	Corrosion Allowed (CA)	Remaining Life (CA/CR)	External Insp. Interval (CA/4CR)	UT Insp. Interval (CA/2CR)
	(in)	(in)	(in/yr)	(in)	(yrs)	(yrs)	(yrs)
3	0.250	0.246	0.000080	0.146	1825	456	912
2	0.250	0.248	0.000040	0.148	1850	463	925
1	0.250	0.249	0.000020	0.149	1863	466	931
Maximum Corrosion Rate			**0.000080**	**Maximum Interval**		**5**	**15**

7.0 SHELL THICKNESS READINGS



UT Readings	Course 1	Course 2	Course 3
	[inches]	[inches]	[inches]
1	0.249	0.241	0.243
2	0.250	0.243	0.240
3	0.252	0.245	0.242
4	0.251	0.246	0.241
5	0.251	0.246	0.240
6	0.252	0.247	0.239
7	0.252	0.247	0.241
8	0.251	0.247	0.242
9	0.251	0.246	0.243
10	0.250	0.243	0.241
Minimum	0.249	0.241	0.239
Maximum	0.252	0.247	0.243
Average	0.251	0.245	0.241



SHELL ROLLOUT
NTS

NOZZLE SCHEDULE

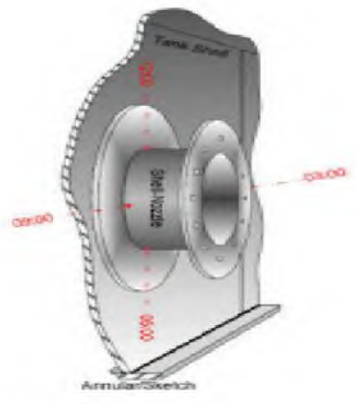
ID	SIZE
N-1	24"Ø
N-2	3"Ø
N-3	2"Ø
N-4	3"Ø
N-5	6"Ø
N-6	2"Ø
N-7	2"Ø

DRAWN BY: AUSTIN ALVIS	DATE INSPECTED: 08/09/2022	EQ. NUMBER: TANK T-2	CLIENT NAME: KU-LG&E	gecko robotics
DATE DRAWN: 09/15/2022	INSPECTOR: WILLIAM STOUT	EQ. NAME -	CLIENT LOCATION: GHENT STATION, GHENT, KY	GECKO ROBOTICS 100 S. COMMONS, SUITE 145 PITTSBURGH, PA 15212
FILE NO. -	DRAWING: 1 OF 1			

9.0 NOZZLE AND APPURTENANCES TABLE **

Nozzle Description				Reinforcing Plate				Measurements						Comments
Item	Description	Pipe Size [in]	Station [ft]	Width [in]	Height [in]	WT [in]	Shape	Neck WT [in]	Flange WT [in]	Cover WT [in]	Tell-Tale Y/N	CL [in]	WS [in]	
N1	Manway	24	10.66	-	-	-	-	0.253	0.375	-	-	36.00	22.50	No Reinforcing plate; evidence of product weep in lower half of flange.
N2	Nozzle	3	60.83	-	-	-	-	0.213	-	-	-	11.50	9.75	No Reinforcing Plate
N3	Rosemount Gauge	2	78.08	-	-	-	-	0.284	-	-	-	11.50	10.25	
N4	Recirculation	3	82.66	-	-	-	-	0.214	-	-	-	282.00	280.25	No Reinforcing Plate
N5	Outlet	6	84.00	-	-	-	-	0.280	-	-	-	12.00	8.75	No Reinforcing Plate
N6	Spare	6	1.00	-	-	-	-	0.279	-	-	-	12.00	8.75	No Reinforcing Plate
N7	Spare	2	2.66	-	-	-	-	0.289	-	-	-	59.75	58.00	
N8	Spare	2	78.08	-	-	-	-	0.280	-	-	-	282.00	280.75	

9.1 APPURTENANCES SUPPLEMENTAL ULTRASONIC NECK THICKNESS**



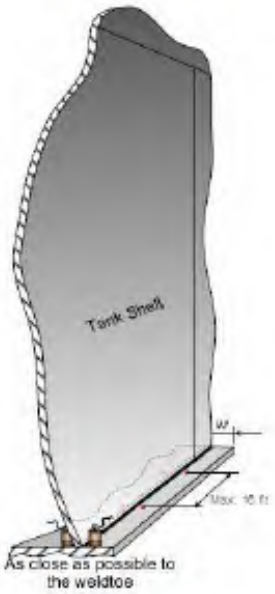
Nozzle ID	Clock Position [inches]				
Item	12:00	3:00	6:00	9:00	Average
N1	0.257	0.250	0.248	0.256	0.253
N2	0.213	0.198	0.220	0.221	0.213
N3	0.285	0.283	0.284	0.282	0.284
N4	0.203	0.209	0.217	0.227	0.214
N5	0.281	0.279	0.281	0.279	0.280
N6	0.279	0.279	0.278	0.280	0.279
N7	0.278	0.286	0.297	0.296	0.289
N8	0.281	0.283	0.283	0.272	0.280

**Note: Red readings denote thickness below API 650, Table 5-6b, Column 3*

9.2 EXTERNAL BOTTOM PLATE PROJECTION UTT

Tank Diameter:	27.00	ft
Number of Measurements:	12	
Distance between Measurements:	7.07	ft

Distance is <= 16 ft, thus OK.

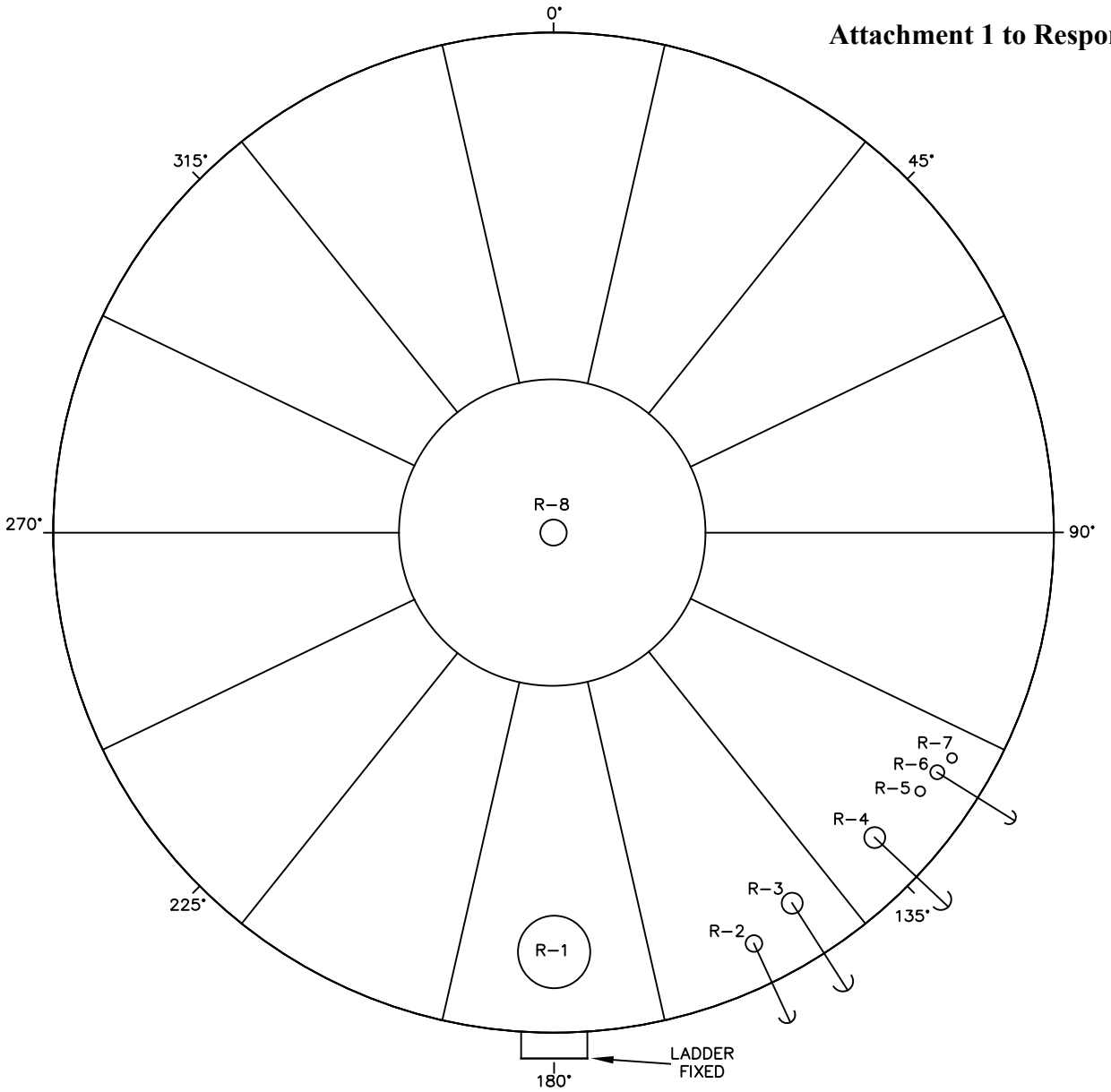


Loc. No.	WT [in]
1	0.246
2	0.243
3	0.247
4	0.249
5	0.245
6	0.248
7	0.252
8	0.247
9	0.246
10	0.242
11	0.243
12	0.247

Projection as per API 653, section 4.4.5.7

Minimum thickness measured: 0.242 inch

> 0.10 inch thus OK.



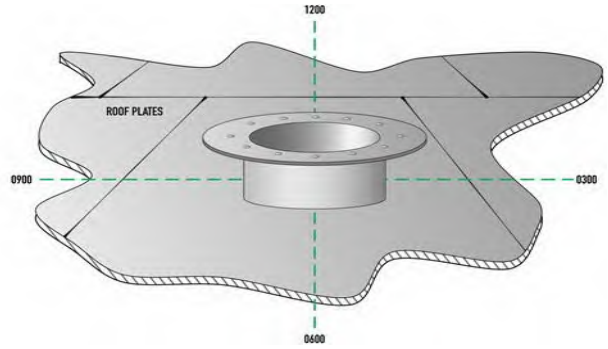
T-2 FIXED ROOF LAYOUT
NTS

NOZZLE SCHEDULE

ID	SIZE
R-1	24"Ø
R-2	2"Ø
R-3	3"Ø
R-4	4"Ø
R-5	1.25"Ø
R-6	1.5"Ø
R-7	1.25"Ø
R-8	6"Ø

DRAWN BY: AUSTIN ALVIS	DATE INSPECTED: 08/10/2021	EQ. NUMBER: TANK T-2	CLIENT NAME: KU-LG&E	gecko robotics
DATE DRAWN: 08/10/2022	TECHNICIAN: WILLIAM STOUT	EQ. NAME -	CLIENT LOCATION: GHENT STATION, GHENT, KY	GECKO ROBOTICS 100 S. COMMONS, SUITE 145 PITTSBURGH, PA 15212
FILE NO. 2022-03519	DRAWING: 1 OF 1			

11.0 FIXED ROOF NOZZLE TABLE**



ID	Description	Nozzle Neck					Flange	Reinforcing Plate	
		Nozzle Size [in]	12:00 [in]	3:00 [in]	6:00 [in]	9:00 [in]	WT [in]	WT [in]	Diameter [in]
R1	Manway	24	-	-	-	-	-	-	-
R2	Nozzle	2	-	-	-	-	-	-	-
R3	Nozzle	3	-	-	-	-	-	-	-
R4	Nozzle	4	-	-	-	-	-	-	8 x 8 square
R5	Float Guide Wire	1.25	-	-	-	-	-	-	-
R6	ATG Tape Guide	1.50	-	-	-	-	-	-	-
R7	Float Guide Wire	1.25	-	-	-	-	-	-	-
R8	Center Circulation Vent	6	-	-	-	-	-	-	-

**Note: Access to the fixed roof was limited to visual from the manlift only.*

gecko robotics

Roof
Ultrasonic Readings

Year Inspected	2022
Year Built	1972
Years in Service	50

0.243	0.247	0.233	0.264
0.240	0.244	0.249	0.250

as measured	tavg [in]	0.246
as measured	tmin [in]	0.233
assumed	tnom [in]	0.250
per API 653	tmin [in]	0.090
calculated	CR [in/yr]	0.00034
calculated	RL [yrs]	420.5882

13.0 INSPECTION CHECKLIST

OVERVIEW TANK ENTRY SAFETY AND INSPECTION READINESS	Completed	Acceptable
a) Check that the tank been cleaned, gas free, and safe for entry:	N/A	--
b) Check that the tank is completely isolated from product lines, all electrical power, and steam lines:	N/A	--
c) Check that the roof is adequately supported, including fixed roof structure and floating roof legs:	N/A	--
d) Check for presence of falling object hazards, such as corroded-through roof rafters, asphalt stalactites, and trapped hydrocarbons in unopen or plugged equipment or appurtenances, ledges, etc.:	N/A	--
e) Inspect for slipping hazards on bottom and roof decks.	Yes	Yes
f) Inspect structural welds on accessways and clips.	Yes	Yes
g) Check surfaces needing inspection which need further cleaning for the proper inspection.	Yes	Yes
Observation:		
Inspector found no notable issues preventing inspection of the tank.		

1.0 Foundation	Completed	Acceptable
Measure foundation levelness and bottom elevations (see Annex B for extent of measurements)	Yes	Yes
Settlement Survey found the tank to be level.	Yes	Yes

Observation:

Inspector found no notable issues at the time of inspection.

Photos:





1.5 Site Drainage	Completed	Acceptable
a) Check site for drainage away from the tank and associated piping and manifolds.	Yes	Yes
b) Check operating condition of the dike drains.	Yes	Yes

Observation:

Facility operators drained the containment basin with inspector onsite. Inspector noted cracking in the containment area adjacent to drain basin structures and tank foundation slab.

Photos:





1.6 Housekeeping	Completed	Acceptable
Inspect the area for buildup of trash, vegetation, and other flammables buildup.	Yes	Yes

Observation:

Inspector found no notable issues at the time of inspection.

1.8 Miscellaneous Items	Completed	Acceptable
a) Inspect for indications of tank bottom leakage.	Yes	Yes
b) Check for presence of a moisture barrier.	Yes	Yes
c) Inspect tank anchorage if present. Record sizes, spacing between anchors, and condition.	N/A	--

Observation:

Inspector found no notable issues at the time of inspection.

3.0 External Visual Inspection	Completed	Acceptable
a) Visually inspect for grooving, corrosion, pitting, and coating failures.	Yes	Yes
b) Clean off the bottom angle area and inspect for corrosion and thinning on plate and weld.	Yes	Yes
d) Inspect shell insulation for damage and proper sealing.	N/A	--

Observation:

Inspector found no notable issues at the time of inspection.

Photos:






5.0 Manways and Nozzles	Completed	Acceptable
a) Inspect for cracks or signs of leakage on weld joint to nozzles, manways, and reinforcing plates.	Yes	Yes
b) Inspect for shell plate dimpling around nozzles.	Yes	Yes
c) Inspect for flange leaks and leaks around bolting.	Yes	Yes
d) Check for inadequate manway flange and cover thickness on mixer manways.	N/A	--
e) Check that the Nozzles have adequate neck thickness per API 650 Table 5.6b.	Yes	No
f) Check the Nozzle have adequate centerlines per API 650 Table 5.6b.	Yes	Yes
Observation:		
Shell nozzles do not meet minimum thickness requirements found in API 650, Table 5.6b.		
Photos:		
*See Photolog		

5.1 Tank Piping Manifolds	Completed	Acceptable
a) Inspect manifold piping, flanges, and valves for leaks.	Yes	Yes
b) Inspect fire-fighting system components.	N/A	--
c) Check for anchored piping which would be hazardous to the tank shell or bottom connections during earth movement.	Yes	Yes
d) Check for adequate thermal pressure relief of piping to the tank.	N/A	--
e) Check for operation of regulators for tanks with purge gas systems.	N/A	--
f) Check sample connects for leaks and for proper valve operation.	N/A	--
g) Check for damage and test the accuracy of temperature indicators.	N/A	--
h) Check welds on shell-mounted davit clips.	N/A	--
Observations:		
Inspector found no notable issues at the time of inspection.		

7.1 Deck Plates External Corrosion	Completed	Acceptable
a). Visually inspect for paint failure, holes, pitting, corrosion, and/or product on the roof.	Yes	Yes
Observation:		
Access to the fixed roof was limited to visual from the manlift. However, Inspector found no notable issues at the time of inspection.		
Photos:		





7.3 Roof Deck Drainage	Completed	Acceptable
a). Look for areas of standing water or staining.	Yes	Yes
Observation:		
Inspector found no notable issues at the time of inspection.		

7.12 Breathers and Vents	Completed	Acceptable
a) Inspect condition of breather vent.	N/A	-

Observation

Access to the fixed roof was limited to visual from the manlift. Center circulation vent opening did not appear to be screened.

Photos:





8.6 Autogauge System and Alarms	Completed	Acceptable
a) Check freedom of movement of tape through autogauge tape guide.	Yes	Yes
b) Test operation checker	N/A	-
c) Inspect tape and tape cable for twisting and fraying.	Yes	Yes
d) Check float for leakage.	N/A	--
e) Inspect float wells for thinning and/ pitting.	N/A	--
f) Check that automatic gauge is firmly attached to float.	N/A	--
g) Inspect board-type indicators for legibility and freedom of movement.	Yes	Yes

Observation:

ATG was a board-type indicator. Inspector found no notable issues at the time of inspection.

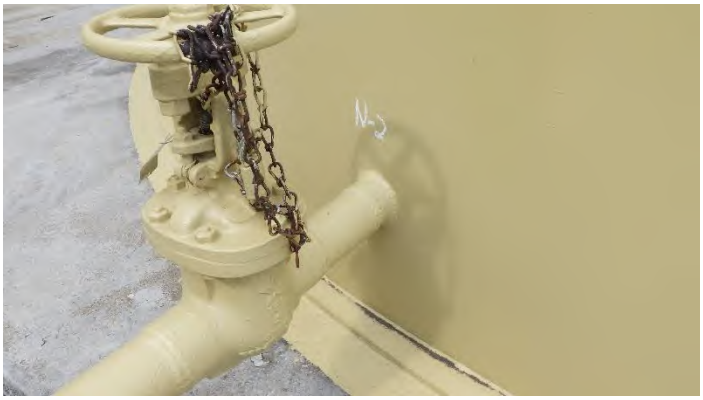
Photos:





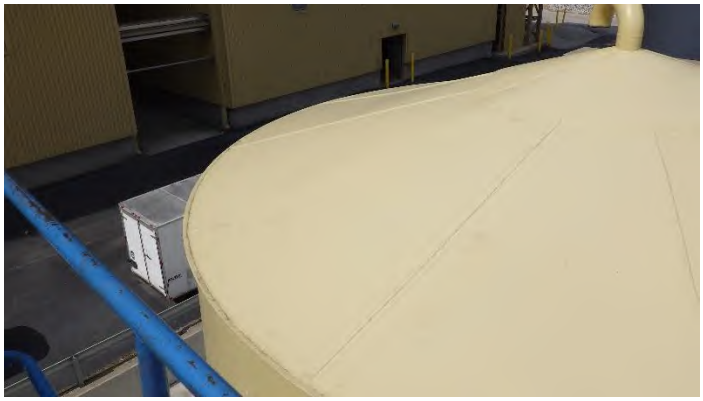
14.0 TANK PHOTOS

	
Tank Elevation View	Tank Elevation View
	
Shell Nozzle N1 (left elevation)	Shell Nozzle N1 (front)
	
Shell Nozzle N1 (right elevation)	Shell Nozzle N2 (left elevation)

	
Shell Nozzle N2 (top)	Shell Nozzle N2 (right elevation)
	
Shell Nozzle N3 (left elevation)	Shell Nozzle N3 (top)
	
Shell Nozzle N3 (right elevation)	Shell Nozzle N4 (on the right)

	
Shell Nozzle N4 (closeup)	Shell Nozzle N5 (left)
	
Shell Nozzle N5 (top)	Shell Nozzle N5 (right)
	
Shell Nozzle N6 (top left)	Shell Nozzle N6 (top)

	
Shell Nozzle N6 (right elevation)	Shell Nozzle N7 (left elevation)
	
Shell Nozzle N7 (front)	Shell Nozzle N8 (right elevation)
	
ATG	Fixed Ladder

	
Fixed Ladder	Fixed Roof Nozzles
	
Fixed Roof	Fixed Roof

Inspection Report

Prepared For:

LG&E

TANK # 2

GHENT , KENTUCKY

Inspection Date: 8-23-2018

Inspection Performed and Documented By:

PNDE
PROFESSIONAL
NDE Services Group, LLC

PNDE PROFESSIONAL
NDE SERVICES GROUP, LLC

Customer: LG&E
Address: Ghent , KY
Equipment: Tank #2
PNDE Work Order #: 18-108

EXECUTIVE SUMMARY

CUSTOMER CONTACTS: Ron Stewart

PNDE PERSONNEL: Jed Carlier/ Camron Sagatchi

DESCRIPTION OF INSPECTION: An external, internal visual, MFE scan of floor and ultrasonic thickness inspection on Tank # 2. Utilizing API 653 as our guide.

SPECIFICATION: API-653 5th ED 2014

ACCEPTANCE: API-653 5th ED 2014

EQUIPMENT: GE DMS GO (SN: UT003), FH2E Transducer (SN: 16K01X6A), Inspection Light, Digital Camera, Tape Measure, MFE 1212 unit.

MATERIALS: EZ-GEL

RESULTS:
External Visual:
Minor Discrepancies:

1. Minor corrosion noted on shell, nozzles, floor protrusion and roof.
2. Tank needs sealed between floor protrusion and concrete pad.

Internal Visual:
Minor Discrepancies:

1. 6'' and 2'' valves are leaking slightly.
2. Minor cluster porosity noted in lap weld.
3. Corner weld was noted as having porosity, cluster porosity, undercut and underfill in fillet weld.
4. Very minor pitting in floor and shell.
5. Manway nozzle neck long seam has 3/32'' porosity and 1/16'' corrosion.

Ultrasonic: Ultrasonic thickness readings consistent though out. The lowest reading obtain on the shell is 0.242''. The lowest reading obtain on the floor is 0.242''. The lowest reading obtain on the roof is 0.254''. The lowest reading obtain in the sump is 0.375''. See attached drawings for thickness locations.

Floor plates: MFE scan of floor plates showed no signs of bottom side corrosion at the time of the inspection.

PNDE PROFESSIONAL NDE SERVICES GROUP, LLC

Customer: LG&E
Address: Ghent , KY
Equipment: Tank #2
PNDE Work Order #: 18-108

RECOMMENDATIONS:

1. Continue inspections in accordance with the latest revision of API-653.
2. Seal the floor protrusion to tank pad.
3. Monitor the minor corrosion on shell, roof and nozzles.
4. At next internal inspection; re-evaluate the porosity, undercut, cluster porosity and underfill of fillet welds on floor plate and corner weld for removal and rewelding of these areas.

API-653 Inspector: Jed Carlier Certification # 32545

REFERENCES

1) API-653 Above Ground Storage Tank

PNDE PROFESSIONAL NDE SERVICES GROUP, LLC

Customer: LG&E
Address: Ghent , KY
Equipment: Tank #2
PNDE Work Order #: 18-108

Tank Inspection Check List

Item	Inspection Task	Y	N	N/A	Comments and Observations
1 External	Visually inspect the annular plate and weldments for cracks and corrosion.			✓	N/A
2	Visually inspect for general deterioration, spalling, and cracking of concrete base.	✓			MINOR SPALLING
3	Visually inspect for evidence of poor drainage where rain water runoff could settle against the tank.	✓			SEAL AT FLOOR PROTRUSION AND TANK PAD
4	Visually inspect drain opening if the tank is sitting on a concrete ring or resting on supports.			✓	N/A
5	Visually inspect the anchor bolts and grounding connection for proper bolting and corrosion.	✓			NO ANCHORS MINOR VEGITATION
6	Check for levelness of foundation and tank bottom	✓			ACCEPTABLE
7	Inspect the shell for out-of-bulging, peaking and out of roundness.	✓			ACCEPTABLE
8	Inspect for coating/paint deterioration or failure.	✓			ACCEPTABLE MINOR CHIPS
9	Inspect supports and attachments for reinforcing pads.	✓			NO SUPPORT PADS
10	Inspect all roof plates, shell and nozzles for surface corrosion, cracks, gouges,	✓			MINOR CORROSION NOTED
11	Inspect outer secondary seal of floating roofs for deterioration and poor sealing.			✓	N/A
12	Inspect the weldments for possible cracking and corrosion.	✓			ACCEPTABLE
13	Inspect insulation for damage and adequate sealing of the insulation joints.			✓	N/A
14	Inspect dike area for cracking, spalling and general overall condition and proper drainage of rain water.			✓	N/A
15	Inspect roof for areas of poor drainage and standing rain water.	✓			ACCEPTABLE

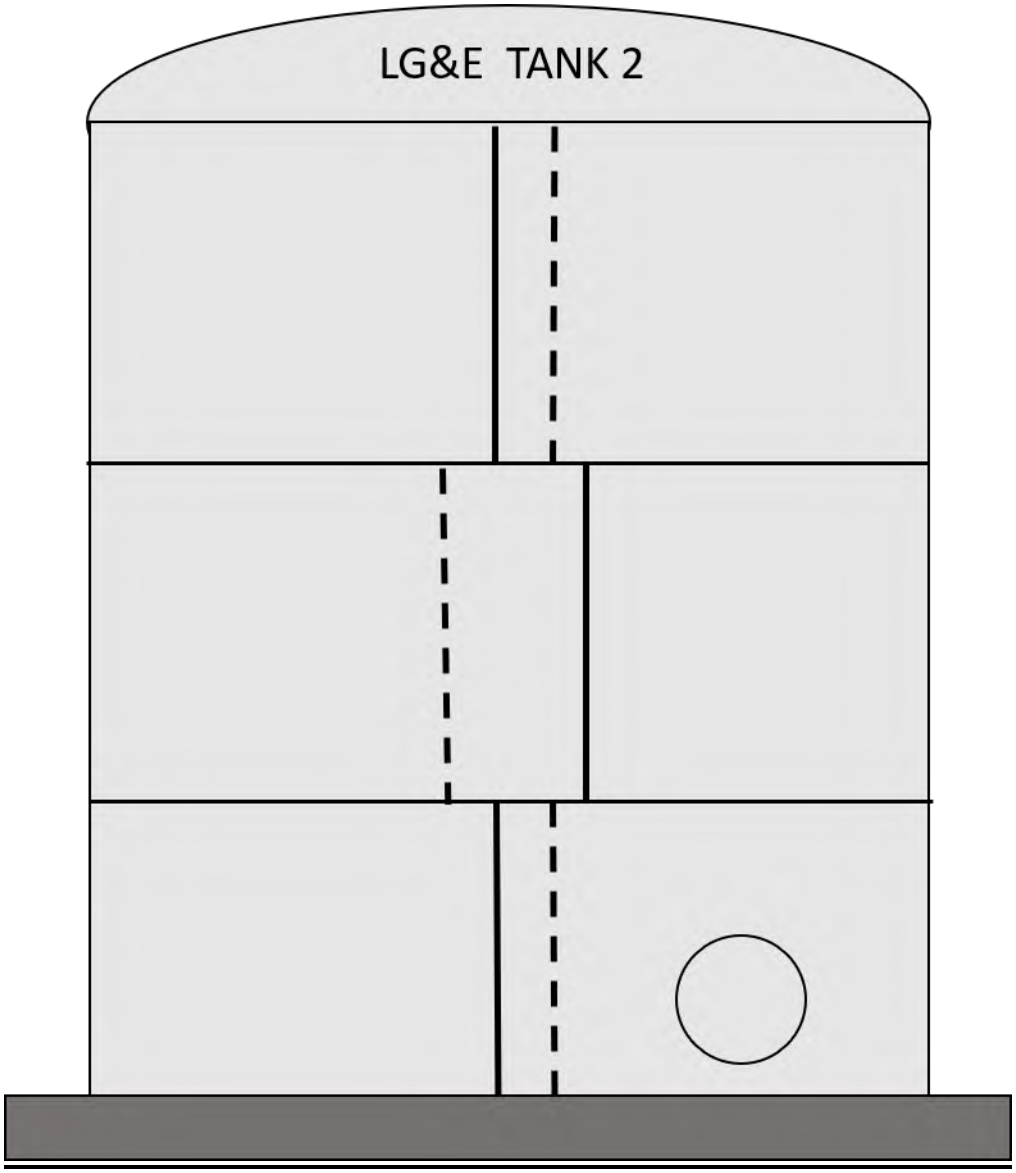
PNDE PROFESSIONAL NDE SERVICES GROUP, LLC

Customer: LG&E
Address: Ghent , KY
Equipment: Tank #2
PNDE Work Order #: 18-108

Item	Inspection Task	Y	N	N/A	Comments and Observations
16 Internal	Inspect apertures for proper fit-up, welding, corrosion and cracking.	✓			MANWAY NOZZLE NECK CORROSION AND ISOLATED POROSITY
17	Inspect floor, shell, and roof for cracking and corrosion.	✓			POROSITY, UNDERCUT, CLUSTER POROSITY, UNDERFIL OF FILLET WELD ON CORNER WELD AND LAB WELD
18	Inspect agitators, mixers, paddles, rakes, internal piping and heating coils for structural integrity, cracking, corrosion, or mechanical damage.	✓			SUMP PIPING ACCEPTABLE SUMP ACCEPTABLE
19	Inspect internal ladders for proper attachment to the shell, corrosion and cracking.			✓	N/A
20	Inspect coating for disbonding, deterioration, and cracking.			✓	N/A
21	Inspect primary seal on floating roofs for deterioration and poor sealing.			✓	N/A
22	Inspect floating roof support legs and pontoons for cracking and corrosion.			✓	N/A
23	Inspect roof rafters for corrosion and damage.	✓			MINOR SURFACE RUST ON ROOF PLATES
24	Perform magnetic particle or dye-penetrant inspection on the shell-to-floor (chime) weld.			✓	N/A
25	Inspect vacuum box testing of all floor welds and floor to shell weld.			✓	N/A

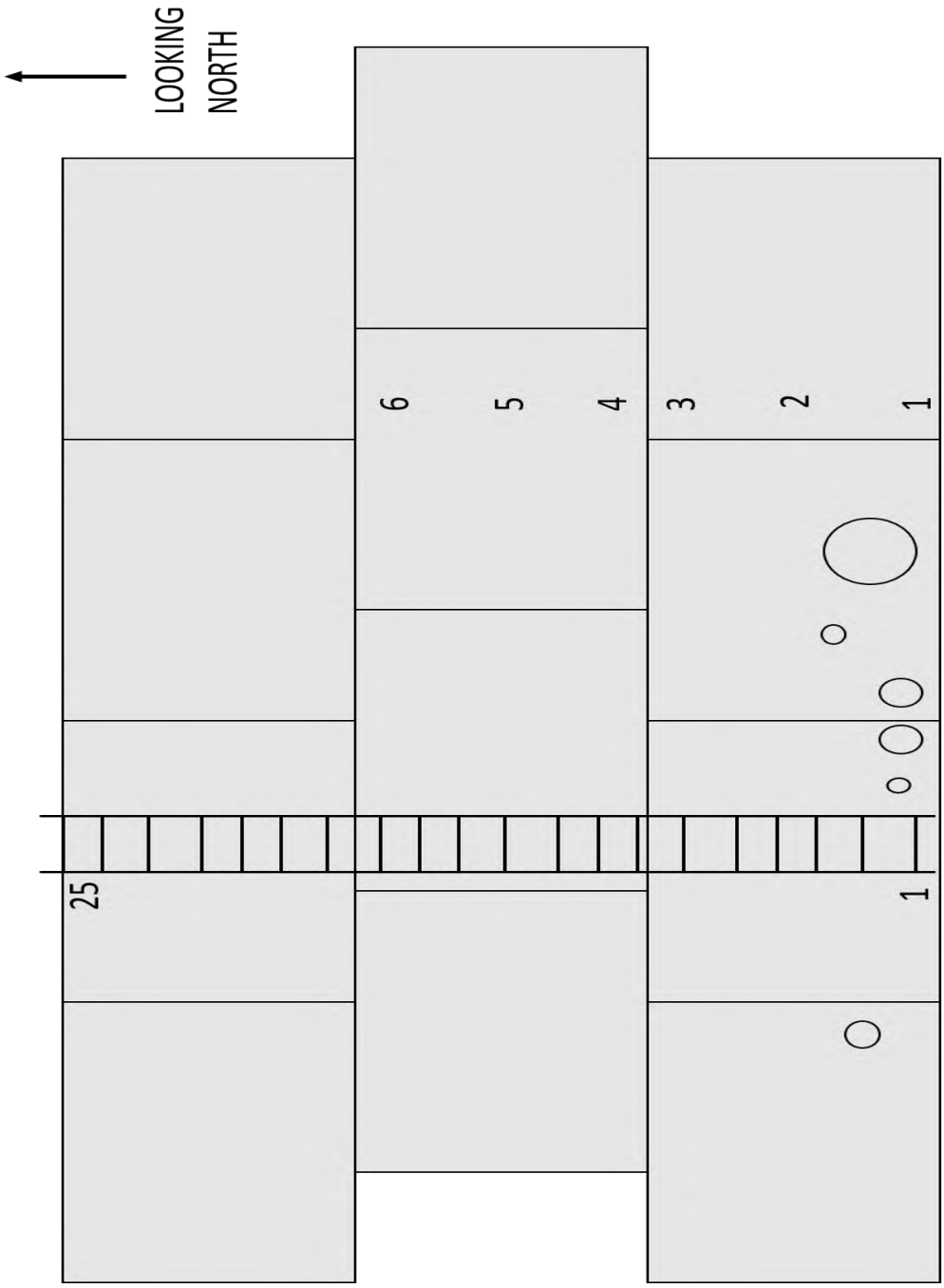
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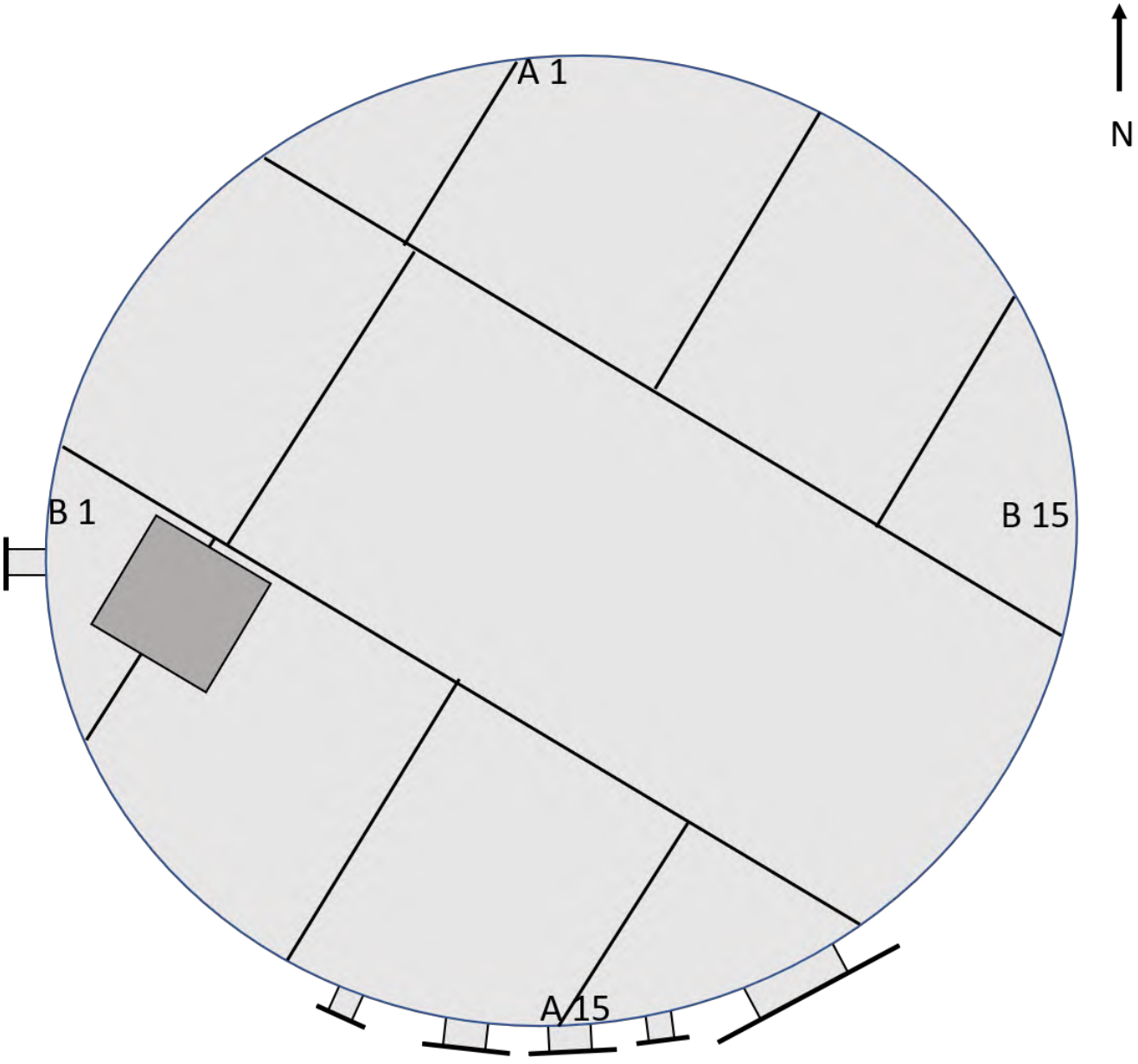
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NDE SERVICES GROUP, LLC

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PNDE PROFESSIONAL NDE SERVICES GROUP, LLC

Customer: LG&E
Address: Ghent , KY
Equipment: Tank #2
PNDE Work Order #: 18-108

ULTRASONIC THICKNESS DATA OF SHELL

2 SHELL	N	NE	E	SE	S	SW	W	NW
1	0.247	0.245	0.259	0.243	0.264	0.257	0.256	0.252
2	0.246	0.248	0.270	0.260	0.277	0.272	0.258	0.257
3	0.242	0.242	0.258	0.245	0.262	0.260	0.255	0.254
4	0.250	0.250	0.247	0.249	0.247	0.246	0.253	0.243
5	0.251	0.252	0.250	0.254	0.253	0.247	0.256	0.246
6	0.251	0.251	0.250	0.256	0.255	0.247	0.253	0.247

ULTRASONIC THICKNESS DATA OF SUMP

2 SUMP	A	B	C	D
NORTH	0.380	0.381	0.378	0.378
WEST	0.381	0.381	0.375	0.378
SOUTH	0.381	0.381	0.379	0.380
EAST	0.379	0.380	0.379	0.379
BOTTOM	0.379	0.377	0.378	0.380

ULTRASONIC THICKNESS DATA OF ROOF

2 ROOF	
1	0.257
2	0.256
3	0.256
4	0.257
5	0.254
6	0.258
7	0.258
8	0.257
9	0.254
10	0.255

PNDE PROFESSIONAL NDE SERVICES GROUP, LLC

Customer: LG&E
Address: Ghent , KY
Equipment: Tank #2
PNDE Work Order #: 18-108

ULTRASONIC THICKNESS DATA OF LADDER

2 LADDER		
1	0.261	1 COARSE
2	0.269	1 COARSE
3	0.272	1 COARSE
4	0.273	1 COARSE
5	0.275	1 COARSE
6	0.275	1 COARSE
7	0.276	1 COARSE
8	0.276	1 COARSE
9	0.273	1 COARSE
10	0.269	2 COARSE
11	0.267	2 COARSE
12	0.262	2 COARSE
13	0.248	2 COARSE
14	0.253	2 COARSE
15	0.253	2 COARSE
16	0.254	2 COARSE
17	0.255	2 COARSE
18	0.252	3 COARSE
19	0.254	3 COARSE
20	0.253	3 COARSE
21	0.253	3 COARSE
22	0.254	3 COARSE
23	0.253	3 COARSE
24	0.253	3 COARSE
25	0.252	3 COARSE

PNDE PROFESSIONAL NDE SERVICES GROUP, LLC

Customer: LG&E
Address: Ghent , KY
Equipment: Tank #2
PNDE Work Order #: 18-108

ULTRASONIC THICKNESS DATA OF FLOOR

2 FLOOR	N-S	W-E
1	0.247	0.250
2	0.248	0.250
3	0.247	0.251
4	0.248	0.251
5	0.248	0.252
6	0.249	0.251
7	0.249	0.249
8	0.251	0.251
9	0.251	0.249
10	0.247	0.250
11	0.249	0.251
12	0.247	0.255
13	0.247	0.256
14	0.247	0.255
15	0.242	0.253

Suggested Inspection Intervals for Tank 2

INSPECTION TYPE	FREQUENCY	NEXT DUE DATE
OWNER VISUAL	Monthly	--
EXTERNAL VISUAL	5 years	8-23-2023
INTERNAL VISUAL	10 years	8-23-2028
UT THICKNESS	5 years	8-23-2023

PNDE PROFESSIONAL NDE SERVICES GROUP, LLC

Customer: LG&E
Address: Ghent , KY
Equipment: Tank #2
PNDE Work Order #: 18-108

PNDE PROFESSIONAL NDE SERVICES GROUP, LLC

2.6 (H-1)DG/SE

Height	24.00
Diameter	27
Gravity of product	0.95
S lower courses	23600
S top courses	26000
Efficiency of welds/Plates	0.7
T-Min	0.093

	Fill Height	T-Min
1st Course	23	0.100
2nd Course	16	0.100
3rd Course	8	0.100
4th Course	0	0.000
5th Course	0	0.000
6th Course	0	0.000

Shell Plate	
Height	8
T ORIG.	0.2500
T ACTUAL	0.242
YRS SERVICE	46

Shell Course	
C/R	0.000174
R/L	816.5

*NOTE: per API 653 paragraph 4.3.3.1 T-min shall not be less than 0.100" thickness in any tank course.

Floor Plate	
T Orig.	0.250
T Actual	0.242
Yrs Service	10

Floor Plates	
C/R	0.0008
R/L	177.5

PNDE PROFESSIONAL NDE SERVICES GROUP, LLC

Customer: LG&E
Address: Ghent , KY
Equipment: Tank #2
PNDE Work Order #: 18-108

MINOR ROOF CORROSION



TOP HEAD MINOR SHELL CORROSION



PNDE PROFESSIONAL NDE SERVICES GROUP, LLC

Customer: LG&E
Address: Ghent , KY
Equipment: Tank #2
PNDE Work Order #: 18-108

CORROSION ON FLOOR PROTRUSION / PROTRUSION TO PAD NEEDS SEALED



CORROSION ON NOZZLES



PNDE PROFESSIONAL NDE SERVICES GROUP, LLC

Customer: LG&E
Address: Ghent , KY
Equipment: Tank #2
PNDE Work Order #: 18-108

CLUSTER POROSITY IN CORNER WELD



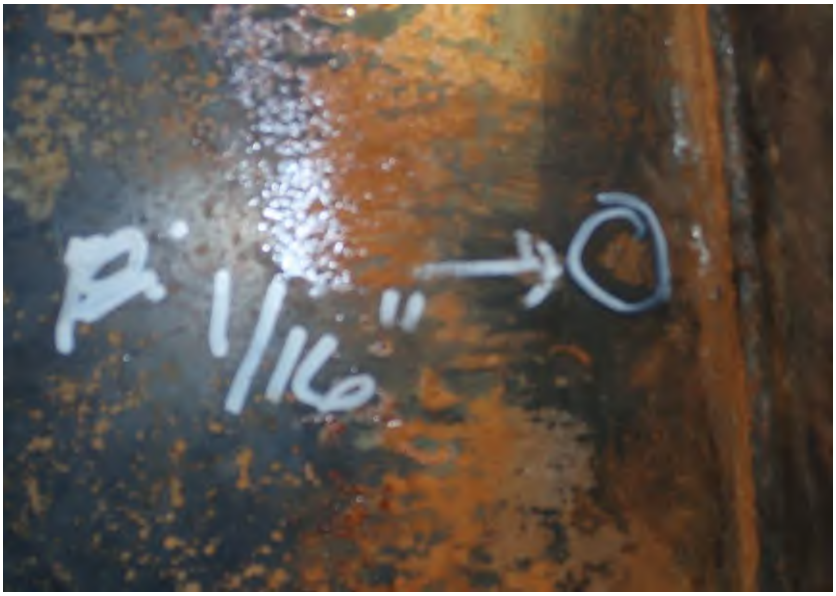
POROSITY IN CORNER WELD



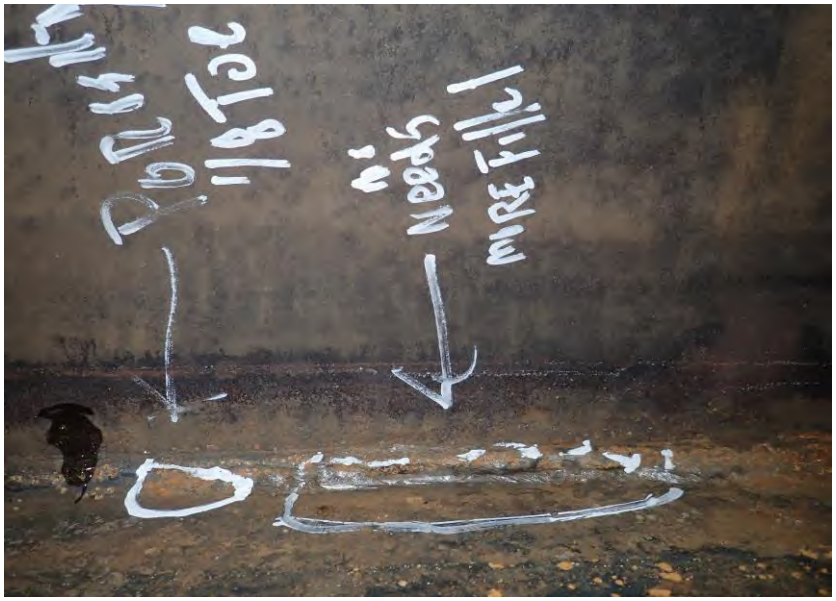
PNDE PROFESSIONAL
NDE SERVICES GROUP, LLC

Customer: LG&E
Address: Ghent , KY
Equipment: Tank #2
PNDE Work Order #: 18-108

PIT 1/16'' APP



POROSITY AND UNDER FILL OF CORNER FILLET



PNDE PROFESSIONAL
NDE SERVICES GROUP, LLC

Customer: LG&E
Address: Ghent , KY
Equipment: Tank #2
PNDE Work Order #: 18-108

UNDER CUT ON CORNER WELD



DOOR SHEET



PNDE PROFESSIONAL NDE SERVICES GROUP, LLC

Customer: LG&E
Address: Ghent , KY
Equipment: Tank #2
PNDE Work Order #: 18-108

SUMP



LONG SEAM OF MANWAY NOZZLE NECK



TEAM QUALSPEC

10540 Chester Road, Woodlawn, OH 45215

INSPECTION REPORT FOR ATMOSPHERIC STORAGE TANK

Form VT.3-1238 Rev. 0

COMPANY:	Kentucky Utilities	LOCATION:	Ghent, KY
UNIT LOCATION:	East Unit #1	EQUIPMENT NUMBER:	Tank #2
TEAM W.O. #:	53870350	COMPLETION DATE:	3-22-17
EQUIPMENT NAME:	100,000 Fuel oil tank		

Formal External Inspection with thickness of 100,000 Fuel oil tank



In accordance with API 653

Site Contact: Ben Zeigler
Inspector: William T. McDaniel API 653 #38330
UTT Technician: Adam Holland

TEAM QUALSPEC
10540 Chester Road, Woodlawn, OH 45215

INSPECTION REPORT FOR ATMOSPHERIC STORAGE TANK

Form VT.3-1238 Rev. 0

COMPANY:	Kentucky Utilities	LOCATION:	Ghent, KY
UNIT LOCATION:	East Unit #1	EQUIPMENT NUMBER:	Tank #2
TEAM W.O. #:	53870350	COMPLETION DATE:	3-22-17
EQUIPMENT NAME:	100,000 Fuel oil tank		

INSPECTION SUMMARY

GENERAL:	A formal external inspection with thickness was performed at this time meeting the requirements of API 653. The tank is in a surrounding dyke area capable of holding 114% of total liquids carried in the tank. Thickness minimums are established from the referencing code.
FOUNDATION:	The tank sets on a foundation ring inside of a concrete dyke area.
INSULATION:	The tank is not currently insulated.
EXTERNAL:	The tank to foundation area has no grouting or caulking to prevent moisture from entering underneath the tank. Some isolated coating failure throughout the tank. No nameplate was found at this time.
INTERNAL:	Not performed at this time.

REPAIRS RECOMMENDED FOR TANK (SEE OBSERVATIONS / RECOMMENDATIONS)

[ ] YES - ASAP - PRIOR TO RETURNING TO SERVICE [X] YES- IN A TIMELY MANNER [ ] NONE

NEXT INSPECTION:

EXTERNAL: 3-22-22
THICKNESS: 3-22-27

INTERNAL: 11-08-18 Derived from floor replacement date

INSPECTOR: *William Trafton McDaniel* DATE: *3-22-17*

SIGNATURE: William T McDaniel API 653 NO: *38330*

TEAM QUALSPEC

10540 Chester Road, Woodlawn, OH 45215

INSPECTION REPORT FOR ATMOSPHERIC STORAGE TANK

Form VT.3-1238 Rev. 0

COMPANY:	Kentucky Utilities	LOCATION:	Ghent, KY
UNIT LOCATION:	East Unit #1	EQUIPMENT NUMBER:	Tank #2
TEAM W.O. #:	53870350	COMPLETION DATE:	3-22-17
EQUIPMENT NAME:	100,000 Fuel oil tank		

OBSERVATIONS	RECOMMENDATIONS
No grouting/caulking between tank and foundation allowing moisture to enter beneath tank	Place grouting or caulking in this area to prevent underside corrosion
Isolated areas of coating failure , mainly on attached nozzles and piping.	Recoat as deemed necessary
No nameplate on tank	Place nameplate with proper design info

TEAM QUALSPEC

10540 Chester Road, Woodlawn, OH 45215

INSPECTION REPORT FOR ATMOSPHERIC STORAGE TANK

Form VT.3-1238 Rev. 0

COMPANY:	Kentucky Utilities	LOCATION:	Ghent, KY
UNIT LOCATION:	East Unit #1	EQUIPMENT NUMBER:	Tank #2
TEAM W.O. #:	53870350	COMPLETION DATE:	3-22-17
EQUIPMENT NAME:	100,000 Fuel oil tank		

External Visual Inspection Results

Item No.	Item	Good	Fair	Poor	N/A	
1	Shell	X				
2	Floor / Bottom Head				X	
3	Roof / Top Head	X				
4	Nozzles and Fasteners		X			Coating failure
5	Piping and Components	X				
6	Valves and Components	X				
7	Welds and Seams	X				
8	Davits	X				
9	Manways & Fasteners	X				
10	Stiffner Rings				X	
11	Gauges	X				
12	Sight Glass	X				
13	Platforms/Handrails	X				
14	Ladders/Cages/Stairs	X				
15	Grating/Treads	X				
16	Insulation or Coating		X			Isolated areas with coating failure
17	Weather Jacket				X	
18	Supports/Base plates				X	**Type:**
19	Anchors/Support bolts				X	
20	Foundation (Spalling, etc.)	X				
21	Grouting				X	

		Yes	No	COMMENTS
22	Corrosion (Location)		X	
23	Name Plate Attached		X	None Found
24	Visible Leaks		X	
25	Ground Wire	X		
26	Visible Distortion		X	
27	Weep Holes Okay			N/A
28	Blistering		X	
29	Other			

Notes or Comments: The tank is in overall good integral condition with no major concerns at this time.

TEAM QUALSPEC
10540 Chester Road, Woodlawn, OH 45215

INSPECTION REPORT FOR ATMOSPHERIC STORAGE TANK

Form VT.3-1238 Rev. 0

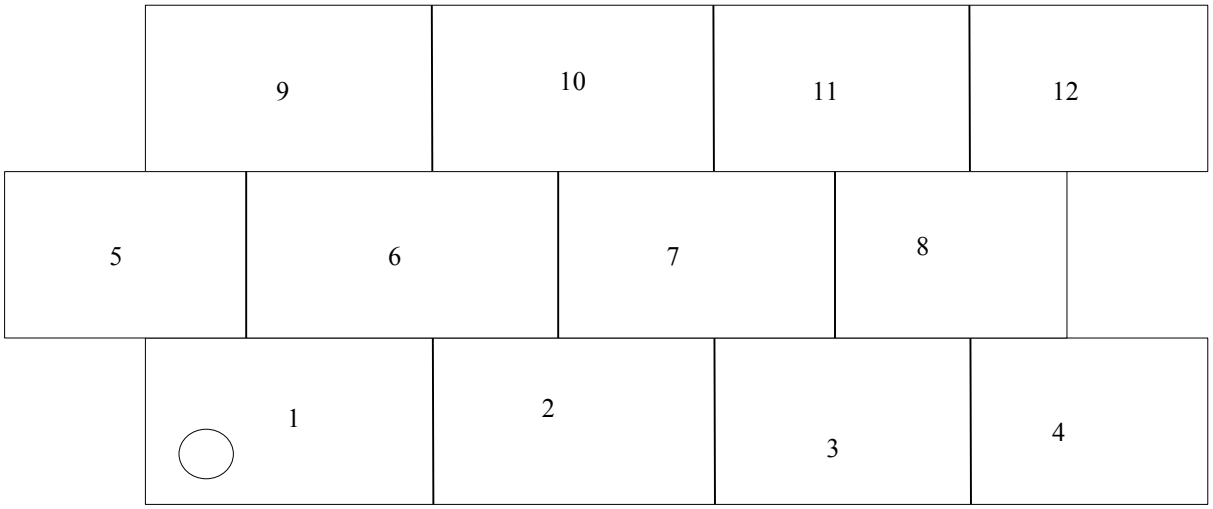
COMPANY:	Kentucky Utilities	LOCATION:	Ghent, KY
UNIT LOCATION:	East Unit #1	EQUIPMENT NUMBER:	Tank #2
TEAM W.O. #:	53870350	COMPLETION DATE:	3-22-17
EQUIPMENT NAME:	100,000 Fuel oil tank		

UT Calibration Data

Equipment Make: *GE* Model # : *DMS 2* Serial # : *01NDJJ*
Calibration Block Material : ☒ C/S Serial # : *09-3799* ☐ S/S Serial # :
Transducer Serial # : *15L00D04* Size : *.375* Frequency: *7.5* MHZ
UT Couplant Type: *Sonix-UT* Batch # : *306-07*

Sketch

Tank shell layout



UTT location per sheet

C	F	I
B	E	H
A	D	G

TEAM QUALSPEC

10540 Chester Road, Woodlawn, OH 45215

INSPECTION REPORT FOR ATMOSPHERIC STORAGE TANK

Form VT.3-1238 Rev. 0

COMPANY:	Kentucky Utilities	LOCATION:	Ghent, KY
UNIT LOCATION:	East Unit #1	EQUIPMENT NUMBER:	Tank #2
TEAM W.O. #:	53870350	COMPLETION DATE:	3-22-17
EQUIPMENT NAME:	100,000 Fuel oil tank		

UTT DATA

	A	B	C	D	E	F	G	H	I
1	0.268	0.265	0.286	0.27	0.274	0.274	0.281	0.29	0.281
2	0.264	0.268	0.278	0.267	0.267	0.261	0.276	0.268	0.265
3	0.27	0.279	0.27	0.27	0.254	0.283	0.281	0.28	0.294
4	0.274	0.281	0.292	0.276	0.287	0.29	0.29	0.291	0.287
5	0.256			0.25			0.255		
6	0.247			0.249			0.253		
7	0.246			0.245			0.243		
8	0.258			0.251			0.255		

Minimum Thickness For Welded Tank Shell, API 653

Where: t = minumum acceptable thickness in inches
D = nominal diameter of tank in feet
H = liquid height from bottom of corroded area or floor in feet
C = course number (C=1 for bottom course)
G = specific gravity relative to water (G = 1.0 for water)
S = maximum allowable stress in psi. Use smaller of 0.8Y or 0.426T for bottom and 2nd course.
Use smaller of 0.88Y or 0.472T for all other courses.
Y = minimum yield strength in psi
T = minimum tensile strength in psi
E = joint efficiency Use E = 0.7 if original E is unknown. Use E = 1.0 when away from welds by 1 inch or 2t.

Calculation based on this formula: t = [2.6 D (H-1) G]/S E E from 2.3.3.1 of API Standard 653

Enter Values						
D=	48					
H=	40					
C=	1					
Y=	30000	0.8Y =	24000	0.88Y =	26400	
T=	55000	0.426T =	23430	0.472T =	25960	
G=	1					
E=	1					

Value of S selected, S= 23430

Calculated minimum thickness, t = 0.208

TEAM QUALSPEC
10540 Chester Road, Woodlawn, OH 45215

INSPECTION REPORT FOR ATMOSPHERIC STORAGE TANK

Form VT.3-1238 Rev. 0

COMPANY:	Kentucky Utilities	LOCATION:	Ghent, KY
UNIT LOCATION:	East Unit #1	EQUIPMENT NUMBER:	Tank #2
TEAM W.O. #:	53870350	COMPLETION DATE:	3-22-17
EQUIPMENT NAME:	100,000 Fuel oil tank		

T nominal	0.27858	
T actual	0.277	
Wall loss	0.00158	
Yrs in service	8.5	
Corrosion per/yr	0.000186	
T-min	0.208	
Remaining wall	0.069	
Yrs remaining	371.2025	yrs.

TEAM QUALSPEC

10540 Chester Road, Woodlawn, OH 45215

INSPECTION REPORT FOR ATMOSPHERIC STORAGE TANK

Form VT.3-1238 Rev. 0

COMPANY:	Kentucky Utilities	LOCATION:	Ghent, KY
UNIT LOCATION:	East Unit #1	EQUIPMENT NUMBER:	Tank #2
TEAM W.O. #:	53870350	COMPLETION DATE:	3-22-17
EQUIPMENT NAME:	100,000 Fuel oil tank		





Typical isolated areas where coating failure is present



Example of tank area that does not have grouting/caulking. There is currently water moving freely beneath tank.

EVERGREEN ENVIRONMENTAL
Engineers and Remediation Contractors

September 9, 2008

Mr. Danny Ayler
LOUISVILLE GAS AND ELECTRIC
9485 Highway 42 East
Ghent, KY 41045

Re: Fuel Tank Inspection

Dear Mr. Ayler:

Enclosed is a copy of the inspection report for the 100,000-gallon fuel oil tank located at your Ghent, Kentucky, facility. A copy on CD has also been enclosed. The inspection was conducted by API 653 Specifications.

If I can be of further assistance, please do not hesitate to contact me at (502) 241-4171.

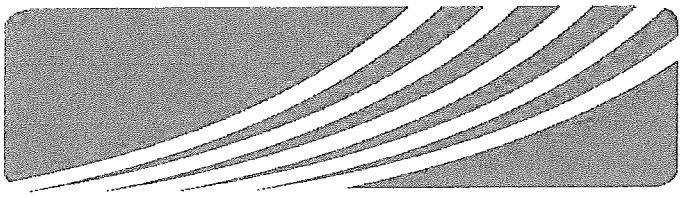
Sincerely,

Dannye Allen
Project Manager

DA/tb

Enclosures

lt090908



ACUREN

Materials Engineering & Testing

KU

100,000 GAL. Fuel Oil Tank

Date of Inspection: 9/4/2008

ACUREN
Materials Engineering & Testing

CUSTOMER: KU

P.O. No: 01-28540

ADDRESS: Rt 42
Ghent, Ky

Lab#: F125722

CUSTOMER CONTACTS: Danny Allen

US INSPECTION PERSONNEL: Justin Andre

DESCRIPTION OF INSPECTION: Internal and external visual inspection and ultrasonic thickness readings of the shell, floor, and roof.

SPECIFICATION: API 653

ACCEPTANCE: API 653

EQUIPMENT: Krautkrammer Branson DMS 2, FH2E Transducer, S/S Calibration Step

MATERIALS: EZ Gel.

RESULTS: At the time of evaluation, thickness readings were recorded and are noted on the attached thickness data sheet. Refer to the attached data sheet and drawing and data. The shell plates were in good condition. The roof was in good condition and was limited to access points from the ladder up the side of the shell and thickness readings were taken off the ladder and were an average of .200". The floor plates had sever pitting and 4 holes were found. The average pitting found was from 1/8" to 3/16".

Recommendations:
Floor- A new floor be installed to the guidelines of API 653 standards. A baseline ultrasonic thickness reading be performed with a leak test on all new welds installed for the floor plates and chime ring.
Remaining life- Past due

Shell- Perform regular inspections to API 653 standards.
Remaining life- >50 years

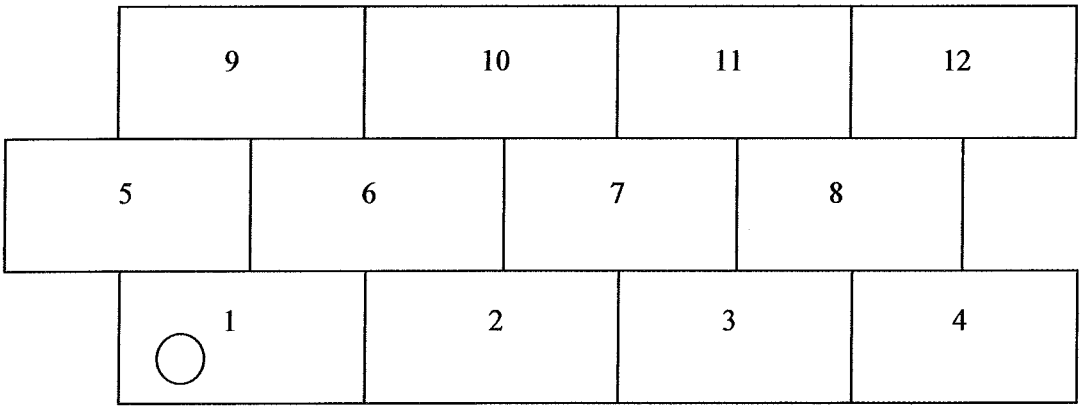
Next internal inspection- 10 years due to unknown corrosion rates
Next external visual- 5 years
Next external ultrasonic thickness inspection- 5 years due to unknown corrosion rates
Tmin- 0.100"

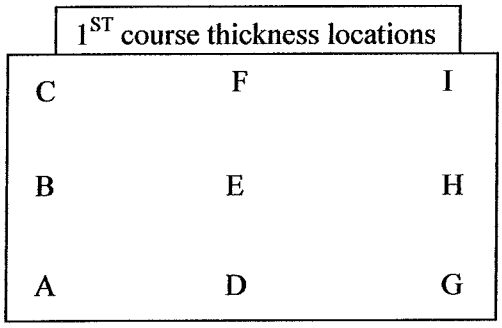
TECHNICIAN: Justin Andre

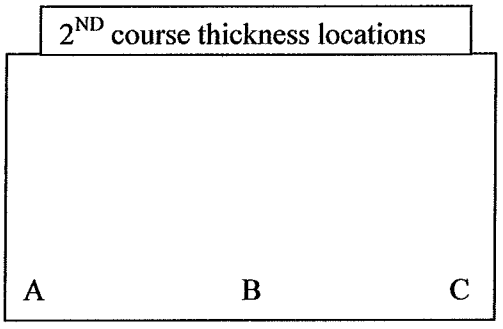
DATE: 9-4-08

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Tank Shell Layout

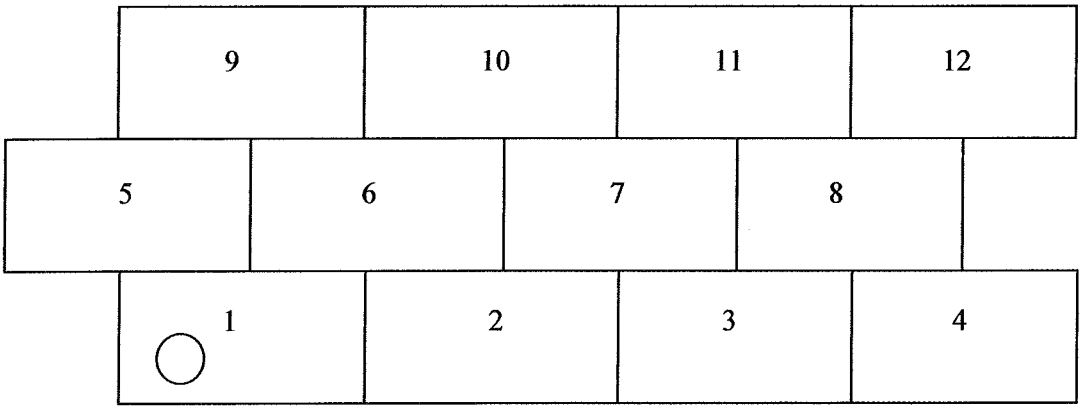


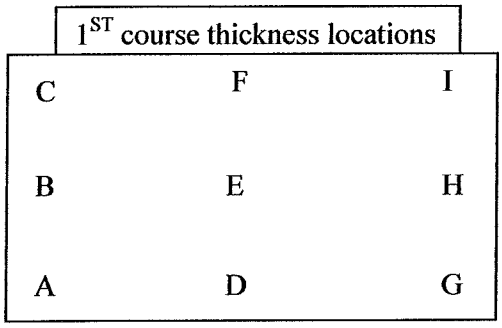


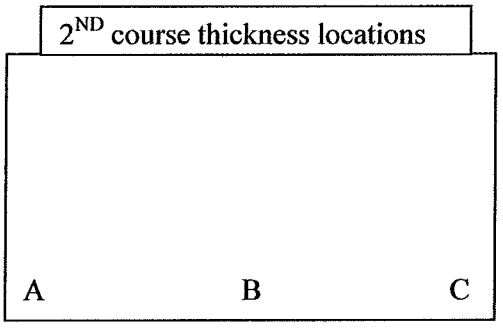


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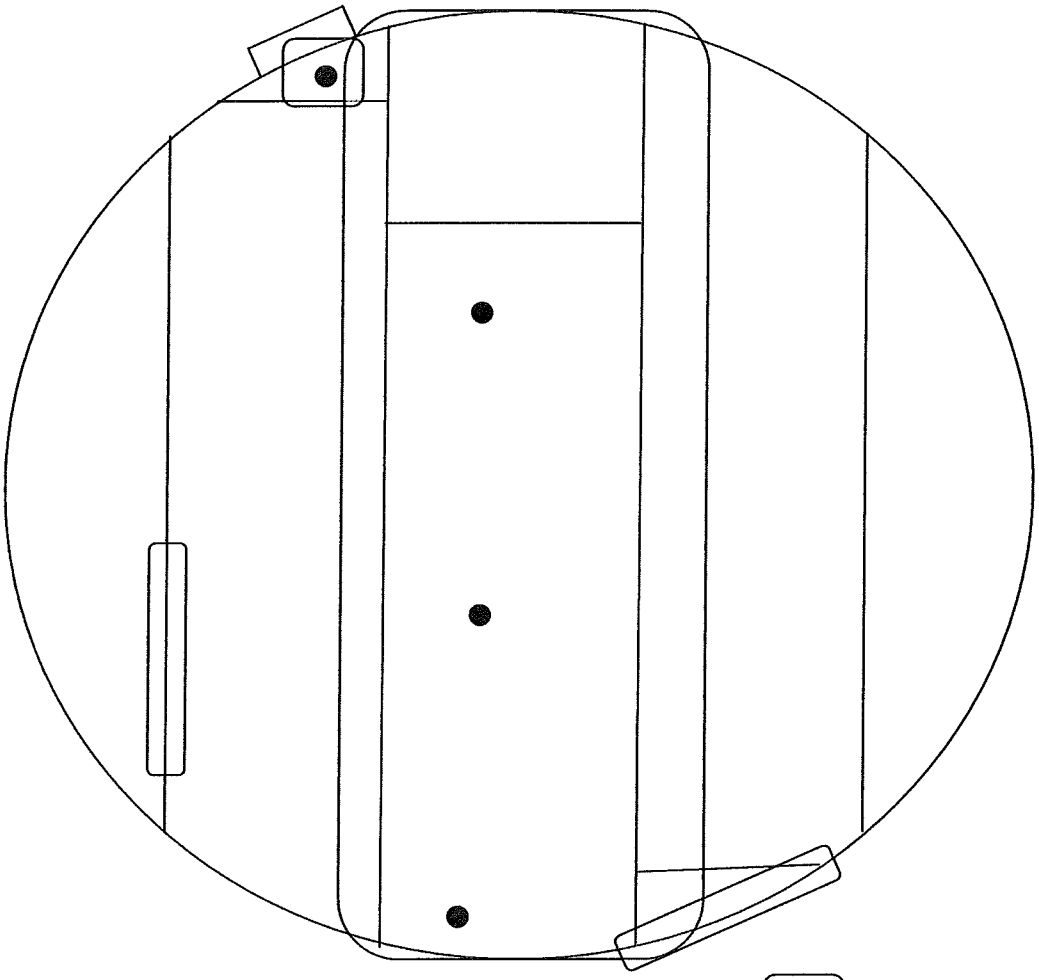
Tank Shell Layout

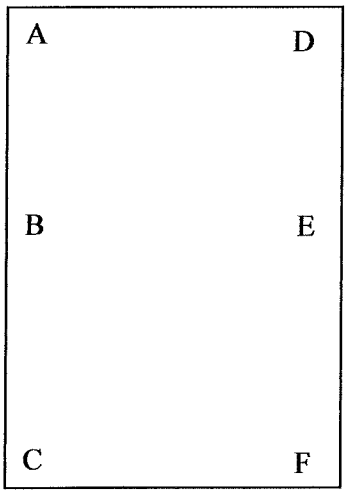






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Materials Engineering & Testing





Areas of top side pitting and corrosion

Thru hole locations

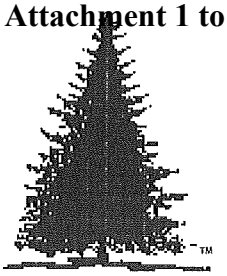
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Materials Engineering & Testing

Ultrasonic thickness readings of the 1st and 2nd shell course.

	A	B	C	D	E	F	G	H	I
1	0.270	0.270	0.288	0.271	0.276	0.274	0.284	0.293	0.283
2	0.259	0.265	0.276	0.269	0.260	0.263	0.278	0.265	0.269
3	0.272	0.281	0.270	0.272	0.282	0.285	0.283	0.281	0.296
4	0.278	0.284	0.304	0.282	0.290	0.285	0.291	0.292	0.288
5	0.248	0.252	0.253						
6	0.249	0.246	0.247						
7	0.249	0.247	0.244						
8	0.256	0.254	0.256						

Ultrasonic thickness readings of the floor plates.

	A	B	C	D	E	F
1	0.244	0.246	0.235	0.242	0.268	0.244
2	0.254	0.240	0.242	0.254	0.241	0.233
3	0.244	0.243	0.251	0.256	0.247	0.240
4	0.238	0.243	0.252	0.241	0.235	0.252
5	0.266	0.261	0.252	0.258	0.256	0.216
6	0.239	0.246	0.241	0.252	0.248	0.255
7	0.243	0.244	0.158	0.260	0.231	0.192
8	0.231	0.278	0.260	0.278	0.264	0.238



EVERGREEN ENVIRONMENTAL

Engineers and Remediation Contractors

December 9, 2008

Mr. Danny Ayler
LG&E – Ghent
9485 Highway 42 East
Ghent, KY 41045

Re: 100,000-Gallon Fuel Oil Floor Replacement

Dear Mr. Ayler:

I am enclosing the reports from Acuren Materials Engineering and Testing Company, Pittsburg Tank, and Tower Company, and Evergreen Environmental.

The reports include the original inspection report dated September 4, 2008, and the final report dated December 4, 2008. I have also included the radiographic report, vacuum testing and re-pad air test certification and liquid penetrant certification for shell to bottom weld. Also included for your records are copies of the confined space entry permits, contractor's safety management/project specific hazard analysis, copies of the daily safety meeting reports and pre-job safety evaluation report. I previously emailed door drawings and certifications of the welders prior to start.

After your review of the reports and files sent, should you have any questions please let me know.

It was our thought that the replacement of the floor went safely and completed as scheduled. We hope that you had the same thoughts as well and will keep us in mind for future projects.

Thanks again for giving us the opportunity to be of assistance.

Sincerely,

Ron Stewart

Ron Stewart
Marketing Director

RS/bo

Enclosures

lt120908

ACUREN

Materials Engineering & Testing

KU

100,000 GAL. Fuel Oil Tank

Date of Inspection: 12/4/2008

ACUREN
aterials Engineering & Testing

CUSTOMER: KU

P.O. No: 01-28540

ADDRESS: Rt 42
Ghent, **Ky**

Lab#: F135997

CUSTOMER CONTACTS: Danny Allen

US INSPECTION PERSONNEL: Virgil Voyles, Justin Andre

DESCRIPTION OF INSPECTION: Internal visual inspection and ultrasonic thickness readings of the new floor.

SPECIFICATION: API 653

ACCEPTANCE: API 653

EQUIPMENT: Krautkrammer Branson DMS 2, FH2E Transducer, S/S Calibration Step

MATERIALS: EZ Gel.

RESULTS: At the time of evaluation, thickness readings were recorded and are noted on the attached thickness data sheet. Refer to the attached data sheet and drawing and data.

Recommendations:

Floor- Perform regular inspections to API 653 standards which state the next internal inspection shall not exceed 10 years if the corrosion rates are unknown and there is no similar service available to estimate the bottom plates minimum thickness at the next inspection date.

TECHNICIAN: Justin Andre

DATE: 12-4-08

ACUREN
Materials Engineering & Testing

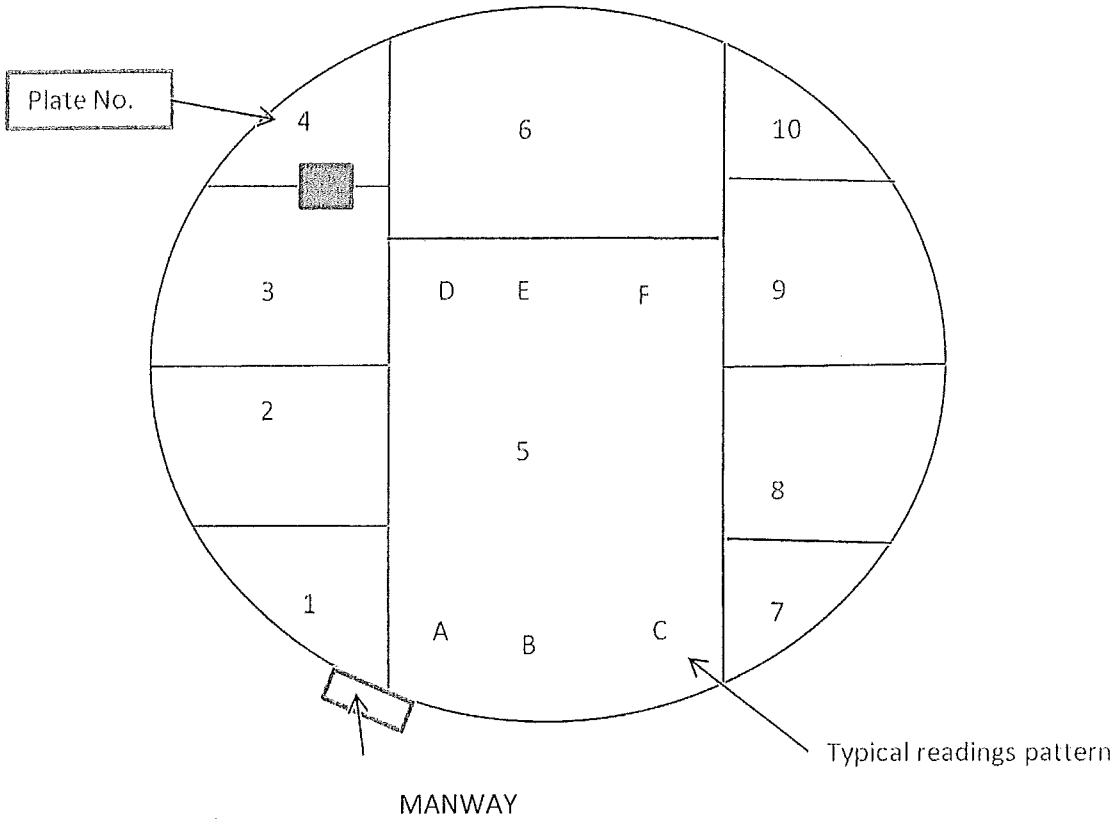


Plate	A	B	C	D	E	F
1	0.248	0.251	0.252	0.249	0.253	0.253
2	0.250	0.249	0.250	0.250	0.252	0.250
3	0.249	0.254	0.251	0.253	0.252	0.251
4	0.247	0.249	0.249	0.251	0.248	0.249
5	0.250	0.250	0.251	0.249	0.255	0.250
6	0.256	0.257	0.253	0.256	0.256	0.256
7	0.253	0.251	0.250	0.253	0.252	0.250
8	0.253	0.251	0.250	0.249	0.248	0.249
9	0.250	0.249	0.248	0.249	0.253	0.248
10	0.253	0.252	0.254	0.264	0.255	0.253

ACUREN
Materials Engineering & Testing

Cincinnati, Ohio

Radiographic Report

Timber

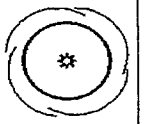
CUSTOMER: KU GHENT	*Pipe Diameter*	PLATE		*Film Technique (See Table 1)*	#2 SW
P/N OR J/N: 6439 DOOR SHEET	*Wall Thickness*	.250"		*Type Penetrameter and Size*	ASTM E GROUP A
SO# F135998	*Weld Reinforcement*	.100"		*Material*	SS
	Joint Type	DV		*Penetrameter Location*	Film Side ☐ Source Side ☒
	Material	CS		*Shim Material*	N/A
Penetrameter Density	N/A	*Radiation Source*	IR 192	*Shim Thickness*	N/A
Weld Density	2.3	*Source Strength/Exposure Time*	96 30 SEC	*Film Processing*	Manual ☒ Automatic ☐
Weld Proc. No.	SMAW	*Focal Spot Size*	.1" X .1"	*Intensifying Screens (material)*	PB
Governing Specification	API 650	*Source to Object Distance*	18"	*Front Thickness*	.010
Acceptance Standard	API 1650	*Source Side of Object to Film Distance*	.350"	*Center Thickness*	-
NDE Procedures/ Rev.	SP RT 1	*Film Manufacture*	AGFA	*Back Thickness*	.010
Elevation	N/A	*Film Type/Speed*	D5	*Radiographer*	JUSTIN ROSE LEVEL II
ISO Dwg. No.	N/A	*Film Size*	4.5" X 10"	*Film Reviewer & Certification Level*	VIRGIL VOYLES LEVEL III

Exposure No.	*Weld No. View*	*Section No. View*	*Original or Repair*	*Geometric Unsharpness (Ug)*	*Porosity*	*S I*	*Crack(s)*	*IF*	*IP*	*Undercut*	*BT*	*SB*	*F/A*	*Accept*	*Reject*	***Remarks***
	V1	A-B	OR											√		
	H1	A-B	OR											√		
	C1	A-B	OR		√									√		

Reviewed by A-I		*Date*		*NDE Inspector*	JUSTIN ROSE	*Date*	11/13/08	*SNT-TC-1A-Level*	II

TABLE 1

1 Single Wall



2 Single Wall



3 Double Wall



4 Elliptical (0&90)



**SI – Slag Inclusions*
** BT – Burn Thru*
** IF – Incomplete Fusion*
** SB – Suck Back / Root Concavity*
** IP – Inadequate Penetration*
** FA – Film Artifact*

PITTSBURG TANK & TOWER CO., INC.

P. O. BOX 913 • HENDERSON, KENTUCKY 42419-0913 • TEL. (270) 826-9000 • FAX (270) 827-4417
PAINT • REPAIR • DISMANTLE • INSPECT • TANKS RAISED, LOWERED AND MOVED • NEW AND USED TANKS

SINCE 1919

Vacuum Testing & Re-Pad Air Test Certification

Project: Floor Replacement on 100,000 Gal. Fule Oil Tank

Location: Ghent Ky Kentucky Power Plant

PT&T Job #: 6439

This is to certify that Pittsburg Tank & Tower Co., Inc. has performed the required vacuum testing of the floor plate welds and the air testing of the re-pads for the project referenced above, and that the results were found to be satisfactory.

Performed By:	Witnessed By:
Jason Head	Bill Head
Signature	
Jason Head welder	
Print Name and Title	
11-11-08	
Date	

PITTSBURG TANK & TOWER CO., INC.

P. O. BOX 913 • HENDERSON, KENTUCKY 42419-0913 • TEL. (270) 826-9000 • FAX (270) 827-4417
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SINCE 1919

Liquid Penetrant Test Certification for Shell to BottomWelds

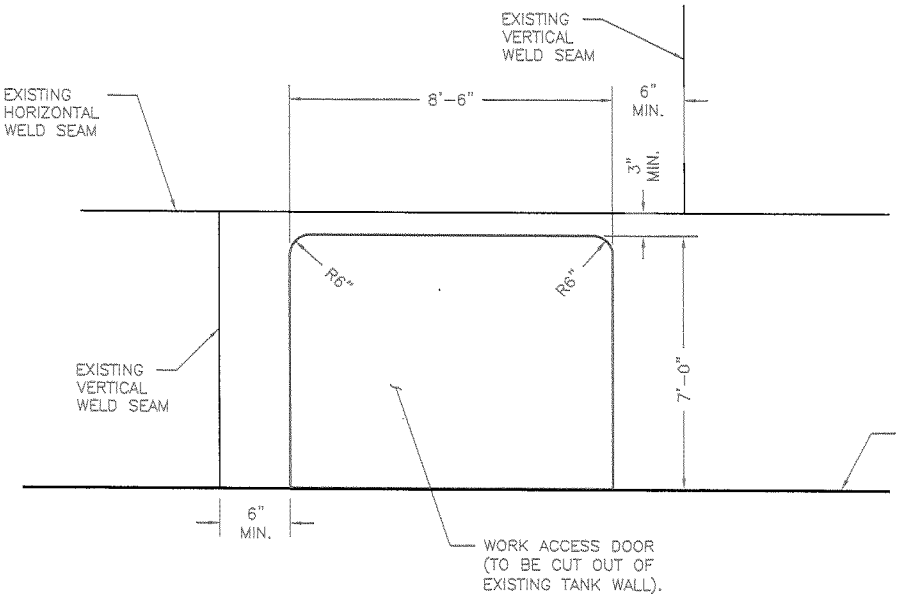
Project: Floor RePLacement on 100,000 gaL. Fule oil tank

Location: Ghent Ky Kentucky Power Plant

PT&T Job #: 6439

This is to certify that Pittsburg Tank & Tower Co., Inc has performed the required Liquid Penetrant Testing of the shell to bottom plate welds for the project referenced above, and that the results were found to be satisfactory.

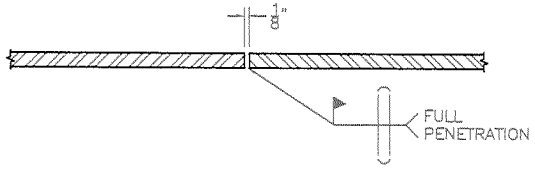
Performed By:	Witnessed By:
Bill Head	Robert Head
Signature	
Bill Head Forman	
Print Name and Title	
11-11-08	
Date	



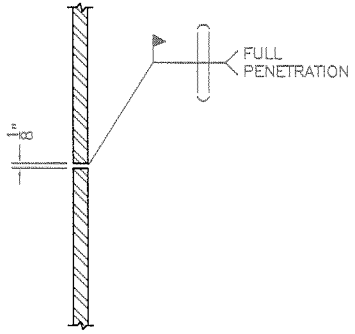
DOOR SHEET CUT-OUT DETAIL

NOTE:
DRAW LINES WITH STRAIGHT EDGE THEN CUT DOOR SHEET OUT WITH CUTTING TORCH.

NOTES:
1. TOP CORNERS OF THE CUTOUT SHALL BE CUT TO A 6" MIN. RADIUS. BOTTOM CORNERS TO BE CUT SQUARE AT INTERSECTION OF EXISTING/NEW BOTTOM.
2. CUT-OUT MUST NOT BE WITHIN 6" OF AN EXISTING VERTICTAL WELD SEAM, OR CUT OUT MUST PROJECT A MINIMUM OF 6" BEYOND AN EXISTING VERTICAL WELD SEAM.
3. CUT-OUT MUST NOT BE WITHIN 3" OF AN EXISTING HORIZONTAL WELD SEAM.
4. THE ORIGINAL SHELL SHEET IS TO BE REPLACED UPON COMPLETION OF THE WORK, PROVIDED THAT IT IS DEEMED IN ACCEPTABLE CONDITION. ALL EDGES SHALL BE GROUND AS REQUIRED PER THE DETAILS SHOWN, PRIOR TO INSTALLATION.
5. THE NEW VERTICAL AND HORIZONTAL WELDS SHALL BE RADIOGRAPH TESTED PER API 653.



VERTICAL WELD
(PLATE 5/16" THICK OR LESS)



HORIZONTAL WELD
(PLATE 5/16" THICK OR LESS)

REVISION BLOCK			
NO.	DATE	BY	REVISION
1	11/5/08	MAB	ADDED DOOR SHEET HEIGHT DIMENSION

DOOR SHEET CUT-OUT DETAIL
BOTTOM REPLACEMENT FOR AN EXISTING
ø27'-0" X 24' FUEL STORAGE TANK

DRAWN BY: MAB
DATE: 11/4/08
CHECKED BY:
APPROVED BY:

EVERGREEN ENVIRONMENTAL
GHENT, KY

JOB NO: 6439
PROJ. MGR.: JEFF MARTIN
DWG. NO.: 5
SCALE: NONE

PITTSBURG TANK & TOWER CO.
GROUND TANK DIVISION
HENDERSON, KENTUCKY
SINCE 1919

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Tank T-004
20,000-Gallon Units 3 & 4 Fuel Oil Tank

T4 Fuel Oil Tank External Inspection

KU-LG&E

Location: Ghent, KY

Inspection Date: August 10, 2022

Report Date: August 25, 2022

Project Number: 2022-03519



DATE	PREPARED BY	APPROVED BY:	APPROVER SIGNATURE
8/25/2022	William Stout	Brian O'Leary	

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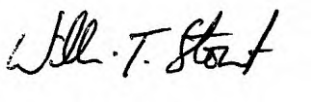
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1.0 INTRODUCTION

On August 10, 2022, Gecko Robotics performed an in-service inspection of Tank 4, a fuel oil tank, for Kentucky Utilities (KU) LG&E in Ghent, KY. The results of this inspection were used to provide an evaluation per the applicable criteria of STI SP001, 6th Edition, January 2018 and API 653, *5th Edition, Addendum 1 April 2018, Addendum 2 May 2020* standard.

Gecko Robotics Personal for Project:



William Stout, Lead API 653 Inspector

Certification Number 25296,

STI SP001 Adjunct Certification #AC44261

Kelly Keil, NDT Level II

2.0 TANK DESCRIPTION

Customer	KU-LG&E	**Location**	Ghent, KY
Tank	T-4	**Project**	2022-03519

GENERAL TANK INFORMATION	
Manufacturer (Repair/Altered)	Unknown
Design Standard	Unknown
Product	Fuel Oil
Cathodic Protection	No
Data Plate	No
DOT Regulated Tank	No
TANK DIMENSIONS	
Tank Diameter	10.50 feet
Tank Height (OAL)	34.77 feet (incl. heads)
Nominal Capacity	20,000 gallons
TANK DESIGN DETAILS	
Foundation Type	Concrete Pedestals w/ three tank saddles
Tank Saddles	Struct. Steel, 9.75" x 36.5" w/ 12" x 110.5" x 0.4375" base plate
Shell Type	Butt Welded, Carbon Steel, Unknown Grade
Continuous Release Detection Method (CRDM)	Yes, Elevated Tank inside Containment
Release Prevention Barrier (RPB)	Yes, Concrete Containment
DATES	
Year Manufactured	1980 (per facility records)
Previous Inspection	March 2017
Date of Internal Coating	Unknown
Data of External Coating	Unknown
TANK COATING	
Shell (External)	Beige, thin film epoxy
Shell (Internal)	Unknown

3.0 INSPECTION INTERVALS

Inspection Intervals	
Periodic	Includes weekly, monthly, quarterly, annually as required
Formal External	August, 2042

Inspection intervals for shop-fabricated ASTs as per STI SP001 5th Ed., Sections 5.5.1-5.5.5 and Section 6-9, Table 5-5.

AST Type and Size (U.S. Gallons)		Category 1	Category 2	Category 3
Shop-Fabricated ASTs	0-1,100 (0-4,164 liters)	**P**	**P**	**P, E & L (10)**
	1,101-5,000 (4,168-18,927 liters)	**P**	**P, E & L (10)**	**[P, E& L(5), I(10)] Or [P, L(2), E(5)]**
	5,001-30,000 (18,931-113,562 liters)	**P, E (20)**	**[P, E(10), I(20)] Or [P, E(5), L(10)]**	**[P, E & L(5), I(10)] Or [P, L(1), E(5)]**
	30,001-50,000 (113,566-189,271 liters)	**P, E (20)**	**P, E & L (5), I (15)**	**P, E & L(5), I(10)**
Portable Containers		**P**	**P**	**P****

** Owner shall either discontinue use of portable container for storage or have the portable container tested and recertified in accordance with the following schedule (please refer to STI SP001 5th Ed. Section 9):

Plastic Portable Container	Every 7 years
Steel Portable Container	Every 12 years
Stainless Steel Portable Container	Every 17 years

Designations used above:

P Periodic AST inspection IAW STI SP001, 5th Ed. Section 6

E Formal external inspection by a certified inspector IAW STI SP001, 5th Ed. Section 7

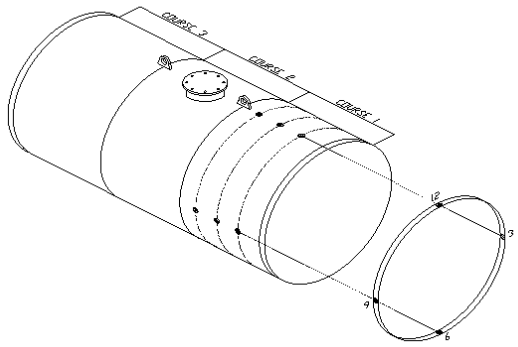
I Formal internal inspection by a certified inspector IAW STI SP001, 5th Ed. Section 8

L Leak testing by the owner or owner's designee IAW STI SP001, 5th Ed. Section 9

(#) Indicates the maximum inspection interval in years

4.0 SHELL THICKNESS DATA

SHELL THICKNESS (MINIMUM AND AVERAGES)



Location		Position 1	Position 2	Position 3	Position 4	Position 5		
Course		[in]	[in]	[in]	[in]	[in]		
1	12:00	0.248	0.251	0.257	0.245	0.264	Minimum	0.232
	3:00	0.253	0.259	0.256	0.245	0.255	Maximum	0.264
	6:00	0.248	0.251	0.246	0.232	0.241	Average	0.250
	9:00	0.249	0.252	0.249	0.246	0.254	St. Dev.	0.006764

Note: These minimum and averages were taken by handheld UT gauge

Head Measurement – UT Inspection

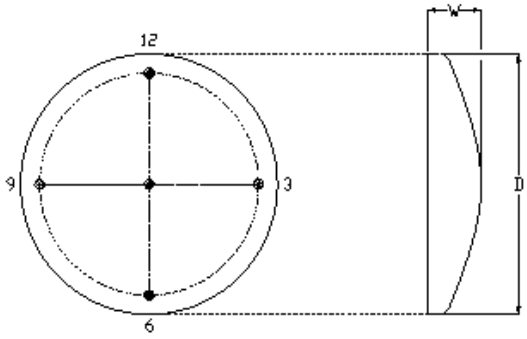
Measurement	WT
Width (W)	23.0 in
Diameter (D)	126.0 in

Head 1 (north)	
Location	WT [in]
12:00	0.310
3:00	0.314
6:00	0.321
9:00	0.301
Center	0.322

Min	0.301
Max	0.322
Ave	0.314

Head 2 (south)	
Location	WT [in]
12:00	0.303
3:00	0.327
6:00	0.301
9:00	0.318
Center	0.317

Min	0.301
Max	0.327
Ave	0.313



5.0 INSPECTION FINDINGS AND RECOMMENDATIONS

Foundation / Supports/ Containment

1. Inspector noted some deterioration of the concrete containment walls and floor. The vertical joints at the wall between the tank containment and the pump station containment have failed. Recommend cleaning the joints and installing a backer rod and joint sealant compatible with the product stored. Recommend sealing cracks to prevent water entry and restore containment integrity.
2. The tank is elevated on pedestals for a means of visual / continuous release detection. The saddles are welded to the tank, leaving a two to three inch length of joint unwelded on both sides of each saddle. Corrosion staining was noted from the middle saddle. Recommend surface preparation of the weld area and providing a weld repair to prevent further deterioration. Upon completion, provide spot coating repair of the area. Corrosion noted at the base plates. Recommend surface preparation and coating repair to prevent further deterioration.

External Shell

1. Tank 4 external protective coating system appeared to be in good condition. Inspector found no issues requiring repair or replacement.
2. Inspector noted a support for the work platform was welded directly to the tank shell without a reinforcing plate. This is noted for information only. However, consider installation of a lap-welded reinforcing plate when the tank is next out of service, or sooner if a change in condition occurs.

External Appurtenances

1. The tank was not provided with a nameplate. Consider installation of a nameplate. Utilize API Standard 653, paragraph 13.1.2 as a reference.
2. Valves at nozzles N-1, N-3, N-4 exhibited deteriorated coatings and product staining. The product staining could be an indication of valve packing deterioration / failure. Recommend replacing valve stem packing and servicing of the valves to increase service life of the valves. Also, consider surface preparation and coating repair of the valves.

6.0 OBSERVATIONS OF INSPECTION FINDINGS

Foundation

1. Inspector noted some deterioration of the concrete containment walls and floor. The vertical joints at the wall between the tank containment and the pump station containment have failed. Recommend cleaning the joints and installing a backer rod and joint sealant compatible with the product stored. Recommend sealing cracks to prevent water entry and restore containment integrity.



Cracking in Containment Floor (typ)



Cracking in Containment Wall (typ)



Failed Vertical Joint

2. The saddles are welded to the tank, leaving a two to three inch length of joint unwelded on both sides of each saddle. Corrosion staining was noted from the middle saddle. Recommend surface preparation of the weld area and providing a weld repair to prevent further deterioration. Upon completion, provide spot coating repair of the area. Corrosion noted at the base plates. Recommend surface preparation and coating repair to prevent further deterioration.



Corrosion noted at saddle-to-tank weld.



Corrosion noted at saddle-to-tank weld.



External Shell

1. Inspector noted a support for the work platform was welded directly to the tank shell without a reinforcing plate. This is noted for information only. However, consider installation of a lap-welded reinforcing plate when the tank is next out of service, or sooner if a change in condition occurs.



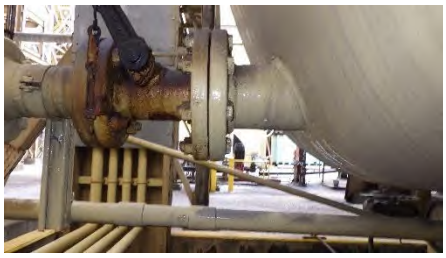
Platform support (right) without reinforcing plate.



Platform support (left) with reinforcing plate.

External Appurtenances

2. Valves at nozzles N-1, N-3, N-4 exhibited deteriorated coatings and product staining. The product staining could be an indication of valve packing deterioration / failure. Recommend replacing valve stem packing and servicing of the valves to increase service life of the valves. Also, consider surface preparation and coating repair of the valves.



Nozzle N-1

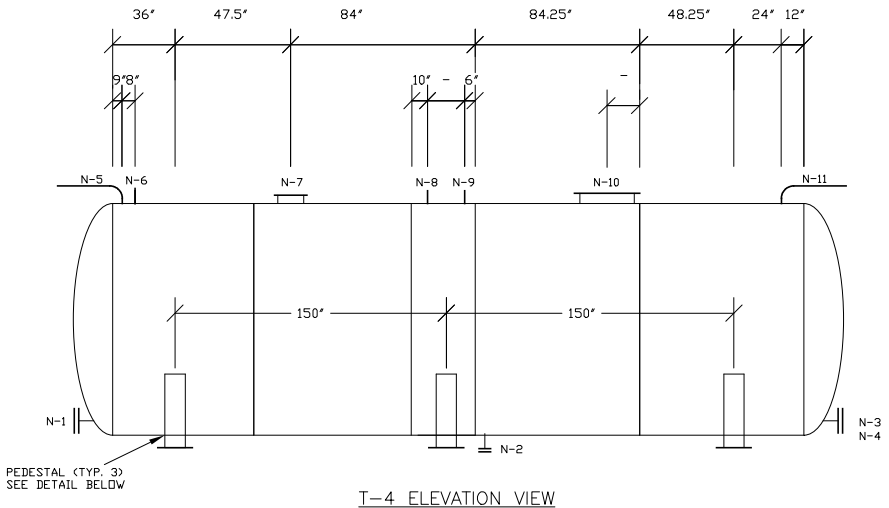


Nozzle N-3

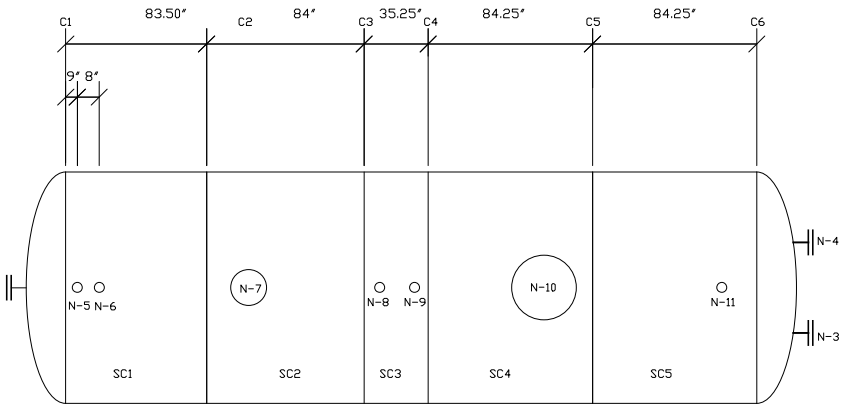


Nozzle N-4

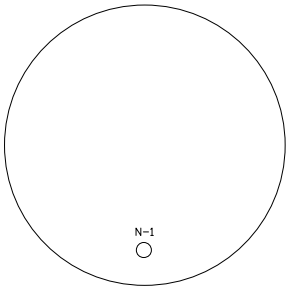
C# = CIRC. WELD
SC# = SHELL COURSE



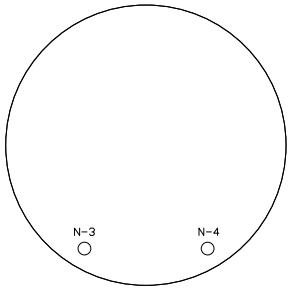
T-4 ELEVATION VIEW
NTS



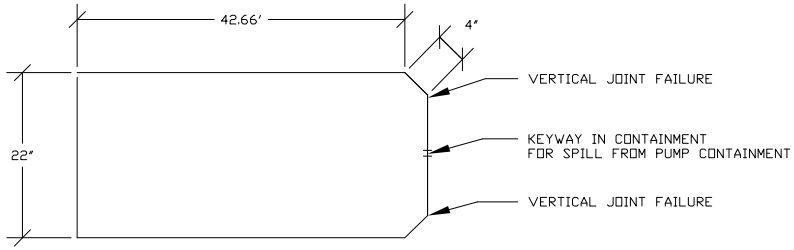
T-4 PLAN VIEW
NTS



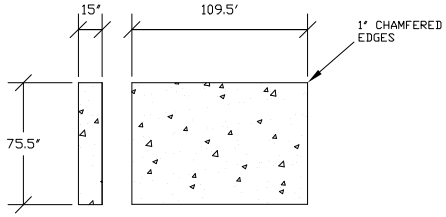
SOUTH HEAD
NTS



NORTH HEAD
NTS



T-4 CONTAINMENT
NTS



PEDESTAL DETAIL (TYP. 3)
NTS

NOZZLE SCHEDULE

ID	SIZE
N-1	4″Ø
N-2	2″Ø
N-3	4″Ø
N-4	4″Ø
N-5	3″Ø
N-6	3″Ø
N-7	20″Ø
N-8	4″Ø
N-9	4″Ø
N-10	36″Ø
N-11	3″Ø

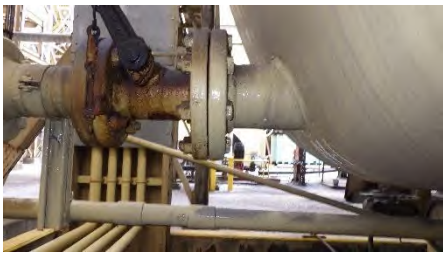
DRAWN BY: AUSTIN ALVIS	DATE INSPECTED: 08/10/2022	EQ. NUMBER: TANK T-4	CLIENT NAME: KU-LG&E	gecko robotics GECKO ROBOTICS 100 S. COMMONS, SUITE 145 PITTSBURGH, PA 15212
DATE DRAWN: 08/10/2022	TECHNICIAN: WILLIAM STOUT	EQ. NAME -	CLIENT LOCATION: GHENT STATION, GHENT, KY	
FILE NO. 2022-03519	DRAWING: 1 OF 1			

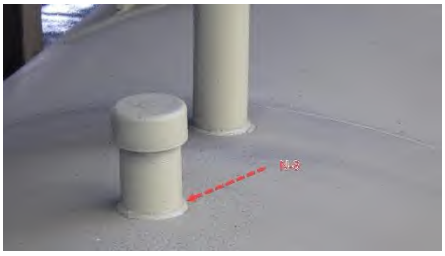
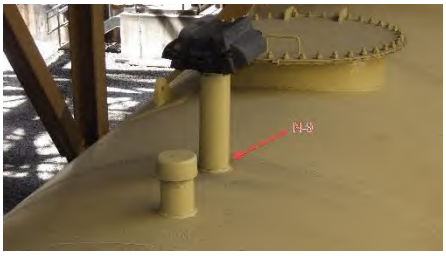
8.0 NOZZLE AND APPURTENANCES TABLE

Item	Description	Pipe Size [in]	12:00 [in]	3:00 [in]	6:00 [in]	9:00 [in]	Comments
N-1	Nozzle	4.00	0.324	0.311	0.311	0.321	
N-2	Low point drain	2.00	-	-	-	-	Threaded Coupler
N-3	Nozzle	4.00	0.326	0.318	0.307	0.323	
N-4	Nozzle	4.00	0.319	0.328	0.309	0.310	
N-5	Nozzle	3.00	0.200	0.225	0.223	0.217	
N-6	Nozzle	6.00	0.254	0.257	0.255	0.255	
N-7	Nozzle	20.00	-	-	-	-	Access limited to visual from ladder
N-8	Nozzle	4.00	-	-	-	-	Access limited to visual from ladder
N-9	Vent	4.00	-	-	-	-	Access limited to visual from ladder
N-10	Manway	36.00	-	-	-	-	Access limited to visual from ladder
N-11	Nozzle	3.00	-	-	-	-	Access limited to visual from ladder

*Installation of an overhead anchor point / tie-off would allow for closer inspection of nozzles at future inspection intervals.

9.0 TANK PHOTOS

		
Nozzle N-1	Nozzle N-1	Nozzle N-1
		
Nozzle N-2	Nozzle N-2	Nozzle N-2
		
Nozzle N-3	Nozzle N-3	Nozzle N-3
		
Nozzle N-4	Nozzle N-4	Nozzle N-4
		
Nozzle N-5	Nozzle N-5	Nozzle N-5

 Nozzle N-6	 Nozzle N-6	 Nozzle N-6
 Nozzle N-7 (emergency vent)	 Nozzle N-7	 Nozzle N-8 (spare)
 Nozzle N-8	 Nozzle N-9 (vent)	 Nozzle N-9
 Nozzle N-10 (manway)	 Nozzle N-11	 Work Platform and Fixed Ladder
 Fixed Ladder	 Elevation View	 Elevation View

		
Elevation View	Elevation (side blocked by wall)	Pedestal
		
Pedestal (end)	Pedestal (center)	Pedestal (end)

TEAM QUALSPEC

10540 Chester Road, Woodlawn, OH 45215

INSPECTION REPORT FOR ATMOSPHERIC STORAGE TANK

Form VT.3-1238 Rev. 0

COMPANY:	Kentucky Utilities	LOCATION:	Ghent, KY
UNIT LOCATION:	North side of building outside at unit 3 location	EQUIPMENT NUMBER:	3+4 Fuel oil tank
TEAM W.O. #:	53870350	COMPLETION DATE:	3-22-17
EQUIPMENT NAME:	3+4 Fuel oil tank		

Formal External Inspection with thickness of 3+4 Fuel Oil Tank



In accordance with ST-SP001

Site Contact: Ben Zeigler
Inspector: William T. McDaniel API 653 #38330
UTT Technician: Adam Holland

TEAM QUALSPEC
10540 Chester Road, Woodlawn, OH 45215

INSPECTION REPORT FOR ATMOSPHERIC STORAGE TANK

Form VT.3-1238 Rev. 0

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TEAM W.O. #:	53870350	COMPLETION DATE:	3-22-17
EQUIPMENT NAME:	3+4 Fuel oil tank		

INSPECTION SUMMARY

GENERAL:	A formal external inspection with thickness was performed at this time meeting the requirements of STI-SP001(Inspection). The tank capacity is 20,000 gallons. The T-min is derived from UL-142(Design), which is based on the maximum liquid capacity of horizontal tank. API 653 does not include horizontal tanks. The inspection frequencies can be maintained in accordance with API 653 which in this case is similar in both inspection codes. The tank is in secondary containment that is capable of maintaining 148% of full volume of tank and the tank currently has overfill protection. The current conditions classify the tank as a category 1 tank. The tank has no integral concerns at this time and appears to be fit for service.
FOUNDATION:	The tank is a horizontal tank that rest on steel horizontal supports which are mounted to concrete structure.
INSULATION:	The tank is not currently insulated.
EXTERNAL:	The tank is currently dirty currently. Areas around the steel saddle are not currently grouted, there is currently coating failure in this area.
INTERNAL:	Not performed at this time.

REPAIRS RECOMMENDED FOR TANK (SEE OBSERVATIONS / RECOMMENDATIONS)

[ ] YES - ASAP - PRIOR TO RETURNING TO SERVICE
[X] YES- IN A TIMELY MANNER
[X] NONE

NEXT INSPECTION DATE:

EXTERNAL: **3-22-37**

INTERNAL: **Is not required**

INSPECTOR: *William Trafton McDaniel* DATE: *3-22-17*

SIGNATURE: William T McDaniel API 653 NO: *38330*

TEAM QUALSPEC

10540 Chester Road, Woodlawn, OH 45215

INSPECTION REPORT FOR ATMOSPHERIC STORAGE TANK

Form VT.3-1238 Rev. 0

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TEAM W.O. #:	53870350	COMPLETION DATE:	3-22-17
EQUIPMENT NAME:	3+4 Fuel oil tank		

OBSERVATIONS	RECOMMENDATIONS
Coating failure on bottom of steel saddle where it is connected to concrete	Clean and recoat
No grouting in place on joint area of steel to concrete saddle	Grout area to prevent moisture from entering below and causing underside corrosion and freezing and damaging concrete issues
Tank is covered in dirt	Clean to increase longevity of protective coating

TEAM QUALSPEC

10540 Chester Road, Woodlawn, OH 45215

INSPECTION REPORT FOR ATMOSPHERIC STORAGE TANK

Form VT.3-1238 Rev. 0

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TEAM W.O. #:	53870350	COMPLETION DATE:	3-22-17
EQUIPMENT NAME:	3+4 Fuel oil tank		

External Visual Inspection Results

Item No.	Item	Good	Fair	Poor	N/A	
1	Shell	X				
2	Floor / Bottom Head	X				
3	Roof / Top Head	X				
4	Nozzles and Fasteners	X				
5	Piping and Components	X				
6	Valves and Components	X				
7	Welds and Seams	X				
8	Davits				X	
9	Manways & Fasteners	X				
10	Stiffner Rings				X	
11	Gauges				X	
12	Sight Glass				X	
13	Platforms/Handrails	X				
14	Ladders/Cages/Stairs	X				
15	Grating/Treads	X				
16	Insulation or Coating		X			Coating failure on saddles
17	Weather Jacket				X	
18	Supports/Base plates	X				**Type:**
19	Anchors/Support bolts	X				
20	Foundation (Spalling, etc.)	X				
21	Grouting			X		No grouting in place

		Yes	No		COMMENTS
22	Corrosion (Location)		X		
23	Name Plate Attached	X			
24	Visible Leaks		X		
25	Ground Wire		X		
26	Visible Distortion		X		
27	Weep Holes Okay			N/A	
28	Blistering		X		
29	Other		X		

Notes or Comments:

TEAM QUALSPEC
10540 Chester Road, Woodlawn, OH 45215

INSPECTION REPORT FOR ATMOSPHERIC STORAGE TANK

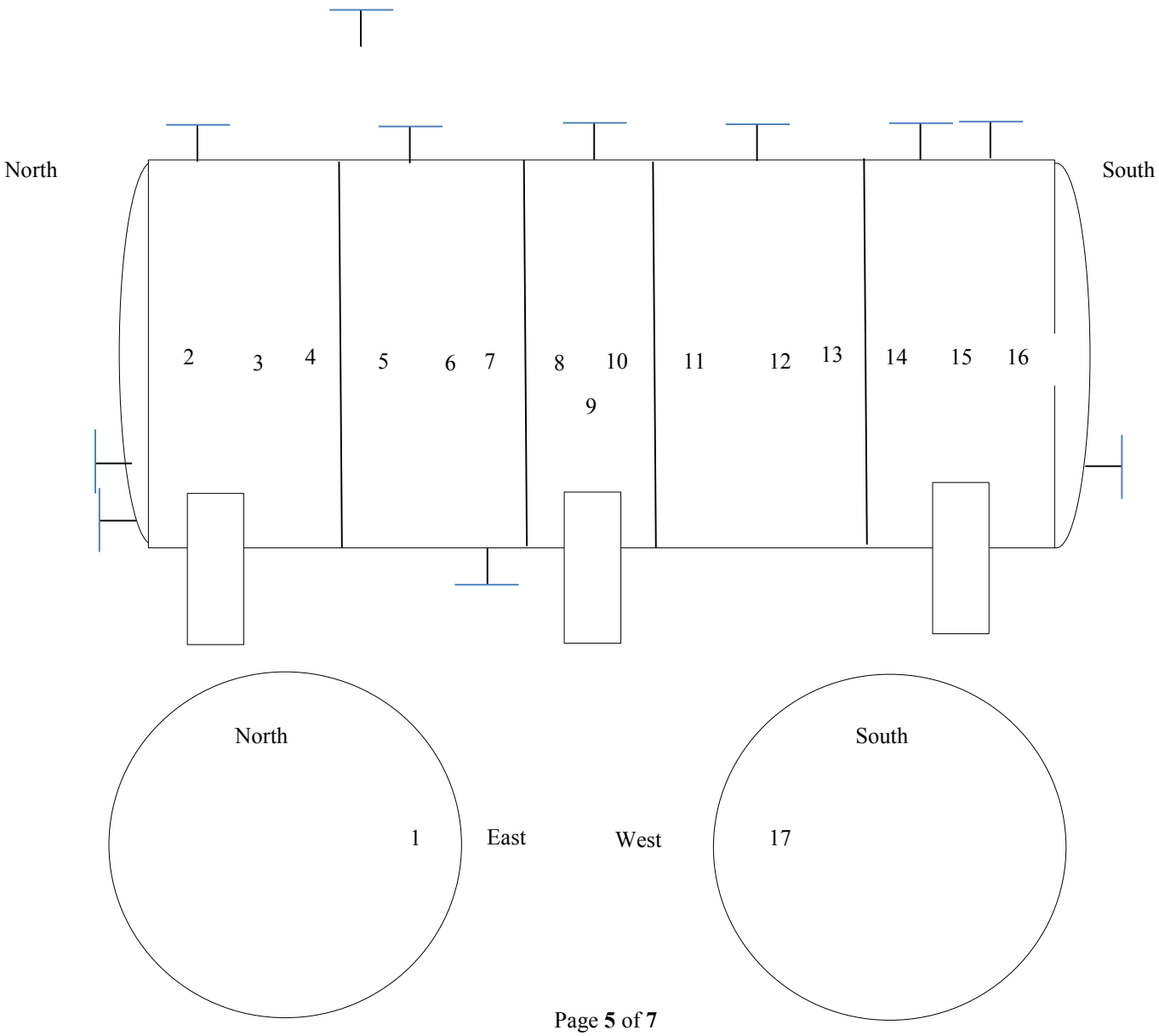
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TEAM W.O. #:	53870350	COMPLETION DATE:	3-22-17
EQUIPMENT NAME:	3+4 Fuel oil tank		

UT Calibration Data

Equipment Make:	*GE*	Model # :	*DMS 2*	Serial # :	*01NDJJ*		
Calibration Block Material :	☒ C/S	Serial # :	*09-3799*	☐ S/S	Serial # :		
Transducer Serial # :	*15L00D04*	Size :	*.375*	Frequency:	*7.5*	MHZ	
UT Couplant Type:	*Sonix-UT*	Batch # :	*306-07*				

Sketch



TEAM QUALSPEC
10540 Chester Road, Woodlawn, OH 45215

INSPECTION REPORT FOR ATMOSPHERIC STORAGE TANK

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TEAM W.O. #:	53870350	COMPLETION DATE:	3-22-17
EQUIPMENT NAME:	3+4 Fuel oil tank		

	East	Bottom
1	0.332	0.341
2	0.266	0.263
3	0.273	0.267
4	0.271	0.263
5	0.267	0.266
6	0.271	0.267
7	0.269	0.261
8	0.274	0.262
9	0.28	N/A
10	0.283	0.254
11	0.262	0.258
12	0.261	0.257
13	0.262	0.254
14	0.268	0.255
15	0.279	0.259
16	0.278	0.266
17	0.34	0.34

T-min in accordance with UL-142 .240”
T-original=.281

T-previous=.281
T-actual=.2659
Wall loss=.0151
Yrs in service=37
Corrosion rate=.0004”per year

T-actual=.2659
T-min=.240
Remaining wall=.0259
Remaining life=64 years

The T-min in accordance with UL-142 was the best method to determine T-min. The T-min may actually be lower and the corrosion rate assumed is on the conservative side and material thicknesses would be likely scenarios in tank construction, although it is not guaranteed with limited design information. To meet code requirements and internal inspection needs to be performed.

TEAM QUALSPEC

10540 Chester Road, Woodlawn, OH 45215

INSPECTION REPORT FOR ATMOSPHERIC STORAGE TANK

Form VT.3-1238 Rev. 0

COMPANY:	Kentucky Utilities	LOCATION:	Ghent, KY
UNIT LOCATION:	North side of building outside at unit 3 location	EQUIPMENT NUMBER:	3+4 Fuel oil tank
TEAM W.O. #:	53870350	COMPLETION DATE:	3-22-17
EQUIPMENT NAME:	3+4 Fuel oil tank		





Area of coating failure and missing grout

Tank T-005
12,000-Gallon Coalyard Mobile Equipment Fuel Tank

T5 Diesel Fuel Tank External Inspection

KU-LG&E

Location: Ghent, KY

Inspection Date: August 11, 2022

Report Date: August 25, 2022

Project Number: 2022-03519



DATE	PREPARED BY	APPROVED BY:	APPROVER SIGNATURE
8/25/2022	William Stout	Brian O'Leary	

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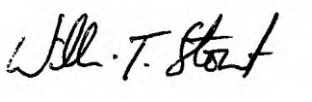
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1.0 INTRODUCTION

On August 11, 2022, Gecko Robotics performed an in-service inspection of Tank 5, a diesel fuel tank, for Kentucky Utilities (KU) LG&E in Ghent, KY. The results of this inspection were used to provide an evaluation per the applicable criteria of STI SP001, 6th Edition, January 2018 and API 653, *5th Edition, Addendum 1 April 2018, Addendum 2 May 2020* standard.

Gecko Robotics Personal for Project:



William Stout, Lead API 653 Inspector

Certification Number 25296,

STI SP001 Adjunct Certification #AC44261

Kelly Keil, NDT Level II

2.0 TANK DESCRIPTION

Customer	KU-LG&E	**Location**	Ghent, KY
Tank	T-5	**Project**	2022-03519

GENERAL TANK INFORMATION	
Manufacturer (Repair/Altered)	Unknown
Design Standard	STI
Product	Fuel Oil
Cathodic Protection	No
Data Plate	No
DOT Regulated Tank	No
TANK DIMENSIONS	
Tank Diameter	9.08 feet
Tank Height (OAL)	26.50 feet (incl. heads)
Nominal Capacity	12,000 gallons
TANK DESIGN DETAILS	
Foundation Type	Steel support saddles, skid-mounted, on concrete slab.
Tank Saddles	Struct. Steel, 10" x 30"
Shell Type	Butt Welded, Carbon Steel, Unknown Grade, Double-walled
Continuous Release Detection Method (CRDM)	Yes
Release Prevention Barrier (RPB)	Yes
DATES	
Year Manufactured	Unknown
Previous Inspection	March 2017
Date of Internal Coating	Unknown
Data of External Coating	Unknown
TANK COATING	
Shell (External)	White and Gray, thin film epoxy
Shell (Internal)	Unknown

3.0 INSPECTION INTERVALS

Inspection Intervals	
Periodic	Includes weekly, monthly, quarterly, annually as required
Formal External	August, 2042

Inspection intervals for shop-fabricated ASTs as per STI SP001 5th Ed., Sections 5.5.1-5.5.5 and Section 6-9, Table 5-5.

AST Type and Size (U.S. Gallons)		Category 1	Category 2	Category 3
Shop-Fabricated ASTs	0-1,100 (0-4,164 liters)	**P**	**P**	**P, E & L (10)**
	1,101-5,000 (4,168-18,927 liters)	**P**	**P, E & L (10)**	**[P, E& L(5), I(10)] Or [P, L(2), E(5)]**
	5,001-30,000 (18,931-113,562 liters)	**P, E (20)**	**[P, E(10), I(20)] Or [P, E(5), L(10)]**	**[P, E & L(5), I(10)] Or [P, L(1), E(5)]**
	30,001-50,000 (113,566-189,271 liters)	**P, E (20)**	**P, E & L (5), I (15)**	**P, E & L(5), I(10)**
Portable Containers		**P**	**P**	**P****

** Owner shall either discontinue use of portable container for storage or have the portable container tested and recertified in accordance with the following schedule (please refer to STI SP001 5th Ed. Section 9):

Plastic Portable Container	Every 7 years
Steel Portable Container	Every 12 years
Stainless Steel Portable Container	Every 17 years

Designations used above:

P Periodic AST inspection IAW STI SP001, 5th Ed. Section 6

E Formal external inspection by a certified inspector IAW STI SP001, 5th Ed. Section 7

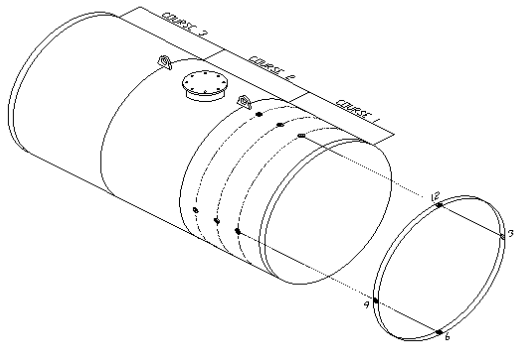
I Formal internal inspection by a certified inspector IAW STI SP001, 5th Ed. Section 8

L Leak testing by the owner or owner's designee IAW STI SP001, 5th Ed. Section 9

(#) Indicates the maximum inspection interval in years

4.0 SHELL THICKNESS DATA

SHELL THICKNESS (MINIMUM AND AVERAGES)



Location		Position 1	Position 2	Position 3	Position 4	Position 5		
Course		[in]	[in]	[in]	[in]	[in]		
1	12:00	0.215	0.215	0.214	0.216	0.179	Minimum	0.176
	3:00	0.214	0.215	0.214	0.213	0.178	Maximum	0.216
	6:00	0.215	0.215	0.214	0.216	0.178	Average	0.207
	9:00	0.214	0.215	0.214	0.213	0.176	St. Dev.	0.014728

Note: These minimum and averages were taken by handheld UT gauge

Head Measurement – UT Inspection

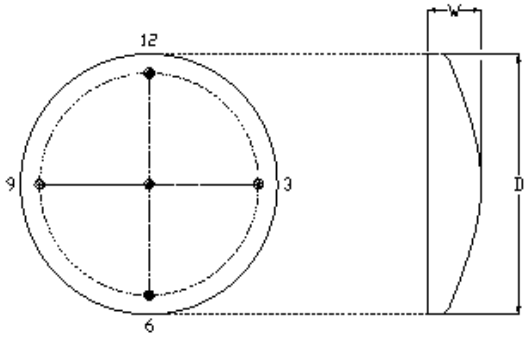
Measurement	WT
Width (W)	2.0 in
Diameter (D)	109.0 in

Head 1 (south)	
Location	WT [in]
12:00	0.216
3:00	0.215
6:00	0.217
9:00	0.215
Center	0.215

Min	0.215
Max	0.217
Ave	0.216

Head 2 (north)	
Location	WT [in]
12:00	0.217
3:00	0.215
6:00	0.217
9:00	0.214
Center	0.215

Min	0.214
Max	0.217
Ave	0.216



5.0 INSPECTION FINDINGS AND RECOMMENDATIONS

Foundation / Supports/ Containment

1. Inspector noted that coal dust has collected beneath the tank. This could facilitate moisture collection against the shell in the 6:00 position, which could increase corrosion rate and deterioration of the tank shell. Recommend clearing the coal dust out from beneath the tank. Consider periodically checking for this and cleaning as needed.

External Shell

1. There appears to be a shell band at the north end of the tank that could be a previous repair. This band of steel has an average thickness of 0.178-in compared to the remainder of the tank shell (0.215-in). This is noted for information only as thickness readings are comparable with the 2017 inspection findings. Short term corrosion rate is negligible.

External Appurtenances

1. The tank was not provided with a nameplate. Consider installation of a nameplate. Utilize API Standard 653, paragraph 13.1.2 as a reference.

6.0 OBSERVATIONS OF INSPECTION FINDINGS

Foundation

1. Inspector noted that coal dust has collected beneath the tank. This could facilitate moisture collection against the shell in the 6:00 position, which could increase corrosion rate and deterioration of the tank shell. Recommend clearing the coal dust out from beneath the tank. Consider periodically checking for this and cleaning as needed. (Onsite personnel confirmed this tank is installed with clearance beneath the tank.)



Southeast Elevation



East Elevation



Northeast Elevation

2. There appears to be a shell band at the north end of the tank that could be a previous repair. This band of steel has an average thickness of 0.178-in compared to the remainder of the tank shell (0.215-in). This is noted for information only as thickness readings are comparable with the 2017 inspection findings. Short term corrosion rate is negligible.

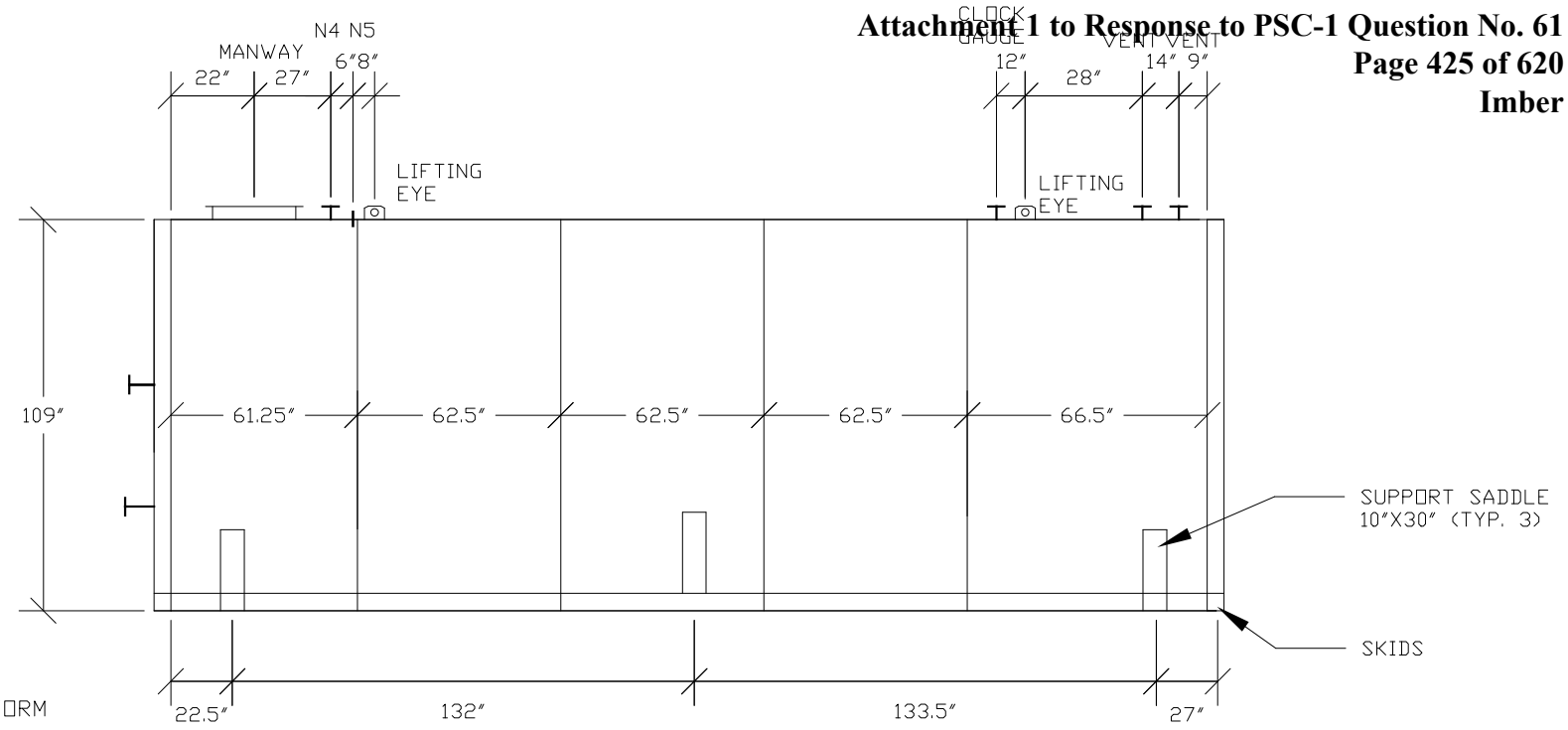


Previous Shell Repair (northeast end)

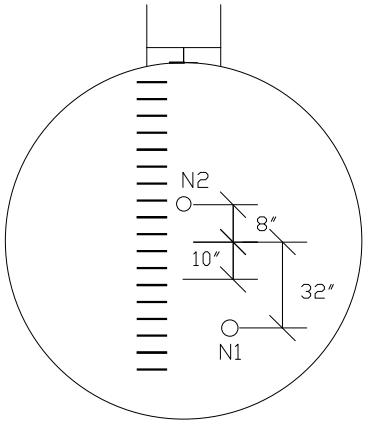


Callouts added

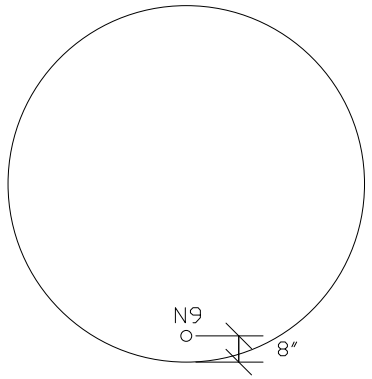




T–5 ELEVATION VIEW
NTS



SOUTH HEAD
NTS



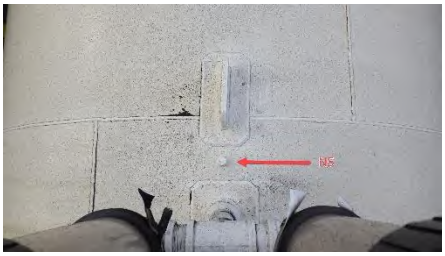
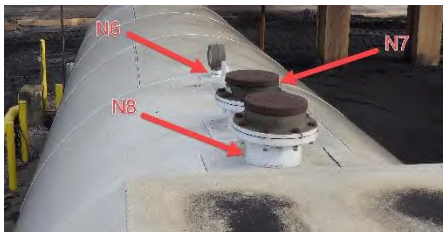
NORTH HEAD
NTS

DRAWN BY: AUSTIN ALVIS	DATE INSPECTED: 08/10/2021	EQ. NUMBER: TANK T-5	CLIENT NAME: KU-LG&E	gecko robotics
DATE DRAWN: 08/10/2022	TECHNICIAN: WILLIAM STOUT	EQ. NAME -	CLIENT LOCATION: GHENT STATION, GHENT, KY	GECKO ROBOTICS 100 S. COMMONS, SUITE 145 PITTSBURGH, PA 15212
FILE NO. 2022-03519	DRAWING: 1 OF 1			

8.0 NOZZLE AND APPURTENANCES TABLE

Item	Description	Pipe Size [in]	12:00 [in]	3:00 [in]	6:00 [in]	9:00 [in]	Comments
N-1	Nozzle	2.00	0.195	0.201	-	-	Located inside spill box, South Head
N-2	Nozzle	4.00	0.195	0.195	0.198	0.197	South Head
N-3	Manway Access	18.00	0.312	0.311	0.305	0.305	
N-4	Vent	3.00	-	-	-	-	
N-5	Threaded Plug	1.00	-	-	-	-	
N-6	Clock Gauge	3.00	-	-	-	-	
N-7	Emer. Vent	8.00	0.296	0.298	0.300	0.296	Emergency Vent
N-8	Emer. Vent	8.00	0.296	0.297	0.297	0.300	Emergency Vent

9.0 TANK PHOTOS

 Nozzle N-1	 Nozzle N-2	 Nozzle N-2
 Nozzle N-2	 Nozzle N-3 (below work platform)	 Nozzle N-4 (Vent)
 Nozzle N-4 (neck)	 Nozzle N-5 (Threaded Plug)	 Nozzle N-6 (Clock Gauge)
 Nozzle N-7 / N8	 Tank Elevation view	 Tank Elevation view
 Tank Elevation view	 Tank Elevation view	 Tank Elevation view

		
Tank Elevation view	Tank Elevation view	Tank Elevation view

TEAM QUALSPEC

10540 Chester Road, Woodlawn, OH 45215

INSPECTION REPORT FOR ATMOSPHERIC STORAGE TANK

Form VT.3-1238 Rev. 0

COMPANY:	Kentucky Utilities	LOCATION:	Ghent, KY
UNIT LOCATION:	Coal Yard	EQUIPMENT NUMBER:	Coalyard Fuel oil tank #5
TEAM W.O. #:	53870350	COMPLETION DATE:	3-22-17
EQUIPMENT NAME:	12,000 Gal Coalyard Fuel oil Tank		

Formal External Inspection with thickness of Coal Yard Tank #5



In accordance with ST-SP001

Site Contact: Ben Zeigler
Inspector: William T. McDaniel API 653 #38330
UTT Technician: Adam Holland

TEAM QUALSPEC

10540 Chester Road, Woodlawn, OH 45215

INSPECTION REPORT FOR ATMOSPHERIC STORAGE TANK

Form VT.3-1238 Rev. 0

COMPANY:	Kentucky Utilities	LOCATION:	Ghent, KY
UNIT LOCATION:	Coal Yard	EQUIPMENT NUMBER:	Coalyard Fuel oil tank #5
TEAM W.O. #:	53870350	COMPLETION DATE:	3-22-17
EQUIPMENT NAME:	12,000 Gal Coalyard Fuel oil Tank		

INSPECTION SUMMARY

GENERAL:	A formal external inspection with thickness was performed at this time meeting the requirements of STI-SP001(Inspection). The tank capacity is 12,000 gallons. The tank is a double walled tank which classifies the tank as a category 1 tank. The tank has no integral concerns at this time and appears to be fit for service.
FOUNDATION:	The tank is a horizontal tank that rest on steel horizontal supports which are mounted to concrete pad.
INSULATION:	The tank is not currently insulated.
EXTERNAL:	There are no visual concerns at this time.
INTERNAL:	Not performed at this time.

REPAIRS RECOMMENDED FOR TANK (SEE OBSERVATIONS / RECOMMENDATIONS)

[ ] YES - ASAP - PRIOR TO RETURNING TO SERVICE [ ] YES- IN A TIMELY MANNER [X] NONE

NEXT INSPECTION DATE:

EXTERNAL: **3-22-37**

INTERNAL: **Not required**

INSPECTOR: *William Trafton McDaniel* DATE: *3-22-17*

SIGNATURE: William T McDaniel API 653 NO: *38330*

TEAM QUALSPEC

10540 Chester Road, Woodlawn, OH 45215

INSPECTION REPORT FOR ATMOSPHERIC STORAGE TANK

Form VT.3-1238 Rev. 0

COMPANY:	Kentucky Utilities	LOCATION:	Ghent, KY
UNIT LOCATION:	Coal Yard	EQUIPMENT NUMBER:	Coalyard Fuel oil tank #5
TEAM W.O. #:	53870350	COMPLETION DATE:	3-22-17
EQUIPMENT NAME:	12,000 Gal Coalyard Fuel oil Tank		

OBSERVATIONS	RECOMMENDATIONS
No visual concerns at this time	Maintain current periodic monthly and annual inspections
UTT was performed at request of owner	UTT is not required on double wall tanks per paragraph 7.4.7 of STI SP001 July 2006 4th edition.

TEAM QUALSPEC
10540 Chester Road, Woodlawn, OH 45215

INSPECTION REPORT FOR ATMOSPHERIC STORAGE TANK

Form VT.3-1238 Rev. 0

COMPANY:	Kentucky Utilities	LOCATION:	Ghent, KY
UNIT LOCATION:	Coal Yard	EQUIPMENT NUMBER:	Coalyard Fuel oil tank #5
TEAM W.O. #:	53870350	COMPLETION DATE:	3-22-17
EQUIPMENT NAME:	12,000 Gal Coalyard Fuel oil Tank		

External Visual Inspection Results

Item No.	Item	Good	Fair	Poor	N/A	
1	Shell	X				
2	Floor / Bottom Head	X				
3	Roof / Top Head	X				
4	Nozzles and Fasteners	X				
5	Piping and Components	X				
6	Valves and Components	X				
7	Welds and Seams	X				
8	Davits				X	
9	Manways & Fasteners	X				
10	Stiffner Rings				X	
11	Gauges				X	
12	Sight Glass	X				
13	Platforms/Handrails	X				
14	Ladders/Cages/Stairs	X				
15	Grating/Treads	X				
16	Insulation or Coating	X				
17	Weather Jacket				X	
18	Supports/Base plates	X				Type:
19	Anchors/Support bolts	X				
20	Foundation (Spalling, etc.)	X				
21	Grouting	X				

		Yes	No	COMMENTS
22	Corrosion (Location)		X	
23	Name Plate Attached	X		
24	Visible Leaks		X	
25	Ground Wire		X	
26	Visible Distortion		X	
27	Weep Holes Okay			N/A
28	Blistering		X	
29	Other		X	

Notes or Comments:

TEAM QUALSPEC

10540 Chester Road, Woodlawn, OH 45215

INSPECTION REPORT FOR ATMOSPHERIC STORAGE TANK

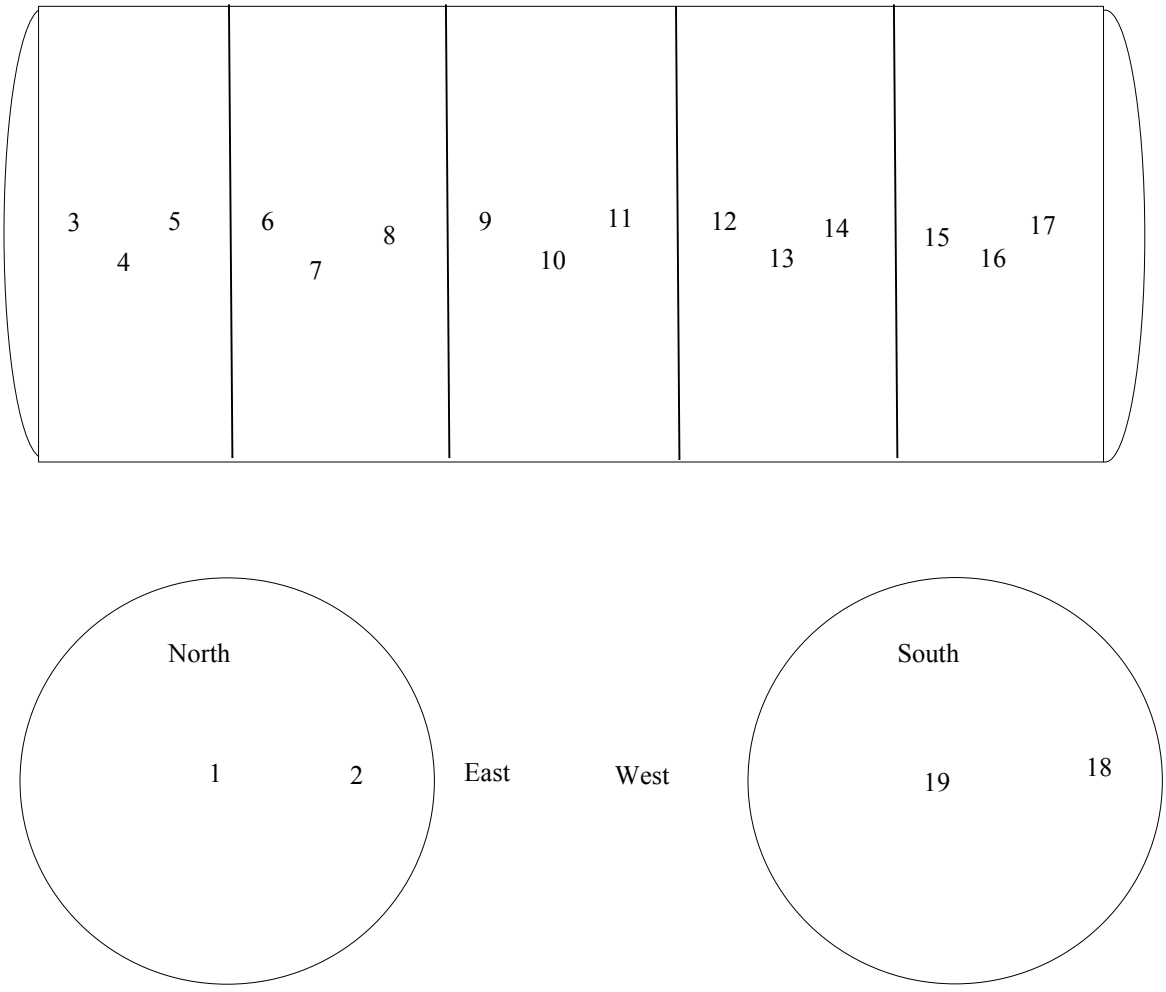
Form VT.3-1238 Rev. 0

COMPANY:	Kentucky Utilities	LOCATION:	Ghent, KY
UNIT LOCATION:	Coal Yard	EQUIPMENT NUMBER:	Coalyard Fuel oil tank #5
TEAM W.O. #:	53870350	COMPLETION DATE:	3-22-17
EQUIPMENT NAME:	12,000 Gal Coalyard Fuel oil Tank		

UT Calibration Data

Equipment Make:	*GE*	Model # :	*DMS 2*	Serial # :	*01NDJJ*		
Calibration Block Material :	☒ C/S	Serial # :	*09-3799*	☐ S/S	Serial # :		
Transducer Serial # :	*15L00D04*	Size :	*.375*	Frequency:	*7.5*	MHZ	
UT Couplant Type:	*Sonix-UT*	Batch # :	*306-07*				

Sketch



TEAM QUALSPEC
10540 Chester Road, Woodlawn, OH 45215

INSPECTION REPORT FOR ATMOSPHERIC STORAGE TANK

Form VT.3-1238 Rev. 0

COMPANY:	Kentucky Utilities	LOCATION:	Ghent, KY
UNIT LOCATION:	Coal Yard	EQUIPMENT NUMBER:	Coalyard Fuel oil tank #5
TEAM W.O. #:	53870350	COMPLETION DATE:	3-22-17
EQUIPMENT NAME:	12,000 Gal Coalyard Fuel oil Tank		

	East
1	0.215
2	0.215
3	0.215
4	216
5	0.215
6	0.216
7	0.218
8	0.215
9	0.216
10	0.216
11	0.213
12	0.214
13	0.215
14	0.213
15	0.174
16	0.177
17	0.177
18	0.213
19	0.214

Tank T-019
15,000-Gallon Units 1 & 2 Clean Oil Tank

T19 Clean Oil Tank External Inspection

KU-LG&E

Location: Ghent, KY

Inspection Date: August 10, 2022

Report Date: August 29, 2022

Project Number: 2022-03519



DATE	PREPARED BY	APPROVED BY:	APPROVER SIGNATURE
8/25/2022	William Stout	Brian O'Leary	

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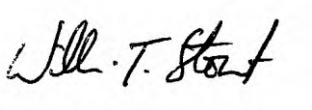
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1.0 INTRODUCTION

On August 10, 2022, Gecko Robotics performed an in-service inspection of Tank 19, a clean oil tank, for Kentucky Utilities (KU) LG&E in Ghent, KY. The results of this inspection were used to provide an evaluation per the applicable criteria of STI SP001, 6th Edition, January 2018 and API 653, *5th Edition, Addendum 1 April 2018, Addendum 2 May 2020* standard.

Gecko Robotics Personal for Project:



William Stout, Lead API 653 Inspector

Certification Number 25296,

STI SP001 Adjunct Certification #AC44261

Kelly Keil, NDT Level II

2.0 TANK DESCRIPTION

Customer	KU-LG&E	**Location**	Ghent, KY
Tank	T-19	**Project**	2022-03519

GENERAL TANK INFORMATION	
Manufacturer (Repair/Altered)	Modern Welding Co. Inc.
Design Standard	Unknown
Product	Clean Oil
Cathodic Protection	No
Data Plate	Yes
DOT Regulated Tank	No
TANK DIMENSIONS	
Tank Diameter	12.50 feet
Tank Height (OAL)	16.00 feet
Nominal Capacity	14,688 gallons
TANK DESIGN DETAILS	
Foundation Type	Concrete
Tank Saddles	N/A
Shell Type	Butt Welded, Carbon Steel, Unknown Grade
Roof Type	Lap Welded, Carbon Steel, Unknown Grade, Self-Supporting Cone
Containment	Concrete
CRDM	Yes, Concrete Containment
Release Prevention Barrier	Yes, Concrete Containment
DATES	
Year Manufactured	1971 (per facility records)
Previous Inspection	March 2017
Date of Internal Coating	Unknown
Data of External Coating	Unknown
TANK COATING	
Shell (External)	Beige, thin film epoxy
Shell (Internal)	Unknown

3.0 INSPECTION INTERVALS

Inspection Intervals	
Periodic, by Owner or Owner's designee	Includes weekly, monthly, quarterly, annually as required
Formal External, by Certified Inspector	August 2027
Formal Internal, by Certified Inspector	December 2026, scheduled, per facility

Inspection intervals for field-erected ASTs as per STI SP001 5th Ed., Appendix B, Section 2.1-2.4.4.2, Table 2-1.

AST Type and Size	Category 1	Category 2	Category 3
Field-Erected AST	**P, E (5), I(10)**	**P, E & L (5), I (10)**	**P, E & L(5), I(10)**

Designations used above:

P Periodic AST inspection IAW STI SP001, 5th Ed. Section 6

E Formal external inspection by a certified inspector IAW STI SP001, 5th Ed. Section 7

I Formal internal inspection by a certified inspector IAW STI SP001, 5th Ed. Section 8

L Leak testing by the owner or owner's designee IAW STI SP001, 5th Ed. Section 9

(#) Indicates the maximum inspection interval in years

4.0 SHELL THICKNESS DATA

SHELL THICKNESS (MINIMUM AND AVERAGES)

Note – UTT readings via handheld in ten locations, bottom-to-top, at the four cardinal directions in each shell course. Chart should be read as Course 1 (bottom shell course), reading 'A' taken within two inches of the corner weld, then each successive reading spaced evenly up the height of the shell course. Course 2 is the top shell course.

Location		North	West	South	East		
Course	Pos.	[in]	[in]	[in]	[in]		
1	A	0.248	0.243	0.252	0.249	Min	**0.243**
	B	0.251	0.245	0.254	0.253	Max	**0.257**
	C	0.254	0.246	0.256	0.254	Average	**0.251**
	D	0.253	0.248	0.257	0.254		
	E	0.254	0.248	0.257	0.255		
	F	0.253	0.247	0.257	0.254		
	G	0.253	0.247	0.256	0.254		
	H	0.252	0.246	0.255	0.252		
	I	0.252	0.246	0.254	0.253		
	J	0.250	0.243	0.252	0.251		
Location		North	West	South	East		
Course	Pos.	[in]	[in]	[in]	[in]		
2	A	0.246	0.244	0.245	0.242	Min	**0.238**
	B	0.248	0.245	0.244	0.243	Max	**0.249**
	C	0.248	0.245	0.245	0.246	Average	**0.244**
	D	0.249	0.245	0.245	0.245		
	E	0.249	0.244	0.245	0.246		
	F	0.247	0.244	0.244	0.246		
	G	0.246	0.244	0.244	0.245		
	H	0.245	0.243	0.243	0.245		
	I	0.244	0.243	0.241	0.244		
	J	0.241	0.238	0.238	0.242		

5.0 LIQUID LOAD CONDITION – FIELD-ERECTED AST

Design Code:		Unknown	STI SP001 Appendix B
Tank Type:		Field-Erected	The following formula is used in calculating the required minimum thickness of shell courses:
Shell Material:		Unknown	
Year Constructed		yr 1971	
Tank Diameter	D	ft 12.50	
Tank Height	H	Ft 16.00	
No. Shell Courses		2	*Note: As taken from STI SP001, Section 2.4.2.1.*
Specific Gravity	G	0.840	
Filling Height	*h*	ft 16.00	

$$t_{min} = \frac{(H-1)DG}{10{,}000}$$

Shell Course	Course Height	Product Height	Allowable Stress	Minimum Calculated t	Minimum Allowable t	Measured t average	Cleared for continued service?
	[ft]	*[ft]*	*[psi]*	*[in]*	*[in]*	*[in]*	
2	8.000	16.000	10,000	0.016	0.100	0.244	OK
1	8.000	16.000	10,000	0.016	0.100	0.251	OK

6.0 OTHER UTT

6.1 Fixed Roof

Fixed Roof ultrasonic testing was completed in four locations around the roof perimeter, due to limited access from a portable ladder.

Tank constructed: 1971
Tank inspected: 2022
Years in service: 51

Plate No.	Thickness Reading			
	Position 1 [in]	Position 2 [in]	Position 3 [in]	Position 4 [in]
1 / 2	0.258	0.252	0.247	0.261

$t_{max\ [in]}$	0.261	t_{min} [in]	0.247	Corrosion Rate [in/yr]	0.000274510
t_{min} per API 653 [in]	0.090	t_{avg} [in]	0.255	Remaining Life [yrs]	571.93

6.2 External Bottom Plate Projection

Tank Diameter: 12.50 ft
Number of Measurements: 5
Distance between Measurements: 7.85 ft
Measurements taken at Manway entrance and continue counterclockwise around the tank circumference.

Position 1 [in]	Position 2 [in]	Position 3 [in]	Position 4 [in]	Position 5 [in]
0.260	0.254	0.250	0.255	0.253
Projection plate as per API 653, section 4.4.5.7; Minimum thickness must be greater than 0.100-in				

7.0 INSPECTION FINDINGS AND RECOMMENDATIONS

Foundation / Supports/ Containment

1. Inspector noted some product staining on the concrete pedestal. It was not clear whether this was due to an instance of a spill or a an overfill event. Consider cleaning the area and monitoring for change to determine if an issue exists and provide repair if necessary.

External Shell

1. Tank 19 external protective coating system appeared to be in generally good condition. There were some locations of mechanical damage (knicks and scratches). This is noted for information only, as the tank is located indoors out of the weather.

External Appurtenances

1. Manway (N1) cover hinge rod is bent. There was no indication that it was not functioning correctly.
2. Shell nozzles N2 and N3 exhibited evidence of product weeps at the valve stems. The bonnets can be removed and the stem packing replaced.
3. Inspector noted evidence of a drip/weep at the isolation valves for the sight glass assembly at shell nozzle N3. The sight glass assembly can be isolated at shell nozzles N3 and N4 to allow for repair or replacement of leaking valves in the assembly.
4. Inspector noted a possible pinhole weep in the nozzle-to-roof weld at R2. Consider grinding out the weld defect and rewelding at the next out-of-service inspection and repair cycle.

8.0 OBSERVATIONS OF INSPECTION FINDINGS

Foundation

1. Inspector noted some product staining on the concrete pedestal. It was not clear whether this was due to an instance of a spill or a an overfill event. Consider cleaning the area and monitoring for change to determine if an issue exists and provide repair if necessary.



Evidence of product staining



Evidence of product staining



Evidence of product staining

External Appurtenances

1. Manway (N1) cover hinge rod is bent. There was no indication that it was not functioning correctly.



Nozzle N1 Hinge Rod Bent



Nozzle N1 Hinge Rod Bent

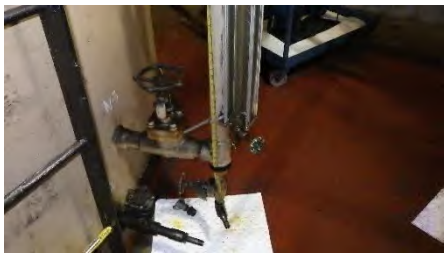
2. Shell nozzles N2 and N3 exhibited evidence of product weeps at the valve stems. The bonnets can be removed and the stem packing replaced.



Nozzle N2

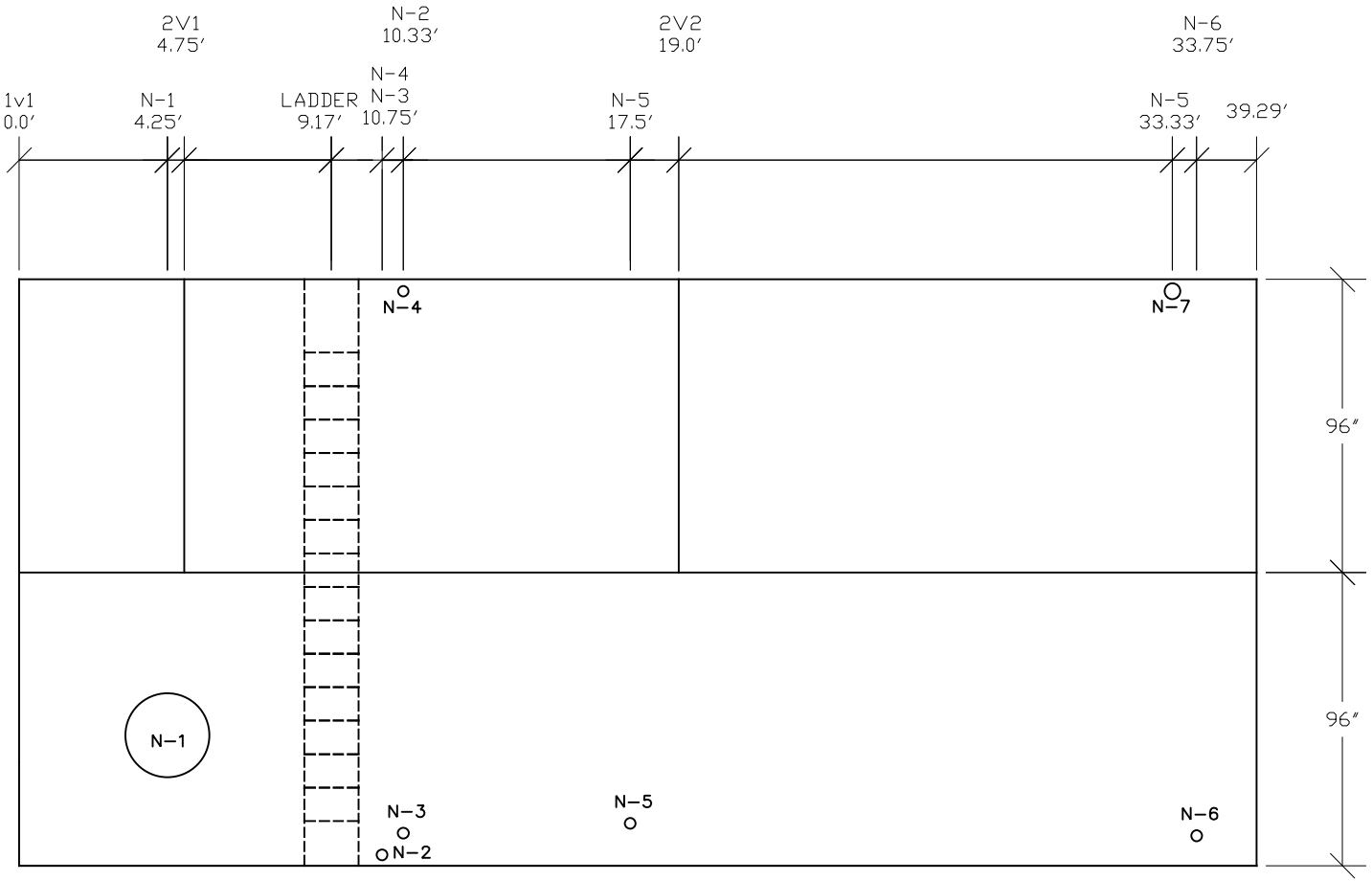


Nozzle N3

3. Inspector noted evidence of a drip/weep at the isolation valves for the sight glass assembly at shell nozzle N3. The sight glass assembly can be isolated at shell nozzles N3 and N4 to allow for repair or replacement of leaking valves in the assembly.		
 Sight Glass lower isolation valve	 Sight Glass upper isolation valve	
4. Inspector noted a possible pinhole weep in the nozzle-to-roof weld at R2. Consider grinding out the weld defect and rewelding at the next out-of-service inspection and repair cycle.		
 Roof Nozzle R2 (note product staining)	 Possible pinhole in weld	

9.0 TANK DRAWINGS (SHELL & ROOF)

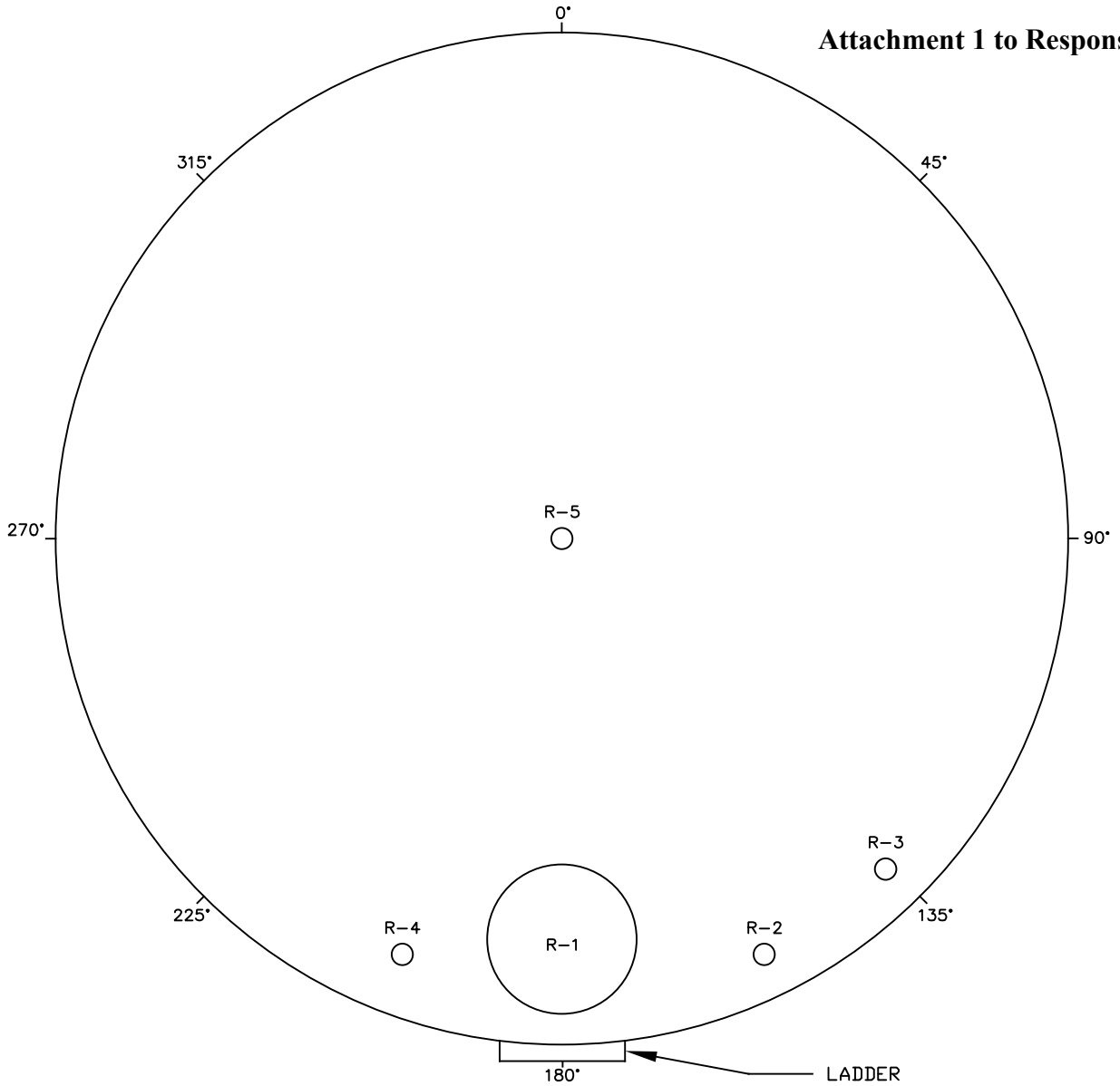
Please refer to following pages.



T-19 SHELL ROLLOUT
NTS

NOZZLE ID	SCHEDULE SIZE
N-1	24"Ø
N-2	1.25"Ø
N-3	2"Ø
N-4	2"Ø
N-5	4"Ø
N-6	4"Ø
N-5	4"Ø

DRAWN BY: AUSTIN ALVIS	DATE INSPECTED: 08/10/2022	EQ. NUMBER: TANK T-19	CLIENT NAME: KU-LG&E	gecko robotics
DATE DRAWN: 08/10/2022	TECHNICIAN: WILLIAM STOUT	EQ. NAME -	CLIENT LOCATION: GHENT STATION, GHENT, KY	GECKO ROBOTICS 100 S. COMMONS, SUITE 145 PITTSBURGH, PA 15212
FILE NO. 2022-03519	DRAWING: 1 OF 2			



T-19 FIXED ROOF LAYOUT
NTS

NOZZLE SCHEDULE

ID	SIZE
R-1	20"Ø
R-2	3"Ø
R-3	3"Ø
R-4	2"Ø
R-5	3"Ø

DRAWN BY: AUSTIN ALVIS	DATE INSPECTED: 08/10/2022	EQ. NUMBER: TANK T-19	CLIENT NAME: KU-LG&E	gecko robotics
DATE DRAWN: 08/10/2022	TECHNICIAN: WILLIAM STOUT	EQ. NAME -	CLIENT LOCATION: GHENT STATION, GHENT, KY	GECKO ROBOTICS 100 S. COMMONS, SUITE 145 PITTSBURGH, PA 15212
FILE NO. 2022-03519	DRAWING: 2 OF 2			

10.0 NOZZLE AND APPURTENANCES TABLE

Item	Description	Pipe Size [in]	12:00 [in]	3:00 [in]	6:00 [in]	9:00 [in]	Comments
N1	Manway	4.00	0.257	0.253	0.249	0.257	
N2	Nozzle	1.25	-	-	-	-	
N3	Sight Glass (lower)	2.00	0.240	0.247	0.246	0.249	
N4	Sight Glass (upper)	2.00	0.272	0.273	0.275	0.275	
N5	Nozzle	4.00	0.231	0.228	0.222	0.220	
N6	Drain	4.00	0.235	0.234	0.239	0.235	
N7	Overflow	4.00	0.241	0.235	0.234	0.226	
R1	Manway	20.00	-	-	-	-	Access limited to visual from ladder
R2	Nozzle	3.00	-	-	-	-	Access limited to visual from ladder
R3	Nozzle	3.00	-	-	-	-	Access limited to visual from ladder
R4	Nozzle	2.00	-	-	-	-	Access limited to visual from ladder
R5	Nozzle	3.00	-	-	-	-	Access limited to visual from ladder

*Installation of an overhead anchor point / tie-off would allow for closer inspection of nozzles at future inspection intervals.

11.0 TANK PHOTOS

		
Nozzle N1	Nozzle N1	Nozzle N1
		
Nozzle N2	Nozzle N2	Nozzle N2
		
Nozzle N3	Nozzle N3	Nozzle N3
		
Nozzle N4	Nozzle N4	Nozzle N4
		
Nozzle N5	Nozzle N5	Nozzle N5

		
Nozzle N6	Nozzle N6	Nozzle N6
		
Nozzle N7	Nozzle N7	
		
Nozzle R1	Nozzle R2	Nozzle R3
		
Nozzle R4	Nozzle R5	
		
Lower Shell Elevation View	Upper Shell Elevation View	

TEAM QUALSPEC

10540 Chester Road, Woodlawn, OH 45215

INSPECTION REPORT FOR ATMOSPHERIC STORAGE TANK

Form VT.3-1238 Rev. 0

COMPANY:	Kentucky Utilities	LOCATION:	Ghent, KY
UNIT LOCATION:	Inside building turbine oil room	EQUIPMENT NUMBER:	T-19
TEAM W.O. #:	53870350	COMPLETION DATE:	3-22-17
EQUIPMENT NAME:	Unit 1 & 2 Clean oil tank		

Formal External Inspection with thickness of Unit 1 &2 Clean Oil Tank



In accordance with STI SP-001

Site Contact: Ben Zeigler
Inspector: William T. McDaniel API 653 #38330
UTT Technician: Adam Holland

TEAM QUALSPEC
10540 Chester Road, Woodlawn, OH 45215

INSPECTION REPORT FOR ATMOSPHERIC STORAGE TANK

Form VT.3-1238 Rev. 0

COMPANY:	Kentucky Utilities	LOCATION:	Ghent, KY
UNIT LOCATION:	Inside building turbine oil room	EQUIPMENT NUMBER:	T-19
TEAM W.O. #:	53870350	COMPLETION DATE:	3-22-17
EQUIPMENT NAME:	Unit 1 & 2 Clean oil tank		

INSPECTION SUMMARY

GENERAL:	A formal external inspection with thickness was performed at this time meeting the requirements of STI SP-001. The tank is a 15,000 gallon storage tank that holds used turbine oil. The tank is in a dyke area located inside of a building. There are currently no continuous release detection system in place due to the design of flat bottom tank resting on ground. With the current design the tank is classified as a category 2 tank and will follow the recommendations of STI-SP001 for inspection intervals.
FOUNDATION:	The tank rest on a concrete ring approximately 6" above the concrete floor. The area is surrounded by a concrete wall for secondary containment.
INSULATION:	The tank is not currently insulated.
EXTERNAL:	There are currently no visual concerns at this time.
INTERNAL:	Not performed at this time.

REPAIRS RECOMMENDED FOR TANK (SEE OBSERVATIONS / RECOMMENDATIONS)

[ ] YES - ASAP - PRIOR TO RETURNING TO SERVICE [ ] YES- IN A TIMELY MANNER [X] NONE

NEXT INSPECTION DATE: Option 1 /Option 2

Performed by Inspector	EXTERNAL:	10 years (3-22-27)	/ 5 years (3-22-21)
	INTERNAL:	20 years (12-15-26)	/ Not required
Performed By owner	PERIODIC:	Monthly + Annually	/ Monthly + Annually
	LEAK TEST:	Not required	/ 10 years (12-15-16)

INSPECTOR: *William Trafton McDaniel* DATE: *3-22-17*

SIGNATURE: William T McDaniel API 653 NO: *38330*

TEAM QUALSPEC

10540 Chester Road, Woodlawn, OH 45215

INSPECTION REPORT FOR ATMOSPHERIC STORAGE TANK

Form VT.3-1238 Rev. 0

COMPANY:	Kentucky Utilities	LOCATION:	Ghent, KY
UNIT LOCATION:	Inside building turbine oil room	EQUIPMENT NUMBER:	T-19
TEAM W.O. #:	53870350	COMPLETION DATE:	3-22-17
EQUIPMENT NAME:	Unit 1 & 2 Clean oil tank		

OBSERVATIONS	RECOMMENDATIONS
The tank has no visual concerns at this time	Maintain and document monthly and annual inspections by owner/user

TEAM QUALSPEC
10540 Chester Road, Woodlawn, OH 45215

INSPECTION REPORT FOR ATMOSPHERIC STORAGE TANK

Form VT.3-1238 Rev. 0

COMPANY:	Kentucky Utilities	LOCATION:	Ghent, KY
UNIT LOCATION:	Inside building turbine oil room	EQUIPMENT NUMBER:	T-19
TEAM W.O. #:	53870350	COMPLETION DATE:	3-22-17
EQUIPMENT NAME:	Unit 1 & 2 Clean oil tank		

Design Data

Year Built: *1971* Service Date: *1971* Fabricator: *Modern Welding Company*

Tank Type: ☐ Horizontal ☒ Vertical ☐ Jacketed ☐ Insulated Service/Product: *Clean Oil*

Tank Height / Length: *16'* ☐ SS ☐ T/T ☒ Overall Tank Diameter: *20'*

Name Plate Verified: Yes ☒ No ☐ N/A ☐ Drawing / Documentation Available: Yes ☒ No ☐

Specific Gravity: *1* Design & Operating Press./Temp.: *Design* *ATM* psig *300* °F / *Operating* *ATM* psig *AMB* °F

Roof / Head Type : ☐ Elliptical ☐ ASME F & D ☐ Domed ☒ Conical ☐ Flat ☐ Pan
Crown Radius _____ Knuckle Radius _____ Head Ratio _____ Joint Efficiency *N/A*

Bottom / Head Type: ☐ Elliptical ☐ ASME F & D ☐ Domed ☐ Conical ☒ Flat ☐ Pan
Crown Radius _____ Knuckle Radius _____ Head Ratio _____ Joint Efficiency *N/A*

Nom. Roof / Head Thickness: _____ Nom. Bottom / Head Thickness: _____ Nom. Shell Thickness: _____

Shell Joint Construction Type:	☒ Butt Welded	☐ Single Lap Welded	☐ Double Lap Welded
Roof / Head Joint Construction Type:	☐ Butt Welded	☒ Single Lap Welded	☐ Double Lap Welded
Bottom / Head Joint Construction Type:	☐ Butt Welded	☒ Single Lap Welded	☐ Double Lap Welded

Other i.e. Riveted : _____

Corrosion Allowance: Head "A" *N/S* Head "B" *N/S* Shell *N/S*

	Min. Yield	Min. Tensile
Shell Material: Specification / Grade / Type	*Unknown C/S*	
"A" Head Material: Specification /Grade / Type	*Unknown C/S*	
"B" Head Material: Specification /Grade / Type	*Unknown C/S*	

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10540 Chester Road, Woodlawn, OH 45215

INSPECTION REPORT FOR ATMOSPHERIC STORAGE TANK

Form VT.3-1238 Rev. 0

COMPANY:	Kentucky Utilities	LOCATION:	Ghent, KY
UNIT LOCATION:	Inside building turbine oil room	EQUIPMENT NUMBER:	T-19
TEAM W.O. #:	53870350	COMPLETION DATE:	3-22-17
EQUIPMENT NAME:	Unit 1 & 2 Clean oil tank		

External Visual Inspection Results

Item No.	Item	Good	Fair	Poor	N/A	
1	Shell	X				
2	Floor / Bottom Head				X	
3	Roof / Top Head	X				
4	Nozzles and Fasteners	X				
5	Piping and Components	X				
6	Valves and Components	X				
7	Welds and Seams	X				
8	Davits	X				
9	Manways & Fasteners	X				
10	Stiffner Rings				X	
11	Gauges	X				
12	Sight Glass	X				
13	Platforms/Handrails	X				
14	Ladders/Cages/Stairs	X				
15	Grating/Treads	X				
16	Insulation or Coating	X				
17	Weather Jacket				X	
18	Supports/Base plates				X	Type:
19	Anchors/Support bolts				X	
20	Foundation (Spalling, etc.)	X				
21	Grouting				X	

		Yes	No	COMMENTS
22	Corrosion (Location)		X	
23	Name Plate Attached	X		
24	Visible Leaks		X	
25	Ground Wire	X		
26	Visible Distortion		X	
27	Weep Holes Okay			N/A
28	Blistering		X	
29	Other			

Notes or Comments: The tank is in overall good integral condition with no major concerns at this time. It is recommended To maintain regular inspection frequencies meeting the requirements of STI-SP001.

TEAM QUALSPEC
10540 Chester Road, Woodlawn, OH 45215

INSPECTION REPORT FOR ATMOSPHERIC STORAGE TANK

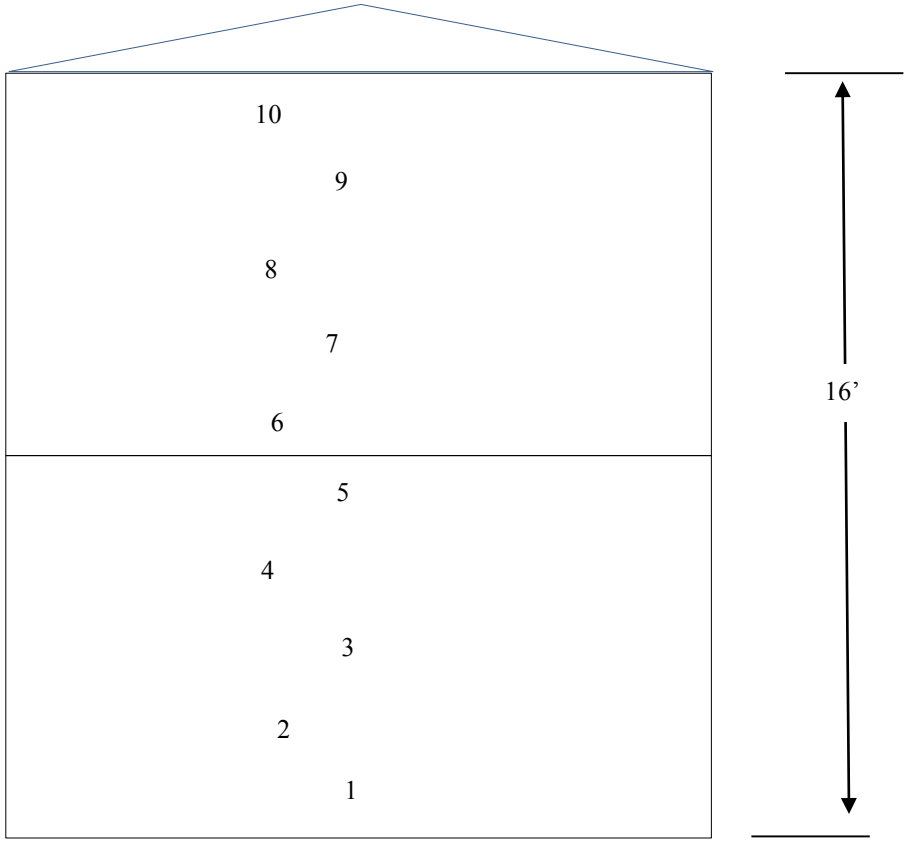
Form VT.3-1238 Rev. 0

COMPANY:	Kentucky Utilities	LOCATION:	Ghent, KY
UNIT LOCATION:	Inside building turbine oil room	EQUIPMENT NUMBER:	T-19
TEAM W.O. #:	53870350	COMPLETION DATE:	3-22-17
EQUIPMENT NAME:	Unit 1 & 2 Clean oil tank		

UT Calibration Data

Equipment Make:	*GE*	Model # :	*DMS 2*		Serial # :	*01NDJJ*	
Calibration Block Material :	☒ C/S	Serial # :	*09-3799*	☐ S/S	Serial # :		
Transducer Serial # :	*15L00D04*	Size :	*.375*	Frequency:	*7.5*	MHZ	
UT Couplant Type:	*Sonix-UT*	Batch # :	*306-07*				

Sketch



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10540 Chester Road, Woodlawn, OH 45215

INSPECTION REPORT FOR ATMOSPHERIC STORAGE TANK

Form VT.3-1238 Rev. 0

COMPANY:	Kentucky Utilities	LOCATION:	Ghent, KY
UNIT LOCATION:	Inside building turbine oil room	EQUIPMENT NUMBER:	T-19
TEAM W.O. #:	53870350	COMPLETION DATE:	3-22-17
EQUIPMENT NAME:	Unit 1 & 2 Clean oil tank		

UTT DATA

	North	East	South	West
1	0.244	0.238	0.244	0.246
2	0.251	0.242	0.251	0.251
3	0.251	0.243	0.252	0.251
4	0.25	0.242	0.249	0.249
5	0.249	0.236	0.246	0.249
6	0.242	0.24	0.243	0.239
7				0.24
8				0.243
9				0.242
10				0.24
Roof random average .240"				

TEAM QUALSPEC

10540 Chester Road, Woodlawn, OH 45215

INSPECTION REPORT FOR ATMOSPHERIC STORAGE TANK

Form VT.3-1238 Rev. 0

COMPANY:	Kentucky Utilities	LOCATION:	Ghent, KY
UNIT LOCATION:	Inside building turbine oil room	EQUIPMENT NUMBER:	T-19
TEAM W.O. #:	53870350	COMPLETION DATE:	3-22-17
EQUIPMENT NAME:	Unit 1 & 2 Clean oil tank		

Calculations per STI SP-001

$$T\text{-}min = \frac{(H-1)DG}{10{,}000}$$

H=16
D=20
G=1(conservative)

= .03”

Torig=.25
Tact=.2447
Yrs in service=40
LTCR=.0003

Tprevious=.24
Tact=.2447
Yrs in service=40
STCR=0

Tact=.2447
Tmin=.187 (25% loss of Torig)
LTCR=.0003
Remaining life=192 years

US INSPECTION SERVICES
NDE and Metallurgical Services

Evergreen Environmental @ Ghent Power Station

Unit 1 & Unit 2 Clean Oil Storage Tank Inspection Report

Date of Inspection: December 15, 2006

US INSPECTION SERVICES
NDE and Metallurgical Services

CUSTOMER: Evergreen Environmental @ Ghent Power Station

ADDRESS: Rt. 42 Ghent Kentucky **Lab#:** F58688

CUSTOMER CONTACTS:	Ron Stewart, Danny Ayler
US INSPECTION PERSONNEL:	Sean Heitman, Chad Schmidt
DESCRIPTION OF INSPECTION:	Mechanical Integrity Inspection Internal/External
SPECIFICATION:	Guidelines of API 653
ACCEPTANCE:	API 653 and customer info
EQUIPMENT:	DMS 2 S/N: 011MTM HT 400A Velocity: 2330 S/N: 00W6K2
MATERIALS:	1 QT Ultra-Gel

RESULTS: The inspections performed were to find equipment deterioration while in service and deficiencies due to degradation from original fabrication. We also look for modifications or alterations that do not comply with generally accepted good engineering practice. Unit 1 & 2 Clean Oil Storage tank is a carbon steel and atmospheric. This tank has no record of construction and the year built was 1971. Minor internal corrosion is present and the integrity of the tank is acceptable. It is assumed that the product in the tank has a specific gravity of less than 1. The specific gravity of 1 was used in the calculations listed below. There are no concerns with this tank at the present time.

Inspection Frequency and Intervals:

Routine in service inspections (which may be performed by Kentucky Utilities employees) should be performed at a minimum of on a **monthly** basis per API 653 para 6.3

The next formal External and UT inspection shall be conducted in **5 years** (October 10, 2011).

The next formal Internal inspection shall be conducted in **20 years**. (October 10, 2026). The inspection frequency may be increased to 20 years since very minor corrosion was found.

TECHNICIAN: Sean Heitman API Cert# 26660 DATE: December 15, 2006

US INSPECTION SERVICES
NDE and Metallurgical Services

Unit 1 & 2 Clean Oil Tank Inspection Report

Shell

Internal Visual/ UT- Internal visual of this tank revealed the tank to be in great condition with no corrosion noted. This tank has a light coating of paint on the inside. Ultrasonic thickness revealed the tank to have thickness readings ranging from .240"-.263". There is a 1 ½" nozzle on the South East side of the tank that was not installed in accordance with API 653. The nozzle does not penetrate fully into the tank therefore there is no possible way to back weld properly. At this time the nozzle does not appear to be a concern.

External Visual- Visual inspection of the outside revealed the tank to be in good condition. There is no grounding for this tank and product residue is present on most of the exterior. There are no concerns for the outside of the tank at this time.

Recommendations for the Shell:

1. No recommendations at this time.

Roof

Internal Visual- There is no concern at this time.

External Visual- The ultrasonic thickness readings were all acceptable. Various UT readings were taken next to the stairs on the roof with a minimum thickness found of .250" thick. A thickness greater than 0.100" is acceptable per API 653. Ultrasonic thickness readings were not taken on the nozzles because the roof was covered in dirt and debris. This condition was unsafe therefore only a visual was conducted on the nozzles.

Recommendations for the Roof:

1. No recommendations at this time.

Floor

Internal Visual/UT- Visual inspection revealed the floor to have no corrosion on the inside. The minimum thickness allowed per API 653 table 6-1 is .050" with means of containment and detection.

External Visual- No grounding strap is in place. The foundation is in good condition with no cracking occurring.

Recommendations for the Floor:

1. The Floor appears ultrasonically and visually to be in good condition, have all inspections conducted in accordance with API 653 as noted above.

US INSPECTION SERVICES
NDE and Metallurgical Services

Unit 1 & 2 Clean Oil Tank Inspection Report

Ultrasonic Thickness Data

Floor Thickness Results

	North	East	South	West
1	0.276	0.270	0.267	0.268
2	0.278	0.275	0.263	0.268
3	0.278	0.266	0.265	0.279
4	0.266	0.272	0.256	0.262
5	0.268	0.267	0.254	0.262
6	0.275	0.267	0.254	0.269
7	0.274	0.269	0.258	0.265
8	0.270	0.264	0.255	0.267
9	0.270	0.262	0.263	0.265
10	0.266	0.266	0.256	0.274

Shell Thickness Results

	North	East	South	West
1	0.250	0.251	0.258	0.261
2	0.253	0.249	0.262	0.258
3	0.258	0.251	0.262	0.258
4	0.263	0.249	0.261	0.257
5	0.249	0.252	0.262	0.257
6	0.257	0.257	0.252	0.249
7				0.245
8				0.248
9				0.247
10				0.243

Note: The stairs are on the West side of this Tank

Nozzle Thickness Results

	Top	North	Bottom	South
N1	0.276	0.288	0.269	0.265
N2	0.238	0.236	0.222	0.236
N3	0.212	0.209	0.24	0.235
N4	0.244	0.236	0.239	0.244

US INSPECTION SERVICES
NDE and Metallurgical Services

Unit 1 & 2 Clean Oil Tank Inspection Report

Calculations

Tmin = $\frac{2.6 \times (H-1) \times D \times G}{S \times E}$

H=	16
D=	20
G=	1
S=	23600
E=	0.7

	Height	Tmin
1ST COURSE	16	0.047
2ND COURSE	8	0.022

No shell sheet shall be less than 0.100" thick in accordance with API 653. These calculations are a representative number showing the life expectancy of the tank if kept in good condition without exterior corrosion taking place.

Torig =	0.25
Tact.=	0.24
Yrs. Service =	35
C/R=	0.0003

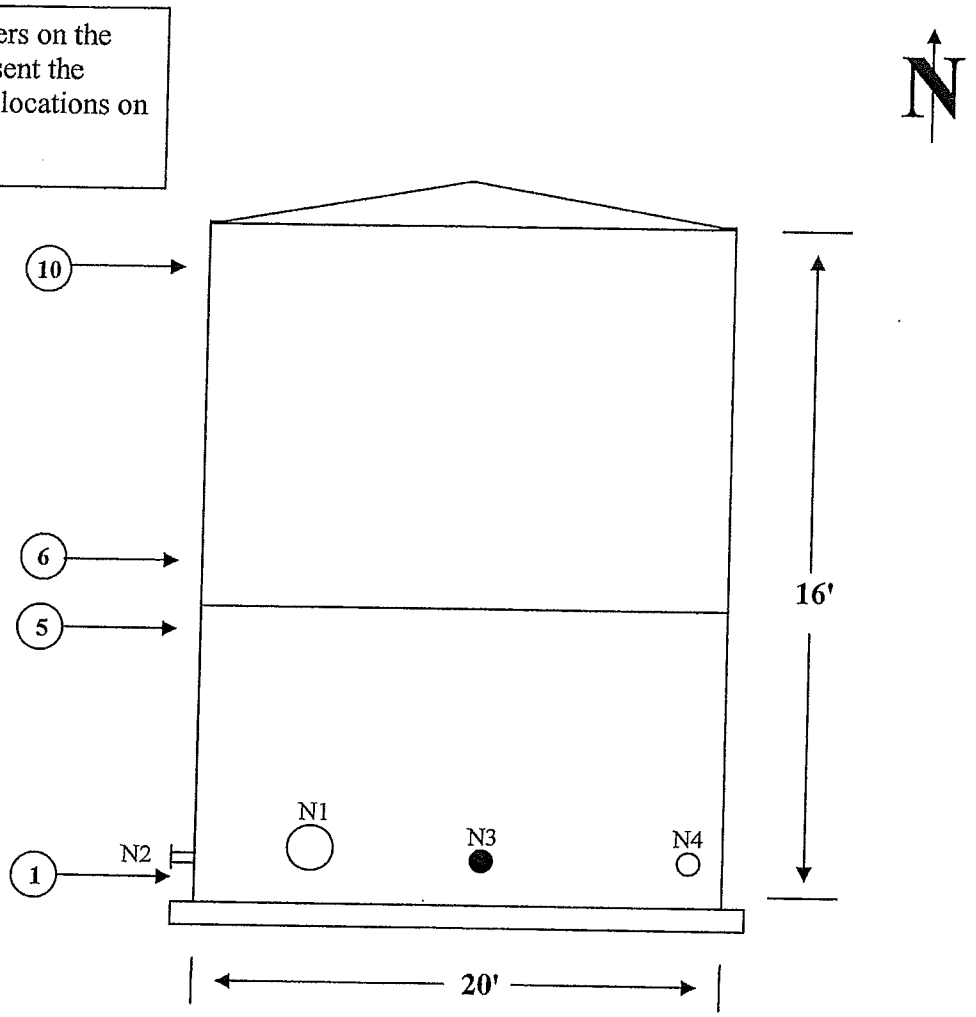
Torig =	0.25	
Tmin =	0.1	
C/R =	0.0003	
R/L=	500.0	Years

****This tank has a calculated remaining life of 500 years at the continued service. This remaining life is dependent on no changes take place including moisture and product that is stored in this tank.**

US INSPECTION SERVICES
NDE and Metallurgical Services

Unit 1 & 2 Clean Oil Tank Inspection Report

The numbers on the tank represent the inspection locations on the shell.



Location of Nozzles

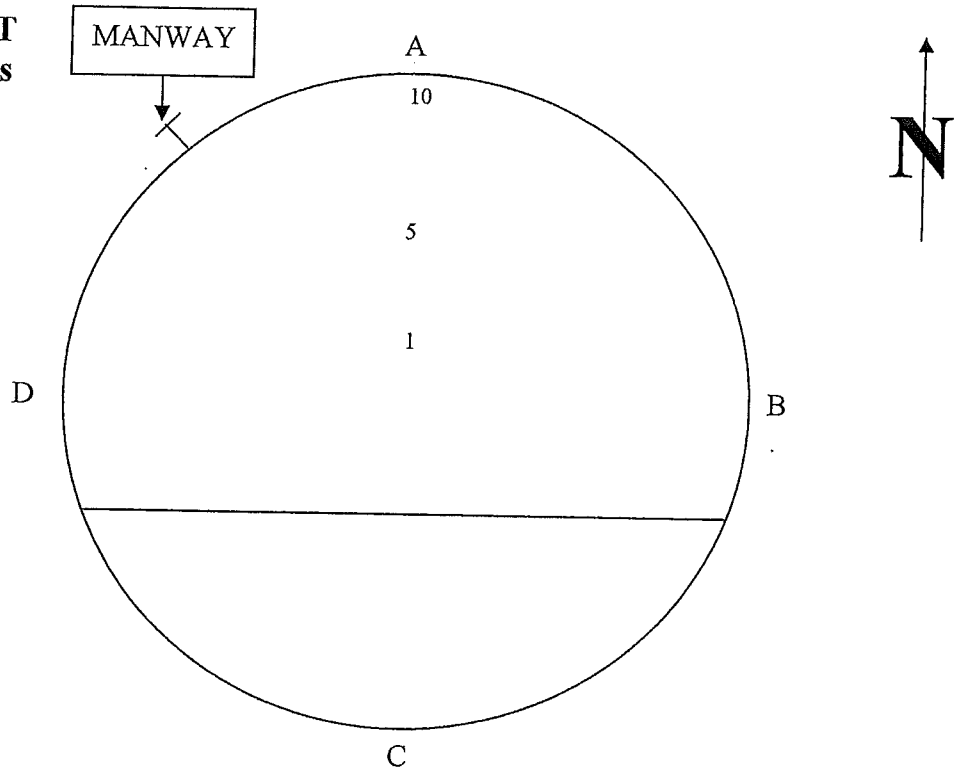
● = South side of tank

○ = North side of tank

US INSPECTION SERVICES
NDE and Metallurgical Services

Unit 1 & 2 Clean Oil Tank Inspection Report

Floor UT locations



Tank T-020
15,000-Gallon Units 1 & 2 Dirty Oil Tank

T20 Dirty Oil Tank External Inspection

KU-LG&E

Location: Ghent, KY

Inspection Date: August 11, 2022

Report Date: August 29, 2022

Project Number: 2022-03519



DATE	PREPARED BY	APPROVED BY:	APPROVER SIGNATURE
8/25/2022	William Stout	Brian O'Leary	

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2022-03519 Grant KY T20
8/25/2022

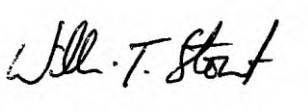
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1.0 INTRODUCTION

On August 11, 2022, Gecko Robotics performed an in-service inspection of Tank 20, a dirty oil tank, for Kentucky Utilities (KU) LG&E in Ghent, KY. The results of this inspection were used to provide an evaluation per the applicable criteria of STI SP001, 6th Edition, January 2018 and API 653, *5th Edition, Addendum 1 April 2018, Addendum 2 May 2020* standard.

Gecko Robotics Personal for Project:



William Stout, Lead API 653 Inspector

Certification Number 25296,

STI SP001 Adjunct Certification #AC44261

Kelly Keil, NDT Level II

2.0 TANK DESCRIPTION

Customer	KU-LG&E	**Location**	Ghent, KY
Tank	T-20	**Project**	2022-03519

GENERAL TANK INFORMATION	
Manufacturer (Repair/Altered)	Modern Welding Co. Inc.
Design Standard	Unknown
Product	Dirty Oil
Cathodic Protection	No
Data Plate	Yes
DOT Regulated Tank	No
TANK DIMENSIONS	
Tank Diameter	12.50 feet
Tank Height (OAL)	16.00 feet
Nominal Capacity	14,688 gallons
TANK DESIGN DETAILS	
Foundation Type	Concrete
Tank Saddles	N/A
Shell Type	Butt Welded, Carbon Steel, Unknown Grade
Roof Type	Lap Welded, Carbon Steel, Unknown Grade, Self-Supporting Cone
Containment	Concrete
CRDM	Yes, Concrete Containment
Release Prevention Barrier	Yes, Concrete Containment
DATES	
Year Manufactured	1971 (per facility records)
Previous Inspection	March 2017
Date of Internal Coating	Unknown
Data of External Coating	Unknown
TANK COATING	
Shell (External)	Beige, thin film epoxy
Shell (Internal)	Unknown

3.0 INSPECTION INTERVALS

Inspection Intervals	
Periodic, by Owner or Owner's designee	Includes weekly, monthly, quarterly, annually as required
Formal External, by Certified Inspector	August 2027
Formal Internal, by Certified Inspector	December 2026, scheduled, per facility

Inspection intervals for field-erected ASTs as per STI SP001 5th Ed., Appendix B, Section 2.1-2.4.4.2, Table 2-1.

AST Type and Size	Category 1	Category 2	Category 3
Field-Erected AST	**P, E (5), I(10)**	**P, E & L (5), I (10)**	**P, E & L(5), I(10)**

Designations used above:

P Periodic AST inspection IAW STI SP001, 5th Ed. Section 6

E Formal external inspection by a certified inspector IAW STI SP001, 5th Ed. Section 7

I Formal internal inspection by a certified inspector IAW STI SP001, 5th Ed. Section 8

L Leak testing by the owner or owner's designee IAW STI SP001, 5th Ed. Section 9

(#) Indicates the maximum inspection interval in years

4.0 SHELL THICKNESS DATA

SHELL THICKNESS (MINIMUM AND AVERAGES)

Note – UTT readings via handheld in ten locations, bottom-to-top, at the four cardinal directions in each shell course. Chart should be read as Course 1 (bottom shell course), reading 'A' taken within two inches of the corner weld, then each successive reading spaced evenly up the height of the shell course. Course 2 is the top shell course.

Location		North	West	South	East		
Course	Pos.	[in]	[in]	[in]	[in]		
1	A	0.250	0.246	0.246	0.250	Min	**0.246**
	B	0.253	0.248	0.249	0.252	Max	**0.255**
	C	0.254	0.249	0.251	0.252	Average	**0.251**
	D	0.254	0.250	0.251	0.253		
	E	0.255	0.250	0.251	0.252		
	F	0.255	0.250	0.251	0.253		
	G	0.254	0.249	0.250	0.252		
	H	0.252	0.248	0.250	0.252		
	I	0.251	0.250	0.249	0.251		
	J	0.250	0.248	0.248	0.250		
Location		North	West	South	East		
Course	Pos.	[in]	[in]	[in]	[in]		
2	A	0.247	0.243	0.243	0.241	Min	**0.241**
	B	0.248	0.245	0.245	0.244	Max	**0.251**
	C	0.250	0.246	0.247	0.245	Average	**0.246**
	D	0.250	0.247	0.246	0.246		
	E	0.251	0.246	0.248	0.246		
	F	0.250	0.247	0.247	0.245		
	G	0.250	0.247	0.246	0.245		
	H	0.249	0.246	0.245	0.244		
	I	0.249	0.245	0.245	0.241		
	J	0.246	0.242	0.243	0.242		

5.0 LIQUID LOAD CONDITION – FIELD-ERECTED AST

Design Code:		Unknown	STI SP001 Appendix B
Tank Type:		Field-Erected	The following formula is used in calculating the required minimum thickness of shell courses:
Shell Material:		Unknown	
Year Constructed		yr 1971	
Tank Diameter	D	ft 12.50	
Tank Height	H	Ft 16.00	
No. Shell Courses		2	*Note: As taken from STI SP001, Section 2.4.2.1.*
Specific Gravity	G	0.840	
Filling Height	*h*	ft 16.00	

$$t_{min} = \frac{(H-1)DG}{10{,}000}$$

Shell Course	Course Height	Product Height	Allowable Stress	Minimum Calculated t	Minimum Allowable t	Measured t average	Cleared for continued service?
	[ft]	*[ft]*	*[psi]*	*[in]*	*[in]*	*[in]*	
2	8.000	16.000	10,000	0.016	0.100	0.241	OK
1	8.000	16.000	10,000	0.016	0.100	0.246	OK

6.0 OTHER UTT

6.1 Fixed Roof

Fixed Roof ultrasonic testing was completed in four locations around the roof perimeter, due to limited access from a portable ladder.

Tank constructed: 1971
Tank inspected: 2022
Years in service: 51

Plate No.	Thickness Reading			
	Position 1 [in]	Position 2 [in]	Position 3 [in]	Position 4 [in]
1 / 2	0.246	0.255	0.240	0.239

$t_{max\ [in]}$	0.255	t_{min} [in]	0.239	Corrosion Rate [in/yr]	0.000313725
t_{min} per API 653 [in]	0.090	t_{avg} [in]	0.245	Remaining Life [yrs]	474.94

6.2 External Bottom Plate Projection

Tank Diameter: 12.50 ft
Number of Measurements: 5
Distance between Measurements: 7.85 ft
Measurements taken at Manway entrance and continue counterclockwise around the tank circumference.

Position 1 [in]	Position 2 [in]	Position 3 [in]	Position 4 [in]	Position 5 [in]
0.255	0.261	0.254	0.253	0.255
Projection plate as per API 653, section 4.4.5.7; Minimum thickness must be greater than 0.100-in				

7.0 INSPECTION FINDINGS AND RECOMMENDATIONS

Foundation / Supports/ Containment

1. No issues noted requiring repair.

External Shell

1. Tank 20 external protective coating system exhibits damage in areas, peeling / flaking. Areas previously repaired by welding were left uncoated. This is noted for information only, as the tank is located indoors out of the weather.
2. A set of supports that are separate from the tank but installed near the tank present a possible risk of damaging the tank shell in the event of vibrational forces acting on the tank shell. Consider grinding the corners of the support or shortening the supports to remove the risk. This condition was noted in the 2017 inspection report as well.

External Appurtenances

1. Roof Manway (R1) cover hinge rod is bent. There was no indication that it was not functioning correctly.
2. Shell nozzle N5 exhibited evidence of product weeping at the valve stem. The bonnet can be removed and the stem packing replaced.
3. Inspector noted evidence of a drip/weep at the isolation valves for the sight glass assembly at shell nozzle N5. The sight glass assembly can be isolated at shell nozzles N5 and N6 to allow for repair or replacement of leaking valves in the assembly.

8.0 OBSERVATIONS OF INSPECTION FINDINGS

External Shell

1. Tank 20 external protective coating system exhibits damage in areas, peeling / flaking. Areas previously repaired by welding were left uncoated. This is noted for information only, as the tank is located indoors out of the weather.

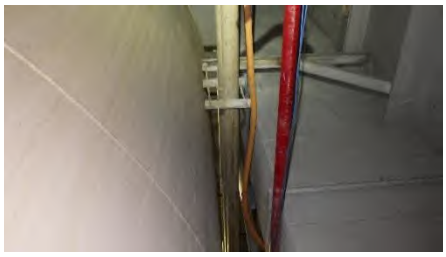


Damaged shell coatings near N3


Damaged coatings at weld repairs


Damaged coatings at weld repairs

2. A set of supports that are separate from the tank but installed near the tank present a possible risk of damaging the tank shell in the event of vibrational forces acting on the tank shell. Consider grinding the corners of the support or shortening the supports to remove the risk. This condition was noted in the 2017 inspection report as well.


Supports installed near shell

External Appurtenances

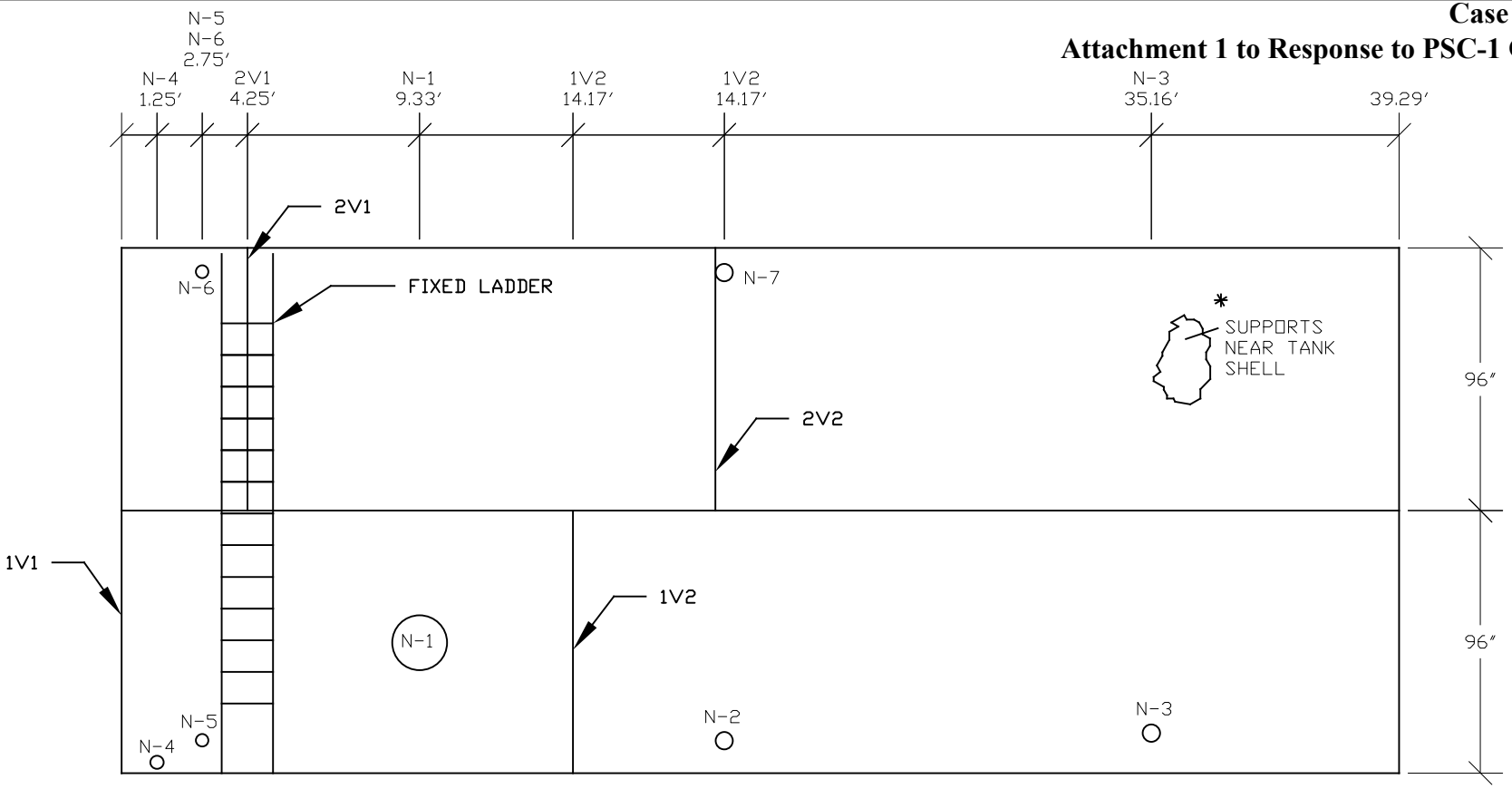
1. Roof Manway (R1) cover hinge rod is bent. There was no indication that it was not functioning correctly.


Nozzle R1 Hinge Rod Bent

2. Shell nozzle N5 exhibited evidence of product weeping at the valve stem. The bonnet can be removed and the stem packing replaced.		
 Nozzle N5		
3. Inspector noted evidence of a drip/weep at the isolation valves for the sight glass assembly at shell nozzle N5. The sight glass assembly can be isolated at shell nozzles N5 and N6 to allow for repair or replacement of leaking valves in the assembly.		
 Sight Glass lower isolation valve	 Sight Glass upper isolation valve	

9.0 TANK DRAWINGS (SHELL & ROOF)

Please refer to following pages.

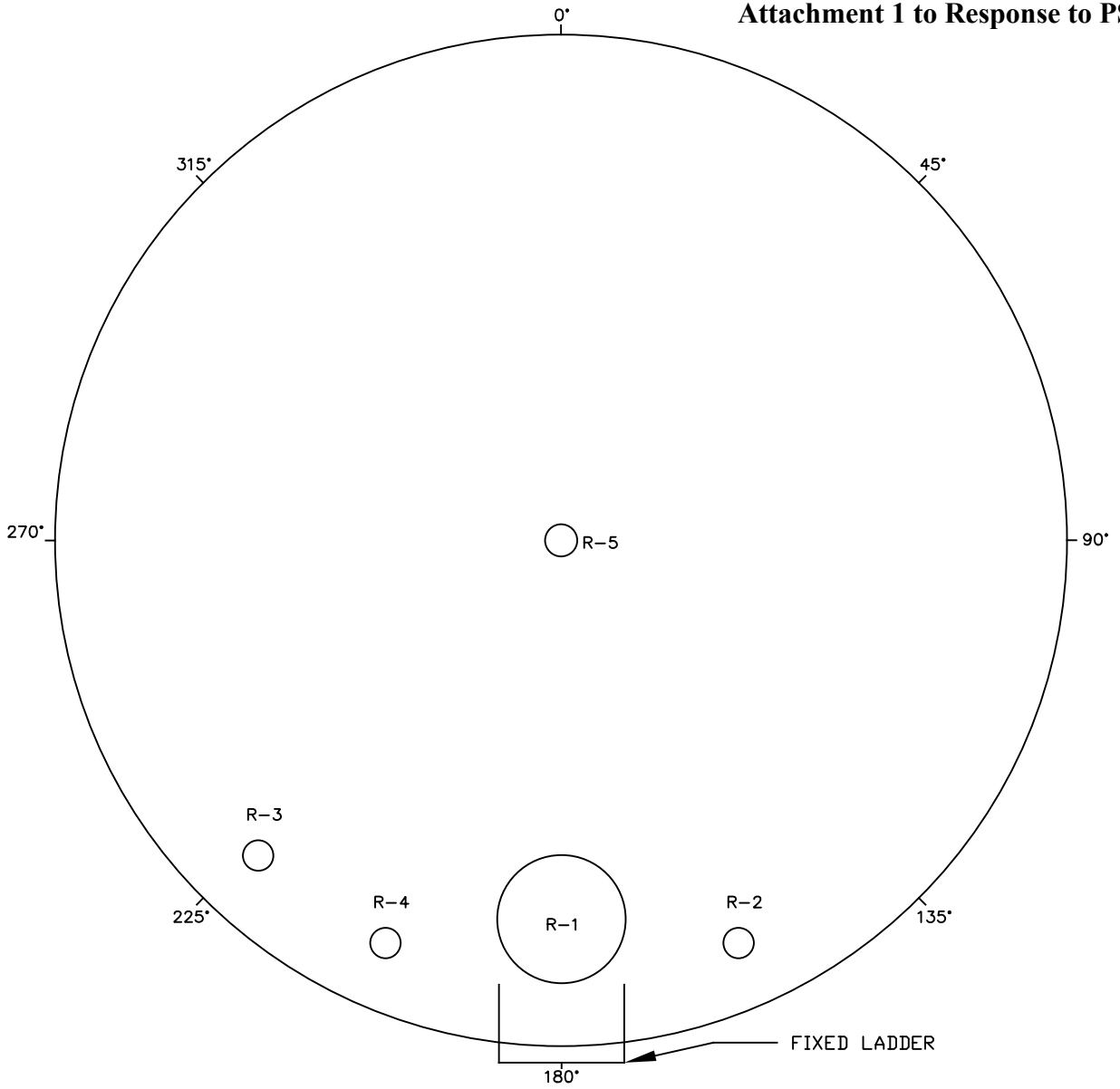


T-20 SHELL ROLLOUT
NTS

NOZZLE SCHEDULE

ID	SIZE
N-1	24″Ø
N-2	4″Ø
N-3	4″Ø
N-4	1.25″Ø
N-5	2″Ø
N-6	2″Ø
N-7	4″Ø

DRAWN BY: AUSTIN ALVIS	DATE INSPECTED: 08/10/2022	EQ. NUMBER: TANK T-20	CLIENT NAME: KU-LG&E	gecko robotics
DATE DRAWN: 08/10/2022	TECHNICIAN: WILLIAM STOUT	EQ. NAME -	CLIENT LOCATION: GHENT STATION, GHENT, KY	GECKO ROBOTICS 100 S. COMMONS, SUITE 145 PITTSBURGH, PA 15212
FILE NO. 2022-03519	DRAWING: 1 OF 2			



NOZZLE SCHEDULE

ID	SIZE
R-1	20"Ø
R-2	2"Ø
R-3	2"Ø
R-4	3"Ø
R-5	3"Ø

T-20 FIXED ROOF LAYOUT
NTS

DRAWN BY: AUSTIN ALVIS	DATE INSPECTED: 08/10/2022	EQ. NUMBER: TANK T-20	CLIENT NAME: KU-LG&E	gecko robotics
DATE DRAWN: 08/10/2022	TECHNICIAN: WILLIAM STOUT	EQ. NAME -	CLIENT LOCATION: GHENT STATION, GHENT, KY	GECKO ROBOTICS 100 S. COMMONS, SUITE 145 PITTSBURGH, PA 15212
FILE NO. 2022-03519	DRAWING: 2 OF 2			

10.0 NOZZLE AND APPURTENANCES TABLE

Item	Description	Pipe Size [in]	12:00 [in]	3:00 [in]	6:00 [in]	9:00 [in]	Comments
N1	Manway	4.00	0.252	0.252	0.258	0.256	
N2	Drain	4.00	0.238	0.229	0.242	0.238	
N3	Nozzle	4.00	0.245	0.232	0.230	0.235	
N4	Nozzle	1.25	-	-	-	-	
N5	Sight Glass (lower)	2.00	0.134	0.130	0.138	0.136	*Thinning of nozzle neck
N6	Sight Glass (upper)	2.00	0.277	0.278	0.279	0.277	
N7	Overflow	4.00	0.282	0.280	0.281	0.283	
R1	Manway	20.00	-	-	-	-	Access limited to visual from ladder
R2	Nozzle	2.00	-	-	-	-	Access limited to visual from ladder
R3	Nozzle	2.00	-	-	-	-	Access limited to visual from ladder
R4	Nozzle	3.00	-	-	-	-	Access limited to visual from ladder
R5	Nozzle	3.00	-	-	-	-	Access limited to visual from ladder

*Installation of an overhead anchor point / tie-off would allow for closer inspection of nozzles at future inspection intervals.

11.0 TANK PHOTOS

		
Nozzle N1	Nozzle N1	Nozzle N1
		
Nozzle N2	Nozzle N2	Nozzle N2
		
Nozzle N3	Nozzle N3	Nozzle N3
		
Nozzle N4	Nozzle N4	Nozzle N4
		
Nozzle N5	Nozzle N5	Nozzle N5

 Nozzle N6	 Nozzle N6	 Nozzle N6
 Nozzle N7	 Nozzle N7	
 Nozzle R1	 Nozzle R2	 Nozzle R3
 Nozzle R4	 Nozzle R5	
 Lower Shell Elevation View	 Upper Shell Elevation View	

TEAM QUALSPEC

10540 Chester Road, Woodlawn, OH 45215

INSPECTION REPORT FOR ATMOSPHERIC STORAGE TANK

Form VT.3-1238 Rev. 0

COMPANY:	Kentucky Utilities	LOCATION:	Ghent, KY
UNIT LOCATION:	Inside building turbine oil room	EQUIPMENT NUMBER:	T-20
TEAM W.O. #:	53870350	COMPLETION DATE:	3-22-17
EQUIPMENT NAME:	Unit 1 & 2 Dirty oil tank		

Formal External Inspection with thickness of Unit 1 &2 Dirty Oil Tank



In accordance with STI SP-001

Site Contact: Ben Zeigler
Inspector: William T. McDaniel API 653 #38330
UTT Technician: Adam Holland

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Form VT.3-1238 Rev. 0

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UNIT LOCATION:	Inside building turbine oil room	EQUIPMENT NUMBER:	T-20
TEAM W.O. #:	53870350	COMPLETION DATE:	3-22-17
EQUIPMENT NAME:	Unit 1 & 2 Dirty oil tank		

INSPECTION SUMMARY

GENERAL:	A formal external inspection with thickness was performed at this time meeting the requirements of STI SP-001. The tank is a 15,000 gallon storage tank that holds used turbine oil. The tank is in a dyke area located inside of a building. There are currently no continuous release detection system in place due to the design of flat bottom tank resting on ground. With the current design the tank is classified as a category 2 tank and will follow the recommendations of STI-SP001 for inspection intervals.
FOUNDATION:	The tank rest on a concrete ring approximately 6" above the concrete floor. The area is surrounded by a concrete wall for secondary containment.
INSULATION:	The tank is not currently insulated.
EXTERNAL:	On the south side of tank approximately 15' from ground there is a pipe support that is in close contact to the tank. Level gauge has an active leak. Isolated area not coated on first course where weld was repaired. Please see attached pages for recommendations and further detail
INTERNAL:	Not performed at this time.

REPAIRS RECOMMENDED FOR TANK (SEE OBSERVATIONS / RECOMMENDATIONS)

☐	YES - ASAP - PRIOR TO RETURNING TO SERVICE	☐	YES- IN A TIMELY MANNER	X	NONE

NEXT INSPECTION DATE: Option 1 /Option 2

Performed by Inspector	EXTERNAL:	10 years (3/22/27)	/ 5 years (3/22/21)
	INTERNAL:	20 years (12/15/26)	/ Not required
Performed By owner	PERIODIC:	Monthly + Annually	/ Monthly + Annually
	LEAK TEST:	Not required	/ 10 years (12/15/16)

INSPECTOR:	*William Trafton McDaniel*	DATE:	*3-22-17*
SIGNATURE:	William T McDaniel	API 653 NO:	*38330*

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UNIT LOCATION:	Inside building turbine oil room	EQUIPMENT NUMBER:	T-20
TEAM W.O. #:	53870350	COMPLETION DATE:	3-22-17
EQUIPMENT NAME:	Unit 1 & 2 Dirty oil tank		

OBSERVATIONS	RECOMMENDATIONS
Support in close contact with tank	Monitor at regular frequencies to ensure the support does not come in contact with tank
Active leak on valve at liquid level gauge	Repair/replace valve and any other parts as necessary
Area of weld repair not recoated	Clean and recoat as deemed necessary.

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INSPECTION REPORT FOR ATMOSPHERIC STORAGE TANK

Form VT.3-1238 Rev. 0

COMPANY:	Kentucky Utilities	LOCATION:	Ghent, KY
UNIT LOCATION:	Inside building turbine oil room	EQUIPMENT NUMBER:	T-20
TEAM W.O. #:	53870350	COMPLETION DATE:	3-22-17
EQUIPMENT NAME:	Unit 1 & 2 Dirty oil tank		

Design Data

Year Built: *1971* Service Date: *1971* Fabricator: *Modern Welding Company*

Tank Type: ☐ Horizontal ☒ Vertical ☐ Jacketed ☐ Insulated Service/Product: *Dirty Oil*

Tank Height / Length: *16'* ☐ SS ☐ T/T ☒ Overall Tank Diameter: *20*

Name Plate Verified: Yes ☒ No ☐ N/A ☐ Drawing / Documentation Available: Yes ☒ No ☐

Specific Gravity: *1* Design & Operating Press./Temp.: *Design* *ATM* psig *300* °F / *Operating* *ATM* psig *AMB* °F

Roof / Head Type : ☐ Elliptical ☐ ASME F & D ☐ Domed ☒ Conical ☐ Flat ☐ Pan
Crown Radius _____ Knuckle Radius _____ Head Ratio _____ Joint Efficiency *N/A*

Bottom / Head Type: ☐ Elliptical ☐ ASME F & D ☐ Domed ☐ Conical ☒ Flat ☐ Pan
Crown Radius _____ Knuckle Radius _____ Head Ratio _____ Joint Efficiency *N/A*

Nom. Roof / Head Thickness: _____ Nom. Bottom / Head Thickness: _____ Nom. Shell Thickness: _____

Shell Joint Construction Type:	☒ Butt Welded	☐ Single Lap Welded	☐ Double Lap Welded
Roof / Head Joint Construction Type:	☐ Butt Welded	☒ Single Lap Welded	☐ Double Lap Welded
Bottom / Head Joint Construction Type:	☐ Butt Welded	☒ Single Lap Welded	☐ Double Lap Welded

Other i.e. Riveted :

Corrosion Allowance: Head "A" *N/S* Head "B" *N/S* Shell *N/S*

	Min. Yield	Min. Tensile
Shell Material: Specification / Grade / Type	*Unknown C/S*	
"A" Head Material: Specification /Grade / Type	*Unknown C/S*	
"B" Head Material: Specification /Grade / Type	*Unknown C/S*	

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UNIT LOCATION:	Inside building turbine oil room	EQUIPMENT NUMBER:	T-20
TEAM W.O. #:	53870350	COMPLETION DATE:	3-22-17
EQUIPMENT NAME:	Unit 1 & 2 Dirty oil tank		

External Visual Inspection Results

Item No.	Item	Good	Fair	Poor	N/A	
1	Shell	X				
2	Floor / Bottom Head				X	
3	Roof / Top Head	X				
4	Nozzles and Fasteners	X				
5	Piping and Components	X				
6	Valves and Components	X				
7	Welds and Seams	X				
8	Davits	X				
9	Manways & Fasteners	X				
10	Stiffner Rings				X	
11	Gauges			X		Active leak at level guage
12	Sight Glass	X				
13	Platforms/Handrails	X				
14	Ladders/Cages/Stairs	X				
15	Grating/Treads	X				
16	Insulation or Coating		X			Isolated are of weld repair not recoated
17	Weather Jacket				X	
18	Supports/Base plates				X	**Type:**
19	Anchors/Support bolts				X	
20	Foundation (Spalling, etc.)	X				
21	Grouting				X	

		Yes	No	COMMENTS
22	Corrosion (Location)		X	
23	Name Plate Attached	X		
24	Visible Leaks	X		Level gauge
25	Ground Wire	X		
26	Visible Distortion		X	
27	Weep Holes Okay			N/A
28	Blistering		X	
29	Other			

Notes or Comments: The tank is in overall good integral condition with no major concerns at this time. It is recommended To maintain regular inspection frequencies meeting the requirements of STI-SP001.

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INSPECTION REPORT FOR ATMOSPHERIC STORAGE TANK

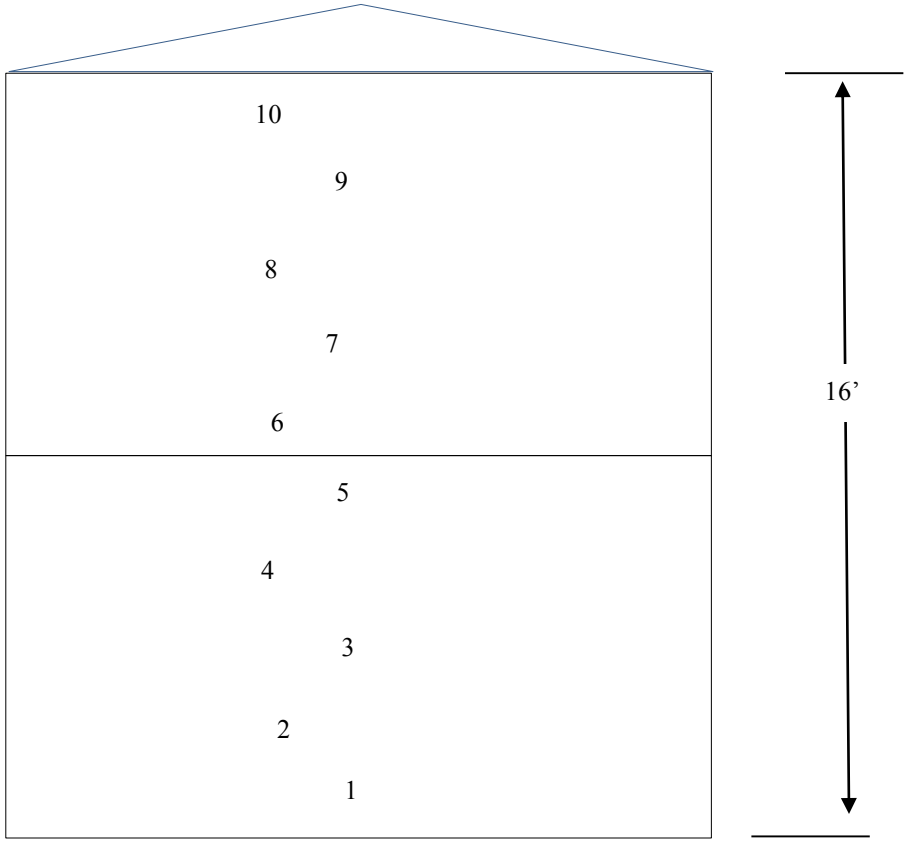
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TEAM W.O. #:	53870350	COMPLETION DATE:	3-22-17
EQUIPMENT NAME:	Unit 1 & 2 Dirty oil tank		

UT Calibration Data

Equipment Make:	*GE*	Model # :	*DMS 2*		Serial # :	*01NDJJ*	
Calibration Block Material :	☒ C/S	Serial # :	*09-3799*	☐ S/S	Serial # :		
Transducer Serial # :	*15L00D04*	Size :	*.375*	Frequency:	*7.5*	MHZ	
UT Couplant Type:	*Sonix-UT*	Batch # :	*306-07*				

Sketch



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TEAM W.O. #:	53870350	COMPLETION DATE:	3-22-17
EQUIPMENT NAME:	Unit 1 & 2 Dirty oil tank		

UTT DATA

	North	East	South	West
1	0.242	0.246	0.246	0.243
2	0.246	0.247	0.246	0.248
3	0.246	0.25	0.249	0.248
4	0.244	0.249	0.249	0.247
5	0.243	0.247	0.245	0.245
6	0.246	0.243	0.242	0.24
7		0.246		
8		0.246		
9		0.246		
10		0.243		
Roof random average .240"				

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INSPECTION REPORT FOR ATMOSPHERIC STORAGE TANK

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EQUIPMENT NAME:	Unit 1 & 2 Dirty oil tank		

Calculations per STI SP-001

$$T\text{-}min = \frac{(H-1)DG}{10{,}000}$$

H=16
D=20
G=1(conservative)

= .03”

Torig=.25
Tact=.2455
Yrs in service=40
LTCR=.0003

Tprevious=.24
Tact=.2455
Yrs in service=40
STCR=0

Tact=.2455
Tmin=.187 (25% loss of Torig)
LTCR=.0003
Remaining life=195 years

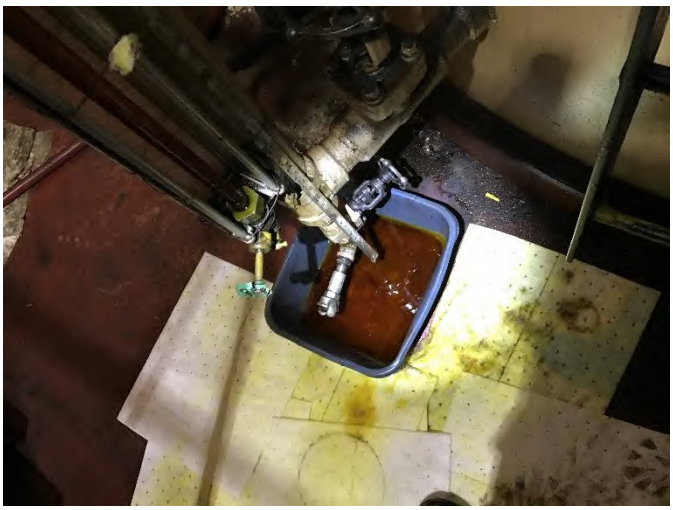
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10540 Chester Road, Woodlawn, OH 45215

INSPECTION REPORT FOR ATMOSPHERIC STORAGE TANK

Form VT.3-1238 Rev. 0

COMPANY:	Kentucky Utilities	LOCATION:	Ghent, KY
UNIT LOCATION:	Inside building turbine oil room	EQUIPMENT NUMBER:	T-20
TEAM W.O. #:	53870350	COMPLETION DATE:	3-22-17
EQUIPMENT NAME:	Unit 1 & 2 Dirty oil tank		



Evidence of active leak on level gauge



Valve area believed to have active leak



Area not coated after weld repair



Support close to tank that may rub if any shift occurs

Imber

US INSPECTION SERVICES
NDE and Metallurgical Services

Evergreen Environmental @ Ghent Power Station

Unit 1 & Unit 2 Dirty Oil Storage Tank Inspection Report

Date of Inspection: October 10, 2006

US INSPECTION SERVICES
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CUSTOMER: Evergreen Environmental @ Ghent Power Station

ADDRESS: Rt. 42 Ghent Kentucky **Lab#:** F 202296

CUSTOMER CONTACTS:	Ron Stewart, Danny Ayler
US INSPECTION PERSONNEL:	Sean Heitman, Jim Willison
DESCRIPTION OF INSPECTION:	Mechanical Integrity Inspection Internal/External
SPECIFICATION:	Guidelines of API 653
ACCEPTANCE:	API 653 and customer info
EQUIPMENT:	DMS 2 S/N: 011MTM HT 400A Velocity: 2330 S/N: 00W6K2
MATERIALS:	1 QT Ultra-Gel

RESULTS: The inspections performed were to find equipment deterioration while in service and deficiencies due to degradation from original fabrication. We also look for modifications or alterations that do not comply with generally accepted good engineering practice. Unit 1 & 2 Dirty oil storage tank is a carbon steel and atmospheric. This tank has no record of construction and the year built was 1971. Minor internal corrosion is present and the integrity of the tank is acceptable. It is assumed that the product in the tank has a specific gravity of less than 1. The specific gravity of 1 was used in the calculations listed below. The greatest concern for this tank is the vertical weld on the south east side of the 1st course has very poor original welding. Also the 1 ½" nozzle on the south east side of the 1st course also needs back welded from the inside. Please see below for further explanation of the above mentioned repairs needed.

Inspection Frequency and Intervals:

Routine in service inspections (which may be performed by Kentucky Utilities employees) should be performed at a minimum of on a **monthly** basis per API 653 para 6.3

The next formal External and UT inspection shall be conducted in **5 years** (October 10, 2011).

The next formal Internal inspection shall be conducted in **20 years**. (October 10, 2026). The inspection frequency may be increased to 20 years since very minor corrosion was found.

TECHNICIAN: Sean Heitman API Cert# 26660 DATE: October 10, 2006

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Unit 1 & 2 Dirty Oil Tank Inspection Report

Shell

Internal Visual/ UT- Internal visual of this tank revealed the tank to be in great condition with very minor corrosion noted. Ultrasonic thickness revealed the tank to have thickness readings ranging from .240"-.258". There is a 1 ½" nozzle on the South East side of the tank that was not installed in accordance with API 653. This nozzle needs to be back welded from the inside using a qualified welder and then magnetic particle inspection conducted after repair. Also the South East 1st course vertical weld has very poor original welding that was recommended for repair. The defects in the welding need to be removed then properly repaired using a qualified welder. After final weld repair a magnetic particle inspection needs to be conducted looking for cracking and weld defects.
External Visual- Visual inspection of the outside revealed the tank to be in good condition. There is no grounding for this tank and product residue is present on most of the exterior. There are no concerns for the outside of the tank at this time.
Recommendations for the Shell:

1. Repair the vertical weld on the South East side of the tank using a qualified welder.
2. Back weld the 1 ½" nozzle on the South East side of the tank using a qualified welder.
3. Magnetic particle inspect the above mentioned welds after final repair.

Roof

Internal Visual- There is no concern at this time.
External Visual- The ultrasonic thickness readings were all acceptable. Various UT readings were taken next to the stairs on the roof with a minimum thickness found of .250" thick. A thickness greater than 0.100" is acceptable per API 653. Ultrasonic thickness readings were not taken on the nozzles because the roof was covered in dirt and debris. This condition was unsafe therefore only a visual was conducted on the nozzles.
Recommendations for the Roof:

1. No recommendations at this time.

Floor

Internal Visual/UT- Visual inspection revealed the floor to have minor corrosion on the inside. The minimum thickness allowed per API 653 table 6-1 is .050" with means of containment and detection.
External Visual- No grounding strap is in place. The foundation is in good condition with no cracking occurring.
Recommendations for the Floor:

1. The Floor appears ultrasonically and visually to be in good condition, have all inspections conducted in accordance with API 653 as noted above.

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Unit 1 & 2 Dirty Oil Tank Inspection Report

Ultrasonic Thickness Data

Floor Thickness Results

	North	East	South	West
1	0.253	0.253	0.253	0.254
2	0.253	0.248	0.252	0.256
3	0.253	0.253	0.254	0.257
4	0.254	0.254	0.252	0.256
5	0.255	0.255	0.250	0.257
6	0.255	0.254	0.252	0.255
7	0.255	0.256	0.252	0.256
8	0.257	0.255	0.251	0.257
9	0.258	0.255	0.253	0.258
10	0.252	0.255	0.253	0.255

Shell Thickness Results

	North	East	South	West
1	0.258	0.250	0.250	0.253
2	0.258	0.256	0.252	0.256
3	0.255	0.255	0.254	0.252
4	0.257	0.252	0.252	0.248
5	0.255	0.252	0.250	0.248
6	0.255	0.250	0.240	0.245
7		0.249		
8		0.251		
9		0.241		
10		0.248		

Note: The stairs are on the East side of this Tank

Nozzle Thickness Results

	Top	North	Bottom	South
N1	0.254	0.253	0.258	0.236
N2	0.211	0.224	0.234	0.222
N3	0.134	0.131	0.137	0.138
N4	0.241	0.235	0.234	0.262
N5	0.240	0.229	0.241	0.242

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Unit 1 & 2 Dirty Oil Tank Inspection Report

Calculations

$$T_{min} = \frac{2.6 \times (H-1) \times D \times G}{S \times E}$$

H=	16
D=	20
G=	1
S=	23600
E=	0.7

	Height	Tmin
1ST COURSE	16	0.047
2ND COURSE	8	0.022

No shell sheet shall be less than 0.100" thick in accordance with API 653. These calculations are a representative number showing the life expectancy of the tank if kept in good condition without exterior corrosion taking place.

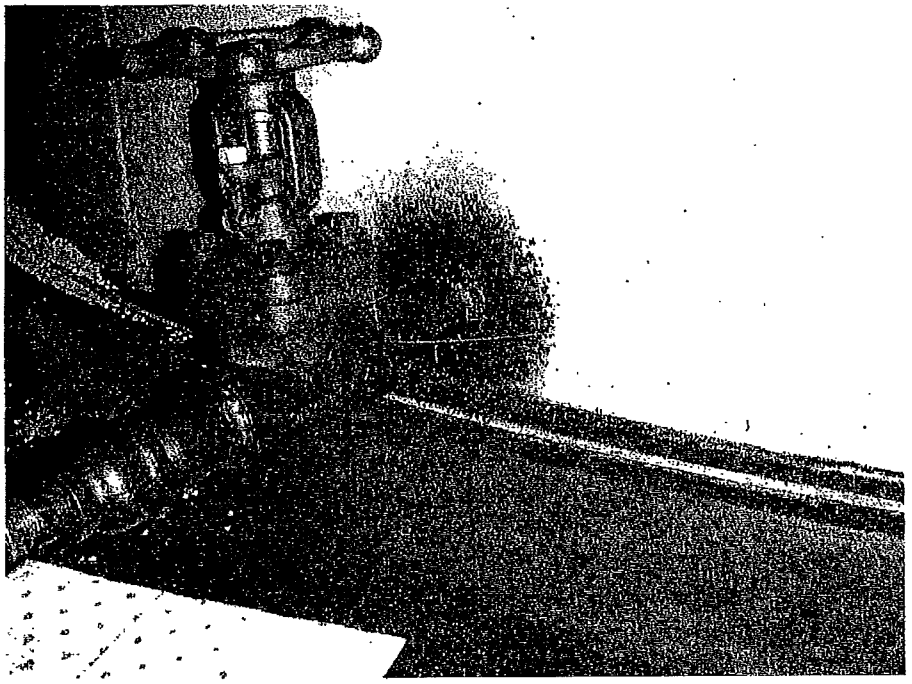
Torig =	0.25
Tact.=	0.24
Yrs. Service =	35
C/R=	0.0003

Torig =	0.25	
Tmin =	0.1	
C/R =	0.0003	
R/L=	500.0	Years

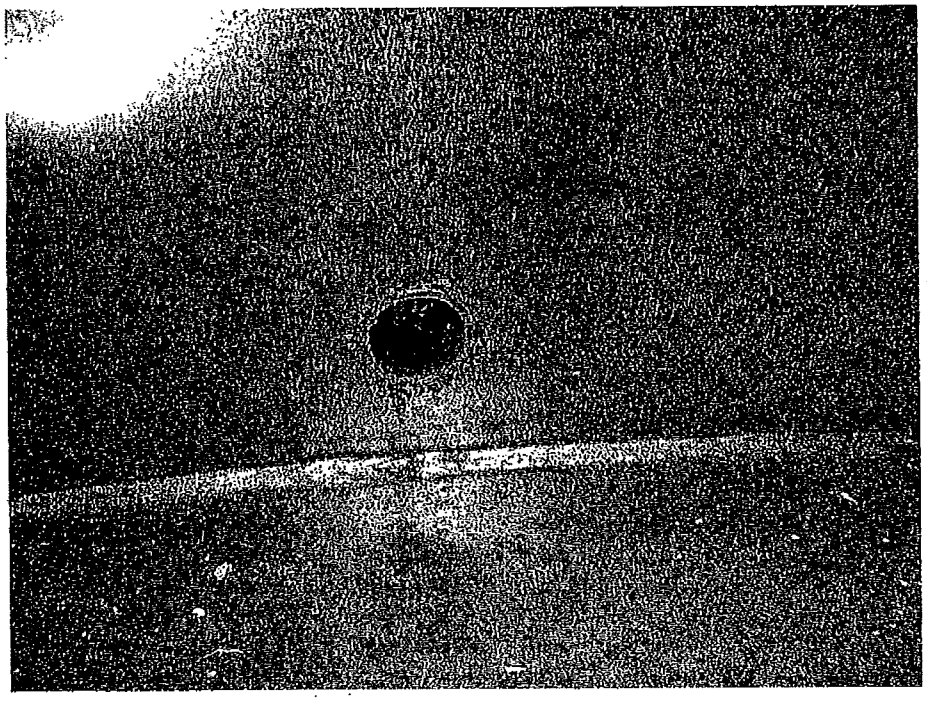
****This tank has a calculated remaining life of 500 years at the continued service. This remaining life is dependent on no changes take place including moisture and product that is stored in this tank.**

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Unit 1 & 2 Dirty Oil Tank Inspection Report

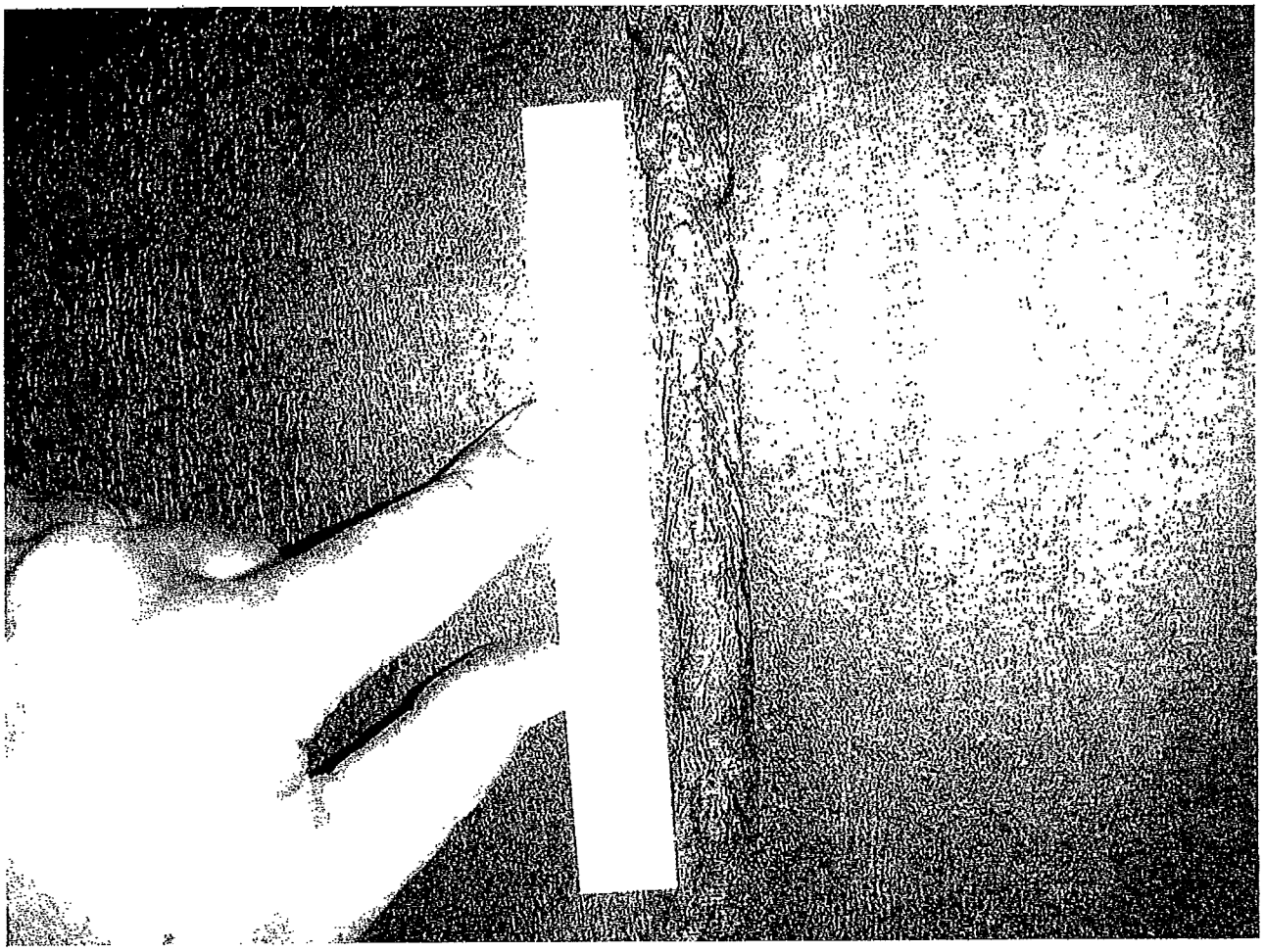


Nozzle on the South East side of the shell that needs back welded



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Unit 1 & 2 Dirty Oil Tank Inspection Report

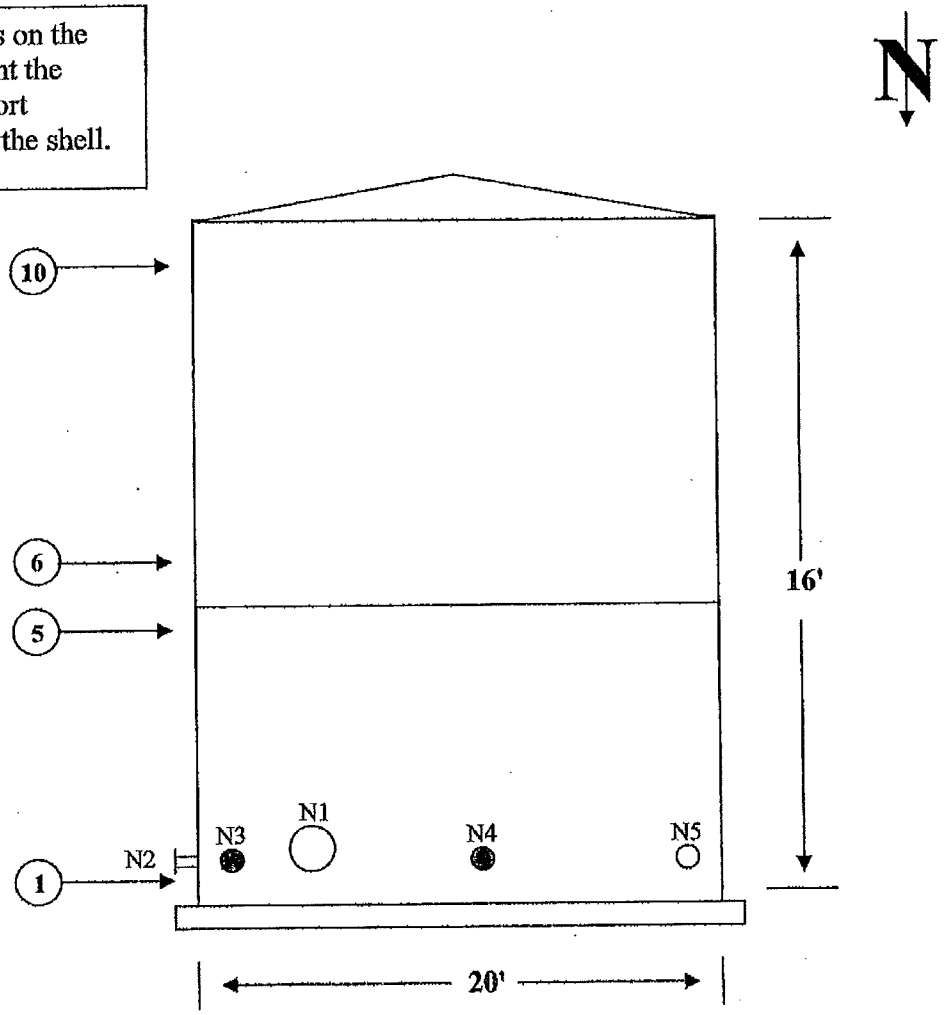


South East vertical weld that needs repaired. The photo shows undercut porosity and lack of reinforcement. See above recommendations for the shell. Due to the flash from the camera the numbers on the 6" ruler did not show up.

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Unit 1 & 2 Dirty Oil Tank Inspection Report

The numbers on the tank represent the inspection port locations on the shell.



Location of Nozzles

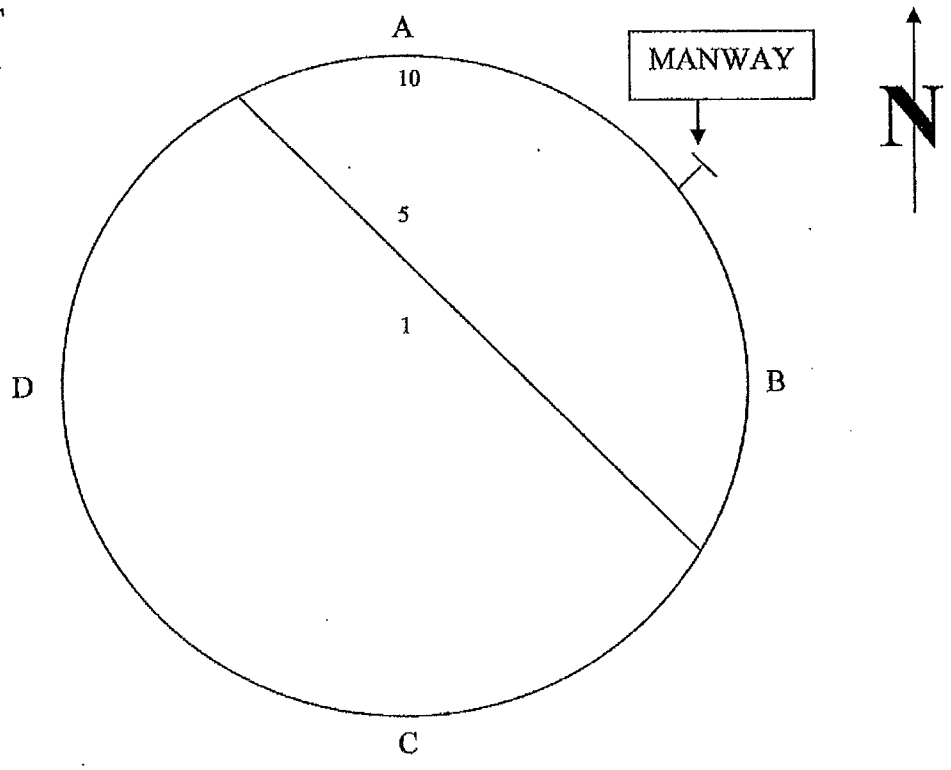
● = South side of tank

○ = North side of tank

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Unit 1 & 2 Dirty Oil Tank Inspection Report

Floor UT locations



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Recommendations on repairs for Dirty Oil Storage Tank

Unit 1 & 2 Tank

1. Back-weld the inside of the 1 ½" nozzle on the South East side of the 1st course. This nozzle is circled on the inside and labeled #1.
2. Properly prep and repair all defects noted on the South East vertical weld on the 1st course. These defects are marked on the inside of the tank #2 thru #10.

NOTE:

1. Use proper welding procedures and qualified welder.
2. Properly prep and repair each weld defect area.
3. Magnetic particle inspect each area noted above prior to putting tank back in service.

Tank T-021
15,000-Gallon Units 3 & 4 Clean Oil Tank

T21 Clean Oil Tank External Inspection

KU-LG&E

Location: Ghent, KY

Inspection Date: August 11, 2022

Report Date: August 29, 2022

Project Number: 2022-03519



DATE	PREPARED BY	APPROVED BY:	APPROVER SIGNATURE
8/25/2022	William Stout	Brian O'Leary	

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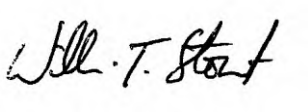
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1.0 INTRODUCTION

On August 11, 2022, Gecko Robotics performed an in-service inspection of Tank 21, a clean oil tank, for Kentucky Utilities (KU) LG&E in Ghent, KY. The results of this inspection were used to provide an evaluation per the applicable criteria of STI SP001, 6th Edition, January 2018 and API 653, *5th Edition, Addendum 1 April 2018, Addendum 2 May 2020* standard.

Gecko Robotics Personal for Project:



William Stout, Lead API 653 Inspector

Certification Number 25296,

STI SP001 Adjunct Certification #AC44261

Kelly Keil, NDT Level II

2.0 TANK DESCRIPTION

Customer	KU-LG&E	**Location**	Ghent, KY
Tank	T-21	**Project**	2022-03519

GENERAL TANK INFORMATION	
Manufacturer (Repair/Altered)	Unknown
Design Standard	Underwriter's Laboratories (UL)
Product	Clean Turbine Oil
Cathodic Protection	No
Data Plate	Yes
DOT Regulated Tank	No
TANK DIMENSIONS	
Tank Diameter	12.99 feet
Tank Height (OAL)	16.00 feet
Nominal Capacity	15,862 gallons
TANK DESIGN DETAILS	
Foundation Type	Concrete
Tank Saddles	N/A
Shell Type	Butt Welded, Carbon Steel, Unknown Grade
Roof Type	Lap Welded, Carbon Steel, Unknown Grade, Self-Supporting Cone
Containment	Concrete
CRDM	Yes, Concrete Containment
Release Prevention Barrier	Yes, Concrete Containment
DATES	
Year Manufactured	1971 (per facility records)
Previous Inspection	March 2017
Date of Internal Coating	Unknown
Data of External Coating	Unknown
TANK COATING	
Shell (External)	Beige, thin film epoxy
Shell (Internal)	Unknown

3.0 INSPECTION INTERVALS

Inspection Intervals	
Periodic, by Owner or Owner's designee	Includes weekly, monthly, quarterly, annually as required
Formal External, by Certified Inspector	August 2027
Formal Internal, by Certified Inspector	March 2026, scheduled, per facility

Inspection intervals for field-erected ASTs as per STI SP001 5th Ed., Appendix B, Section 2.1-2.4.4.2, Table 2-1.

AST Type and Size	Category 1	Category 2	Category 3
Field-Erected AST	**P, E (5), I(10)**	**P, E & L (5), I (10)**	**P, E & L(5), I(10)**

Designations used above:

P Periodic AST inspection IAW STI SP001, 5th Ed. Section 6

E Formal external inspection by a certified inspector IAW STI SP001, 5th Ed. Section 7

I Formal internal inspection by a certified inspector IAW STI SP001, 5th Ed. Section 8

L Leak testing by the owner or owner's designee IAW STI SP001, 5th Ed. Section 9

(#) Indicates the maximum inspection interval in years

4.0 SHELL THICKNESS DATA

SHELL THICKNESS (MINIMUM AND AVERAGES)

Note – UTT readings via handheld in ten locations, bottom-to-top, at the four cardinal directions in each shell course. Chart should be read as Course 1 (bottom shell course), reading 'A' taken within two inches of the corner weld, then each successive reading spaced evenly up the height of the shell course. Course 2 is the top shell course.

Location		North	West	South	East		
Course	Pos.	[in]	[in]	[in]	[in]		
1	A	0.188	0.193	0.192	0.188	Min	**0.185**
	B	0.193	0.198	0.198	0.196	Max	**0.203**
	C	0.196	0.202	0.199	0.198	Average	**0.197**
	D	0.200	0.203	0.199	0.201		
	E	0.200	0.203	0.200	0.200		
	F	0.201	0.202	0.199	0.201		
	G	0.200	0.202	0.198	0.202		
	H	0.198	0.199	0.195	0.198		
	I	0.194	0.194	0.190	0.194		
	J	0.187	0.189	0.185	0.189		
Location		North	West	South	East		
Course	Pos.	[in]	[in]	[in]	[in]		
2	A	0.206	0.201	0.199	0.200	Min	**0.195**
	B	0.206	0.202	0.201	0.202	Max	**0.207**
	C	0.206	0.202	0.202	0.202	Average	**0.201**
	D	0.206	0.203	0.202	0.203		
	E	0.207	0.204	0.202	0.203		
	F	0.206	0.202	0.200	0.202		
	G	0.204	0.201	0.199	0.201		
	H	0.202	0.195	0.198	0.201		
	I	0.201	0.198	0.197	0.199		
	J	0.201	0.196	0.197	0.198		

5.0 LIQUID LOAD CONDITION – FIELD-ERECTED AST

Design Code:			Unknown	STI SP001 Appendix B
Tank Type:			Field-Erected	The following formula is used in calculating the required minimum thickness of shell courses:
Shell Material:			Unknown	
Year Constructed		yr	1971	
Tank Diameter	D	ft	12.99	
Tank Height	H	Ft	16.00	
No. Shell Courses			2	*Note: As taken from STI SP001, Section 2.4.2.1.*
Specific Gravity	G		0.840	
Filling Height	*h*	ft	16.00	

$$t_{min} = \frac{(H-1)DG}{10{,}000}$$

Shell Course	Course Height	Product Height	Allowable Stress	Minimum Calculated t	Minimum Allowable t	Measured t average	Cleared for continued service?
	[ft]	*[ft]*	*[psi]*	*[in]*	*[in]*	*[in]*	
2	8.000	16.000	10,000	0.016	0.100	0.201	OK
1	8.000	16.000	10,000	0.016	0.100	0.197	OK

6.0 OTHER UTT

6.1 Fixed Roof

Fixed Roof ultrasonic testing was completed in four locations around the roof perimeter, due to limited access from a portable ladder.

Tank constructed: 1971
Tank inspected: 2022
Years in service: 51

Plate No.	Thickness Reading			
	Position 1 [in]	Position 2 [in]	Position 3 [in]	Position 4 [in]
1 / 2	0.170	0.167	0.170	0.169

$t_{max\ [in]}$	0.170	t_{min} [in]	0.167	Corrosion Rate [in/yr]	0.000058824
t_{min} per API 653 [in]	0.090	t_{avg} [in]	0.169	Remaining Life [yrs]	1309.00

6.2 External Bottom Plate Projection

UTT of the external bottom plate projection could not be completed due to obstruction by raised floor grating and the presence of oil/water around the tank foundation.

Tank Diameter: 12.99 ft
Number of Measurements: 0
Distance between Measurements: - ft
Measurements taken at Manway entrance and continue counterclockwise around the tank circumference.

Position 1 [in]	Position 2 [in]	Position 3 [in]	Position 4 [in]	Position 5 [in]
-	-	-	-	-
Projection plate as per API 653, section 4.4.5.7; Minimum thickness must be greater than 0.100-in				

7.0 INSPECTION FINDINGS AND RECOMMENDATIONS

Foundation / Supports/ Containment

1. Discussion with facility personnel indicate that there is a water line leak within the wall of the building that causes the water to collect around tank 21 and 22. Water is typically removed by vacuum truck. Ensure liquid is removed from around tanks to prevent deterioration of the tank bottoms and lower shell courses.

External Shell

1. Inspector noted a bulge/deformation in the tank shell at the second vertical weld in the first shell course (1V2). There was no indication of this condition in the 2017 inspection report. Recommend taking the tank out of service to complete an internal inspection to determine cause and repair.

External Appurtenances

1. No notable issues requiring repair or replacement at this time.

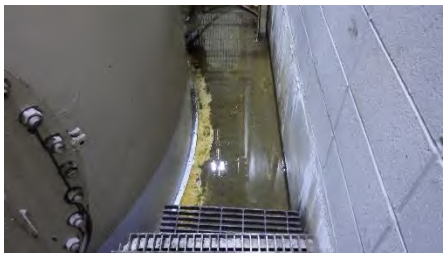
Tank Roof

1. Tank 21 is equipped with a self-supporting cone roof. Nominal thickness of the roof is believed to be 0.1875-in. Discussion with facility personnel indicated this roof collapsed shortly after being placed in service. Inspector believes the weight of the 36-in roof nozzle caused the roof to collapse. A review of the previous inspection report would indicate that the situation appears static, with no change over time. Inspection of the roof was limited to visual from the fixed vertical ladder. Recommend replacing the roof at the next out-of-service inspection and repair cycle.

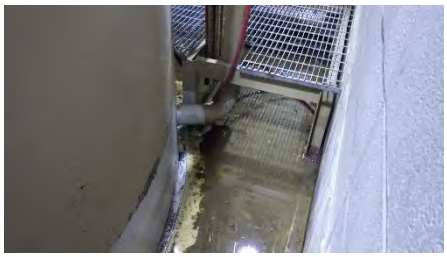
8.0 OBSERVATIONS OF INSPECTION FINDINGS

Foundation / Supports/ Containment

1. Discussion with facility personnel indicate that there is a water line leak within the wall of the building that causes the water to collect around tank 21 and 22. Water is typically removed by vacuum truck. Ensure liquid is removed from around tanks to prevent deterioration of the tank bottoms and lower shell courses.



Oily water around tank foundation



Oily water around tank foundation



Oily water around tank foundation

External Shell

1. Inspector noted a deformation in the tank shell at the second vertical weld in the first shell course (1V2). There was no indication of this condition in the 2017 inspection report. Recommend taking the tank out of service to complete an internal inspection to determine cause and repair.



Nozzle R1 Hinge Rod Bent



Straight edge to illustrate



Note shadow of straight edge

Tank Roof

1. Tank 21 is equipped with a self-supporting cone roof. Nominal thickness of the roof is believed to be 0.1875-in. Discussion with facility personnel indicated this roof collapsed shortly after being placed in service. Inspector believes the weight of the 36-in roof nozzle caused the roof to collapse. A review of the previous inspection report would indicate that the situation appears static, with no change over time. Inspection of the roof was limited to visual from the fixed vertical ladder. Recommend replacing the roof at the next out-of-service inspection and repair cycle.



Roof collapse (left)



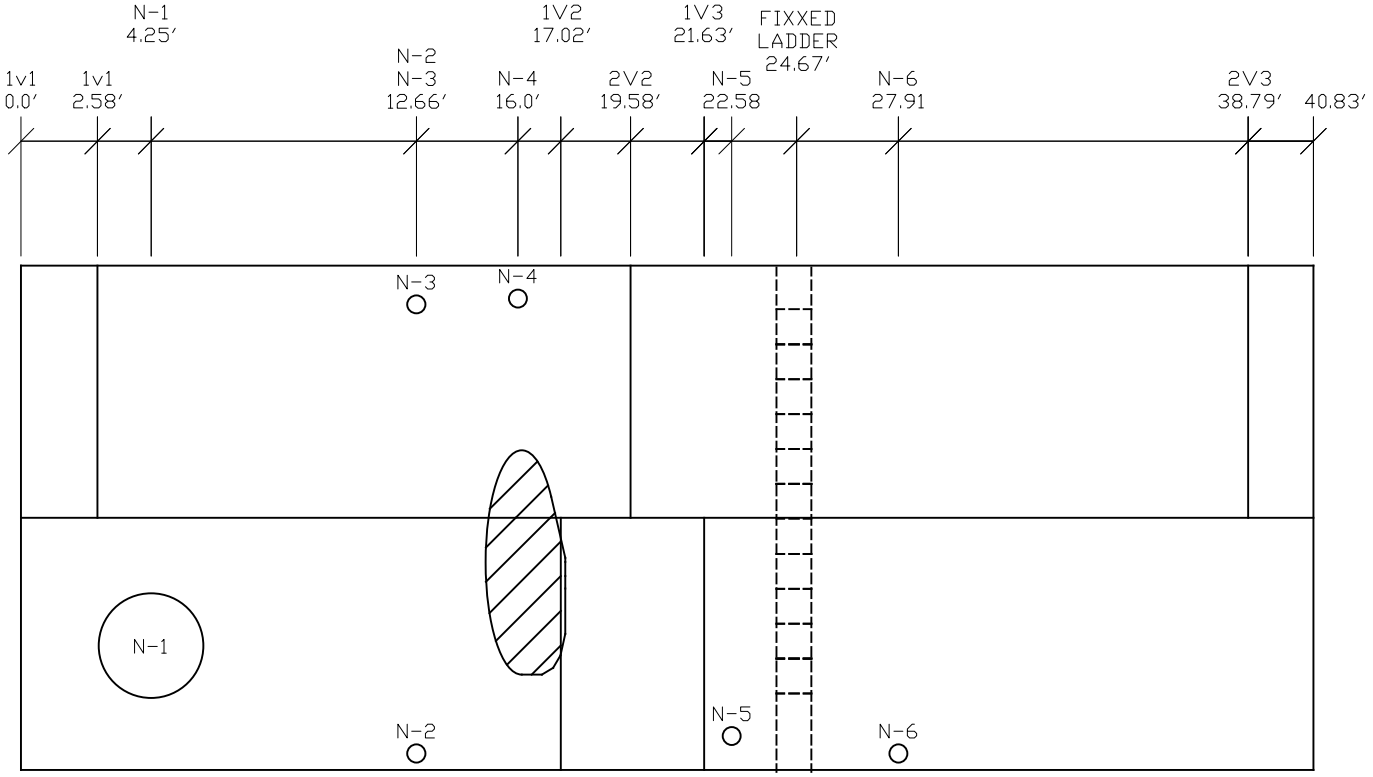
Roof collapse (center)



Roof collapse (right)

9.0 TANK DRAWINGS (SHELL & ROOF)

Please refer to following pages.



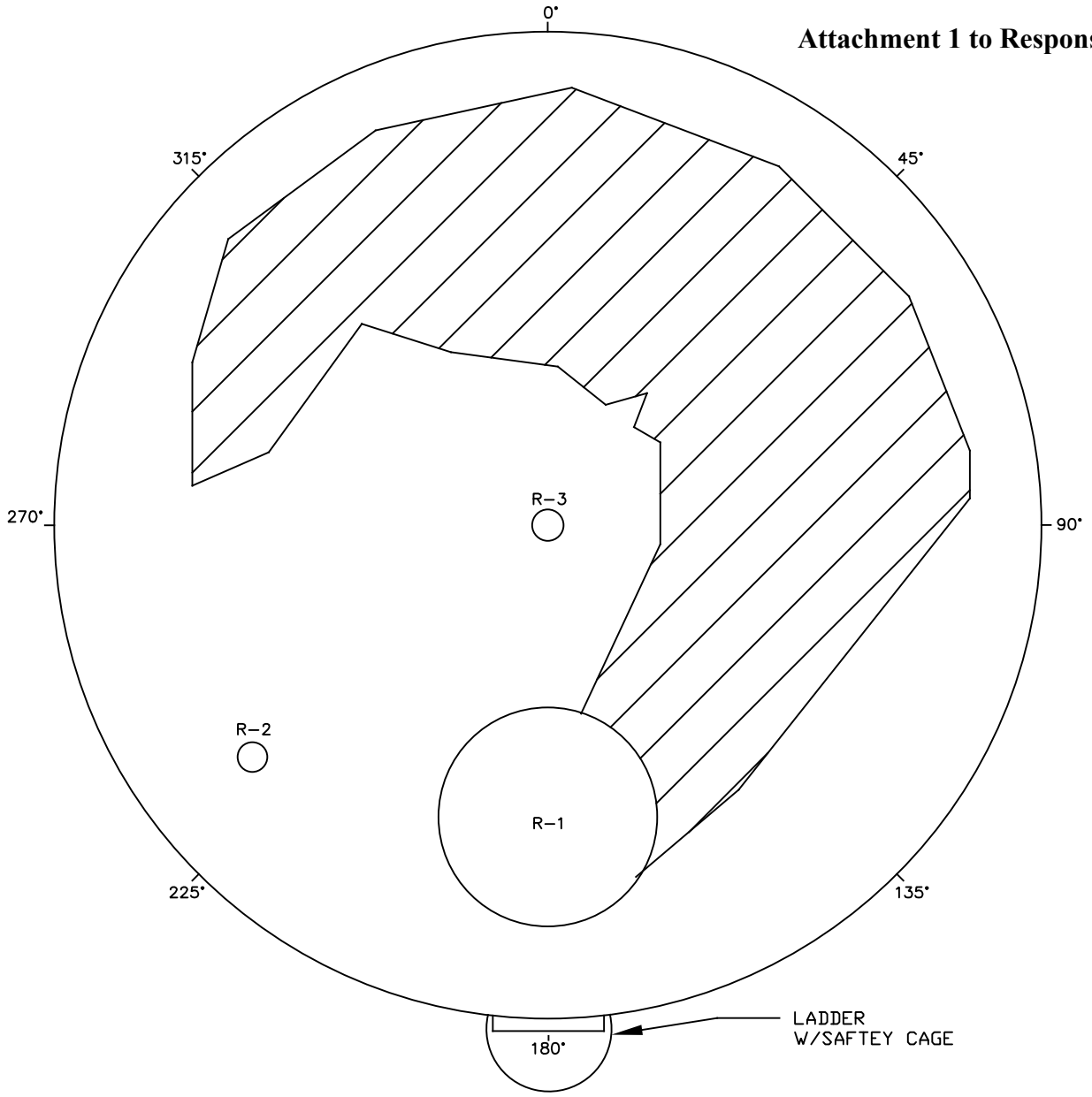
T-21 SHELL ROLLOUT
NTS

NOZZLE SCHEDULE

ID	SIZE
N-1	36'Ø
N-2	4'Ø
N-3	4'Ø
N-4	3'Ø
N-5	3'Ø
N-6	3'Ø

= SHELL BULGE

DRAWN BY: AUSTIN ALVIS	DATE INSPECTED: 08/10/2022	EQ. NUMBER: TANK T-21	CLIENT NAME: KU-LG&E	gecko robotics
DATE DRAWN: 08/10/2022	TECHNICIAN: WILLIAM STOUT	EQ. NAME -	CLIENT LOCATION: GHENT STATION, GHENT, KY	GECKO ROBOTICS 100 S. COMMONS, SUITE 145 PITTSBURGH, PA 15212
FILE NO. 2022-03519	DRAWING: 1 OF 2			



T-21 FIXED ROOF LAYOUT
NTS

NOZZLE SCHEDULE

ID	SIZE
R-1	36"Ø
R-2	3"Ø
R-3	3"Ø

= COLLAPSED ROOF AREA

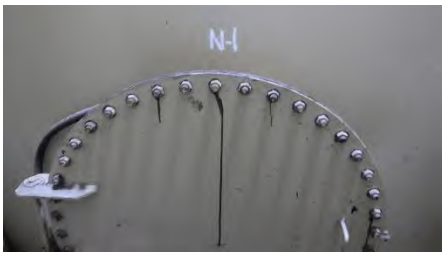
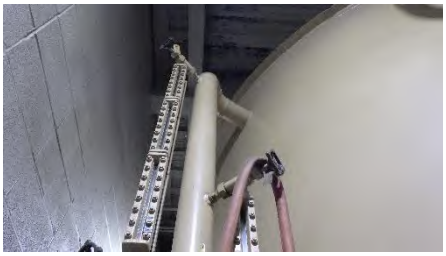
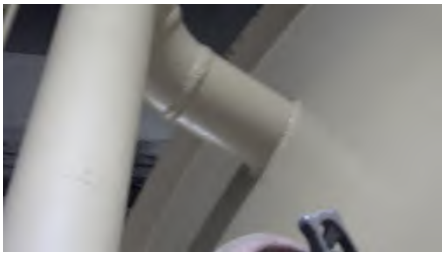
DRAWN BY: AUSTIN ALVIS	DATE INSPECTED: 08/10/2022	EQ. NUMBER: TANK T-21	CLIENT NAME: KU-LG&E	gecko robotics
DATE DRAWN: 08/10/2022	TECHNICIAN: WILLIAM STOUT	EQ. NAME -	CLIENT LOCATION: GHENT STATION, GHENT, KY	GECKO ROBOTICS 100 S. COMMONS, SUITE 145 PITTSBURGH, PA 15212
FILE NO. 2022-03519	DRAWING: 2 OF 2			

10.0 NOZZLE AND APPURTENANCES TABLE

Item	Description	Pipe Size [in]	12:00 [in]	3:00 [in]	6:00 [in]	9:00 [in]	Comments
N1	Manway	36.00	0.269	0.270	0.270	0.263	
N2	Sight Glass (lower)	4.00	0.331	0.332	0.342	0.350	
N3	Sight Glass (upper)	4.00	0.328	0.355	0.355	0.307	
N4	Nozzle	3.00	0.299	0.295	0.309	0.299	
N5	Nozzle	3.00	-	-	-	-	*UTT obstructed by grating
N6	Nozzle	3.00	-	-	-	-	*UTT obstructed by grating
R1	Manway	36.00	-	-	-	-	Access limited to visual from ladder
R2	Nozzle	3.00	-	-	-	-	Access limited to visual from ladder
R3	Nozzle	3.00	-	-	-	-	Access limited to visual from ladder

*Roof has collapsed.

11.0 TANK PHOTOS

 Nozzle N1	 Nozzle N1	 Nozzle N1
 Nozzle N2	 Nozzle N2	 Nozzle N3
 Nozzle N3	 Nozzle N4	 Nozzle N4
 Nozzle N5	 Nozzle N6	
 Nozzle R1	 Nozzle R2	 Nozzle R3

2022-07519 Ghent KY T21
10/25/2022

 Shell Elevation View	 Shell Elevation View	

TEAM QUALSPEC

10540 Chester Road, Woodlawn, OH 45215

INSPECTION REPORT FOR ATMOSPHERIC STORAGE TANK

Form VT.3-1238 Rev. 0

COMPANY:	Kentucky Utilities	LOCATION:	Ghent, KY
UNIT LOCATION:	Inside building turbine oil room	EQUIPMENT NUMBER:	T-21
TEAM W.O. #:	53870350	COMPLETION DATE:	3-22-17
EQUIPMENT NAME:	Unit 3 & 4 Clean oil tank		

Formal External Inspection with thickness of Unit 3 & 4 Clean Oil Tank



In accordance with STI SP-001

Site Contact: Ben Zeigler
Inspector: William T. McDaniel API 653 #38330
UTT Technician: Adam Holland

TEAM QUALSPEC
10540 Chester Road, Woodlawn, OH 45215

INSPECTION REPORT FOR ATMOSPHERIC STORAGE TANK

Form VT.3-1238 Rev. 0

COMPANY:	Kentucky Utilities	LOCATION:	Ghent, KY
UNIT LOCATION:	Inside building turbine oil room	EQUIPMENT NUMBER:	T-21
TEAM W.O. #:	53870350	COMPLETION DATE:	3-22-17
EQUIPMENT NAME:	Unit 3 & 4 Clean oil tank		

INSPECTION SUMMARY

GENERAL:	A formal external inspection with thickness was performed at this time meeting the requirements of STI SP-001. The tank is a 15,000 gallon storage tank that holds used turbine oil. The tank is in a dyke area located inside of a building. There are currently no continuous release detection system in place due to the design of flat bottom tank resting on ground. With the current design the tank is classified as a category 2 tank and will follow the recommendations of STI-SP001 for inspection intervals.
FOUNDATION:	The tank rest on a concrete ring approximately 6" above the concrete floor. The area is surrounded by a concrete wall for secondary containment.
INSULATION:	The tank is not currently insulated.
EXTERNAL:	There is currently external corrosion on the north west side of the tank with an area going beneath the grating. This area does not have significant wall loss at this time, but it is recommended to clean and recoat to prevent further corrosion which could require extensive repairs in future if not addressed. The roof has collapsed as previously noted. There is evidence of leakage around manway.
INTERNAL:	Not performed at this time.

REPAIRS RECOMMENDED FOR TANK (SEE OBSERVATIONS / RECOMMENDATIONS)

[ ] YES - ASAP - PRIOR TO RETURNING TO SERVICE [ ] YES- IN A TIMELY MANNER [X] NONE

NEXT INSPECTION DATE: Option 1 /Option 2

Performed by Inspector	EXTERNAL:	10 years (3-22-27)	/ 5 years (3-22-21)
	INTERNAL:	20 years (3-22-26)	/ Not required
Performed By owner	PERIODIC:	Monthly + Annually	/ Monthly + Annually
	LEAK TEST:	Not required	/ 10 years (3-22-16)

INSPECTOR: *William Trafton McDaniel* DATE: *3-22-17*

SIGNATURE: William T McDaniel API 653 NO: *38330*

TEAM QUALSPEC

10540 Chester Road, Woodlawn, OH 45215

INSPECTION REPORT FOR ATMOSPHERIC STORAGE TANK

Form VT.3-1238 Rev. 0

COMPANY:	Kentucky Utilities	LOCATION:	Ghent, KY
UNIT LOCATION:	Inside building turbine oil room	EQUIPMENT NUMBER:	T-21
TEAM W.O. #:	53870350	COMPLETION DATE:	3-22-17
EQUIPMENT NAME:	Unit 3 & 4 Clean oil tank		

OBSERVATIONS	RECOMMENDATIONS
The roof has partially collapsed and has been previously noted.	Monitor for any deviation form original or any condition that may cause undo stress on the piping and/or shell of the tank.
Corrosion on the West to North side of the tank at the shell to bottom weld	Clean area and recoat to prevent further corrosion
Evidence of leakage at manway	Monitor to ensure the leak is not active. If found to be active replace gasket and properly torque bolting as necessary

TEAM QUALSPEC
10540 Chester Road, Woodlawn, OH 45215

INSPECTION REPORT FOR ATMOSPHERIC STORAGE TANK

Form VT.3-1238 Rev. 0

COMPANY:	Kentucky Utilities	LOCATION:	Ghent, KY
UNIT LOCATION:	Inside building turbine oil room	EQUIPMENT NUMBER:	T-21
TEAM W.O. #:	53870350	COMPLETION DATE:	3-22-17
EQUIPMENT NAME:	Unit 3 & 4 Clean oil tank		

Design Data

Year Built: *1971* Service Date: *1971* Fabricator: *Underwriters Labratory*

Tank Type: ☐ Horizontal ☒ Vertical ☐ Jacketed ☐ Insulated Service/Product: *Clean Oil*

Tank Height / Length: *16'* ☐ SS ☐ T/T ☒ Overall Tank Diameter: *20'*

Name Plate Verified: Yes ☒ No ☐ N/A ☐ Drawing / Documentation Available: Yes ☒ No ☐

Specific Gravity: *1* Design & Operating Press. / Temp.: *ATM* psig *300* °F / *ATM* psig *AMB* °F (Design / Operating)

Roof / Head Type : ☐ Elliptical ☐ ASME F & D ☐ Domed ☒ Conical ☐ Flat ☐ Pan
Crown Radius _____ Knuckle Radius _____ Head Ratio _____ Joint Efficiency *N/A*

Bottom / Head Type: ☐ Elliptical ☐ ASME F & D ☐ Domed ☐ Conical ☒ Flat ☐ Pan
Crown Radius _____ Knuckle Radius _____ Head Ratio _____ Joint Efficiency *N/A*

Nom. Roof / Head Thickness: _____ Nom. Bottom / Head Thickness: _____ Nom. Shell Thickness: _____

Shell Joint Construction Type:	☒ Butt Welded	☐ Single Lap Welded	☐ Double Lap Welded
Roof / Head Joint Construction Type:	☐ Butt Welded	☒ Single Lap Welded	☐ Double Lap Welded
Bottom / Head Joint Construction Type:	☐ Butt Welded	☒ Single Lap Welded	☐ Double Lap Welded

Other i.e. Riveted :
Corrosion Allowance: Head "A" *N/S* Head "B" *N/S* Shell *N/S*

	Min. Yield	Min. Tensile
Shell Material: Specification / Grade / Type	*Unknown C/S*	
"A" Head Material: Specification /Grade / Type	*Unknown C/S*	
"B" Head Material: Specification /Grade / Type	*Unknown C/S*	

TEAM QUALSPEC

10540 Chester Road, Woodlawn, OH 45215

INSPECTION REPORT FOR ATMOSPHERIC STORAGE TANK

Form VT.3-1238 Rev. 0

COMPANY:	Kentucky Utilities	LOCATION:	Ghent, KY
UNIT LOCATION:	Inside building turbine oil room	EQUIPMENT NUMBER:	T-21
TEAM W.O. #:	53870350	COMPLETION DATE:	3-22-17
EQUIPMENT NAME:	Unit 3 & 4 Clean oil tank		

External Visual Inspection Results

Item No.	Item	Good	Fair	Poor	N/A	
1	Shell		X			Coating failure and corrosion at shell to bottom area
2	Floor / Bottom Head				X	
3	Roof / Top Head			X		Partially collapsed does not appear to have changed from last inspection
4	Nozzles and Fasteners	X				
5	Piping and Components	X				
6	Valves and Components	X				
7	Welds and Seams	X				
8	Davits	X				
9	Manways & Fasteners			X		Evidence of leakage. Replace gasket and torque as necessary
10	Stiffner Rings				X	
11	Gauges	X				
12	Sight Glass	X				
13	Platforms/Handrails	X				
14	Ladders/Cages/Stairs	X				
15	Grating/Treads	X				
16	Insulation or Coating	X				
17	Weather Jacket				X	
18	Supports/Base plates				X	**Type:**
19	Anchors/Support bolts				X	
20	Foundation (Spalling, etc.)	X				
21	Grouting				X	

		Yes	No	COMMENTS
22	Corrosion (Location)		X	
23	Name Plate Attached	X		
24	Visible Leaks		X	
25	Ground Wire		X	
26	Visible Distortion		X	
27	Weep Holes Okay			N/A
28	Blistering		X	
29	Other			

Notes or Comments: The tank is in overall good integral condition with no major concerns at this time. It is recommended To maintain regular inspection frequencies meeting the requirements of STI-SP001.

TEAM QUALSPEC
10540 Chester Road, Woodlawn, OH 45215

INSPECTION REPORT FOR ATMOSPHERIC STORAGE TANK

Form VT.3-1238 Rev. 0

COMPANY:	Kentucky Utilities	LOCATION:	Ghent, KY
UNIT LOCATION:	Inside building turbine oil room	EQUIPMENT NUMBER:	T-21
TEAM W.O. #:	53870350	COMPLETION DATE:	3-22-17
EQUIPMENT NAME:	Unit 3 & 4 Clean oil tank		

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10540 Chester Road, Woodlawn, OH 45215

INSPECTION REPORT FOR ATMOSPHERIC STORAGE TANK

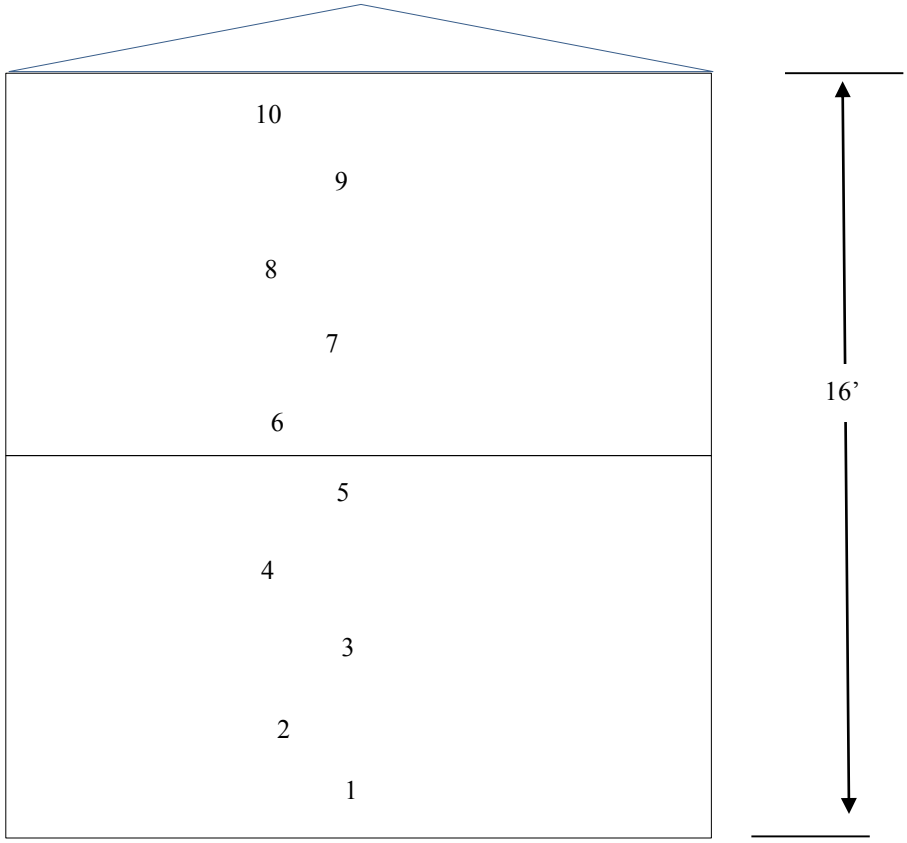
Form VT.3-1238 Rev. 0

COMPANY:	Kentucky Utilities	LOCATION:	Ghent, KY
UNIT LOCATION:	Inside building turbine oil room	EQUIPMENT NUMBER:	T-21
TEAM W.O. #:	53870350	COMPLETION DATE:	3-22-17
EQUIPMENT NAME:	Unit 3 & 4 Clean oil tank		

UT Calibration Data

Equipment Make:	*GE*	Model # :	*DMS 2*		Serial # :	*01NDJJ*	
Calibration Block Material :	☒ C/S	Serial # :	*09-3799*	☐ S/S	Serial # :		
Transducer Serial # :	*15L00D04*	Size :	*.375*	Frequency:	*7.5*	MHZ	
UT Couplant Type:	*Sonix-UT*	Batch # :	*306-07*				

Sketch



TEAM QUALSPEC

10540 Chester Road, Woodlawn, OH 45215

INSPECTION REPORT FOR ATMOSPHERIC STORAGE TANK

Form VT.3-1238 Rev. 0

COMPANY:	Kentucky Utilities	LOCATION:	Ghent, KY
UNIT LOCATION:	Inside building turbine oil room	EQUIPMENT NUMBER:	T-21
TEAM W.O. #:	53870350	COMPLETION DATE:	3-22-17
EQUIPMENT NAME:	Unit 3 & 4 Clean oil tank		

UTT DATA

	North	East	South	West
1	0.183	0.181	0.183	0.183
2	0.198	0.188	0.196	0.193
3	0.201	0.193	0.197	0.199
4	0.193	0.191	0.192	0.193
5	0.186	0.184	0.185	0.183
6	0.193	0.194	0.195	0.202
7			0.196	
8			0.197	
9			0.193	
10			0.192	
Roof random average .180"				

TEAM QUALSPEC

10540 Chester Road, Woodlawn, OH 45215

INSPECTION REPORT FOR ATMOSPHERIC STORAGE TANK

Form VT.3-1238 Rev. 0

COMPANY:	Kentucky Utilities	LOCATION:	Ghent, KY
UNIT LOCATION:	Inside building turbine oil room	EQUIPMENT NUMBER:	T-21
TEAM W.O. #:	53870350	COMPLETION DATE:	3-22-17
EQUIPMENT NAME:	Unit 3 & 4 Clean oil tank		

Calculations per STI SP-001

$$T\text{-}min = \frac{(H-1)DG}{10{,}000}$$

H=16
D=20
G=1(conservative)

= .03”

Torig=.203 (13/64?)
Tact=.1914
Yrs in service=40
LTCR=.0003

Tprevious=.1954
Tact=.1914
Yrs in service=11
STCR=.0004

Tact=.2447
Tmin=.152 (25% loss of Torig)
LTCR=.0004
Remaining life=98.5 years

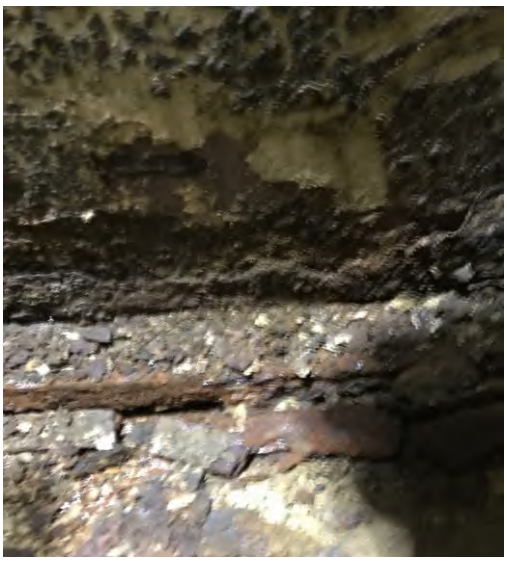
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INSPECTION REPORT FOR ATMOSPHERIC STORAGE TANK

Form VT.3-1238 Rev. 0

COMPANY:	Kentucky Utilities	LOCATION:	Ghent, KY
UNIT LOCATION:	Inside building turbine oil room	EQUIPMENT NUMBER:	T-21
TEAM W.O. #:	53870350	COMPLETION DATE:	3-22-17
EQUIPMENT NAME:	Unit 3 & 4 Clean oil tank		



Typical corrosion on West to North side of shell to bottom area





Pictures representing the partial collapse of the roof. It is recommend to pay attention to attached piping to ensure there are no unusual stresses that may damage piping

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10540 Chester Road, Woodlawn, OH 45215

INSPECTION REPORT FOR ATMOSPHERIC STORAGE TANK

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COMPANY:	Kentucky Utilities	LOCATION:	Ghent, KY
UNIT LOCATION:	Inside building turbine oil room	EQUIPMENT NUMBER:	T-21
TEAM W.O. #:	53870350	COMPLETION DATE:	3-22-17
EQUIPMENT NAME:	Unit 3 & 4 Clean oil tank		





Evidence of leakage at manway around bolting and gasket area

US INSPECTION SERVICES
NDE and Metallurgical Services

Evergreen Environmental @ Ghent Power Station

Unit 3 & Unit 4 Clean Oil Storage Tank Inspection Report

Date of Inspection: December 15, 2006

US INSPECTION SERVICES
NDE and Metallurgical Services

CUSTOMER: Evergreen Environmental @ Ghent Power Station

ADDRESS: Rt. 42 Ghent Kentucky **Lab#:** F58688

CUSTOMER CONTACTS:	Ron Stewart, Danny Ayler
US INSPECTION PERSONNEL:	Sean Heitman, Chad Schmidt
DESCRIPTION OF INSPECTION:	Mechanical Integrity Inspection Internal/External
SPECIFICATION:	Guidelines of API 653
ACCEPTANCE:	API 653 and customer info
EQUIPMENT:	DMS 2 S/N: 011MTM HT 400A Velocity: 2330 S/N: 00W6K2
MATERIALS:	1 QT Ultra-Gel

RESULTS: The inspections performed were to find equipment deterioration while in service and deficiencies due to degradation from original fabrication. We also look for modifications or alterations that do not comply with generally accepted good engineering practice. Unit 3 & 4 Clean Oil Storage tank is a carbon steel and atmospheric. This tank has no record of construction and was constructed in accordance with UL 142. It is assumed the tank is 35 years old just for calculation purposes. Very minor internal corrosion is present and the integrity of the tank is acceptable. It is assumed that the product in the tank has a specific gravity of less than 1. The specific gravity of 1 was used in the calculations listed below. The greatest concern for this tank is the corrosion present around the exterior shell and tank floor. The greatest cause for failures in the storage tank industry is corrosion under the tank floor. This area needs to be kept dry and clean at all times to prolong the corrosion that has already started the tank needs to be properly prepped and painted around the bottom.

Inspection Frequency and Intervals:

Routine in service inspections (which may be performed by Kentucky Utilities employees) should be performed at a minimum of on a **monthly** basis per API 653 para 6.3

The next formal External and UT inspection shall be conducted in **5 years** (October 10, 2011).

The next formal Internal inspection shall be conducted in **20 years**. (October 10, 2026). The inspection frequency may be increased to 20 years since very minor corrosion was found.

TECHNICIAN: Sean Heitman API Cert# 26660 DATE: October 10, 2006

US INSPECTION SERVICES
NDE and Metallurgical Services

Unit 3 & 4 Clean Oil Tank Inspection Report

Shell

Internal Visual/ UT- Internal visual of this tank revealed the tank to be in great condition with very minor corrosion noted. Ultrasonic thickness revealed the tank to have thickness readings ranging from .173"-.207".

External Visual- Visual inspection of the outside revealed the tank to be in good condition. There is no grounding for this tank and product residue is present on some of the exterior. There is corrosion occurring around the tank bottom. This corrosion is not a major concern but needs to be stopped now to prolong the integrity of the tank.

Recommendations for the Shell:

1. Properly prep and re-paint the bottom of this tank to prolong the corrosion present at this time.

Roof

Internal Visual- There is no concern at this time (see external visual).

External Visual- The ultrasonic thickness readings were all acceptable. Various UT readings were taken next to the stairs on the roof with a minimum thickness found of .180" thick. A thickness greater than 0.100" is acceptable per API 653. The roof has caved in on the North and East section of the roof. It is assumed that this condition has been present since construction from talking with many KU employees.

Recommendations for the Roof:

1. No recommendations for the roof at this time.

Floor

Internal Visual/UT- Visual inspection revealed the floor to have minor corrosion on the inside. The minimum thickness allowed per API 653 table 6-1 is .050" with means of containment and detection. Ultrasonic thickness revealed the tank to have thickness readings ranging from .236"-.258". The floor has very minor corrosion occurring if any at this time.

External Visual- No grounding strap is in place. The foundation is in good condition with no cracking occurring. There is minor corrosion occurring on the external surface of the chime ring. Moisture may be present at times during operation. Keep this area dry to ensure corrosion stopped to help with the reliability of the tank. Please see the photos below showing external chime ring corrosion.

Recommendations for the Floor:

1. The Floor appears ultrasonically and visually to be in good condition, have all inspections conducted in accordance with API 653 as noted above.
2. Keep the area clean and dry to help slow down the exterior floor corrosion.

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Unit 3 & 4 Clean Oil Tank Inspection Report

Ultrasonic Thickness Data

Floor Thickness Results

	North	East	South	West
1	0.250	0.248	0.250	0.250
2	0.255	0.248	0.253	0.255
3	0.257	0.250	0.251	0.255
4	0.257	0.249	0.253	0.257
5	0.257	0.250	0.252	0.255
6	0.257	0.252	0.254	0.254
7	0.254	0.252	0.254	0.254
8	0.258	0.254	0.252	0.254
9	0.258	0.253	0.253	0.249
10	0.257	0.256	0.254	0.236

Shell Thickness Results

	North	East	South	West
1	0.173	0.174	0.188	0.182
2	0.206	0.194	0.202	0.200
3	0.205	0.199	0.204	0.205
4	0.198	0.198	0.198	0.198
5	0.189	0.190	0.191	0.190
6	0.189	0.200	0.205	0.207
7			0.201	
8			0.202	
9			0.198	
10			0.199	

Note: The stairs are on the South/East side of this Tank

Shell Nozzle Thickness Results

	Top	North	Bottom	South
N1	0.270	0.242	0.273	0.274
N2	0.336	0.331	0.322	0.351
N3	0.296	0.306	0.297	0.287
N4	0.291	0.309	0.294	0.289

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NDE and Metallurgical Services

Unit 3 & 4 Clean Oil Tank Inspection Report

Calculations

$$T_{min} = \frac{2.6 \times (H-1) \times D \times G}{S \times E}$$

H=	16
D=	20
G=	1
S=	23600
E=	0.7

	Height	Tmin
1ST COURSE	16	0.047
2ND COURSE	8	0.022

No shell sheet shall be less than 0.100" thick in accordance with API 653. These calculations are a representative number showing the life expectancy of the tank if kept in good condition without exterior corrosion taking place.

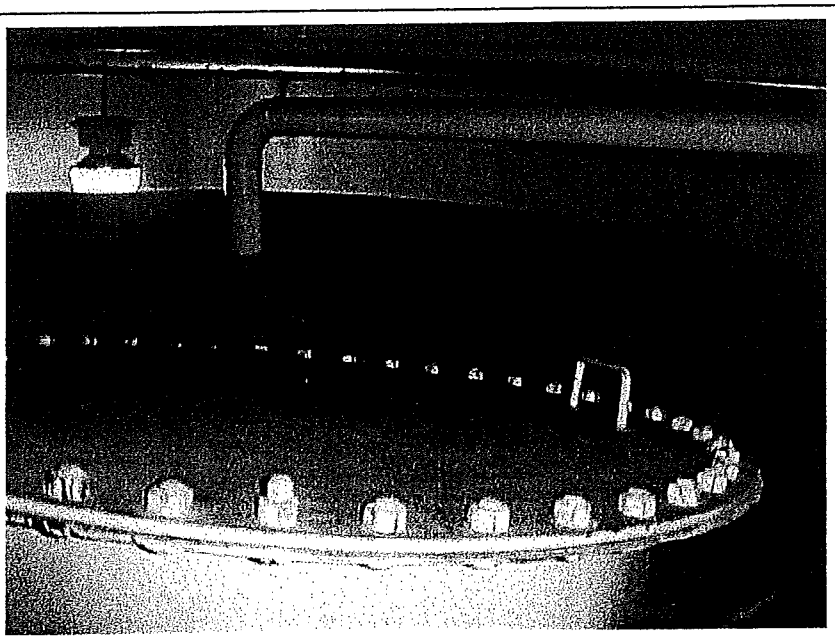
Torig =	0.190
Tact.=	0.173
Yrs. Service =	35
C/R=	0.0005

Torig =	0.173	
Tmin =	0.100	
C/R =	0.0005	
R/L=	146	Years

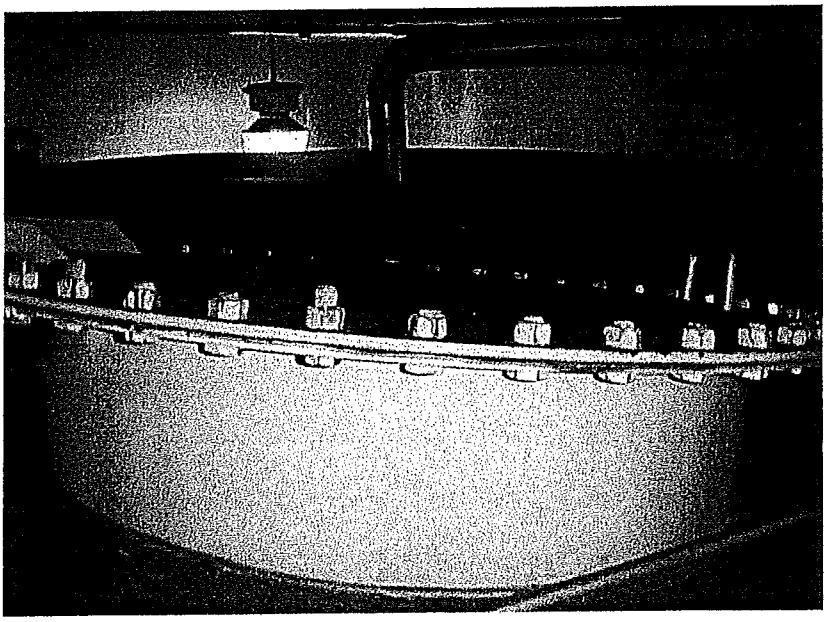
****This tank has a calculated remaining life of 146 years at the continued service. This remaining life is dependent on no changes take place including moisture and product that is stored in this tank.**

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NDE and Metallurgical Services

Unit 3 & 4 Clean Oil Tank Inspection Report



Photos shown are of the roof that has collapsed in areas.

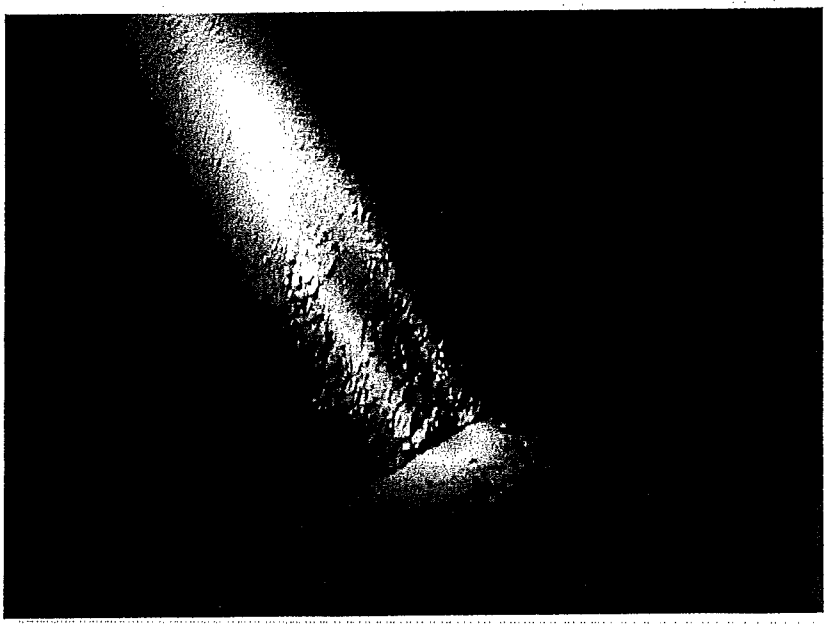


US INSPECTION SERVICES
NDE and Metallurgical Services

Unit 3 & 4 Clean Oil Tank Inspection Report



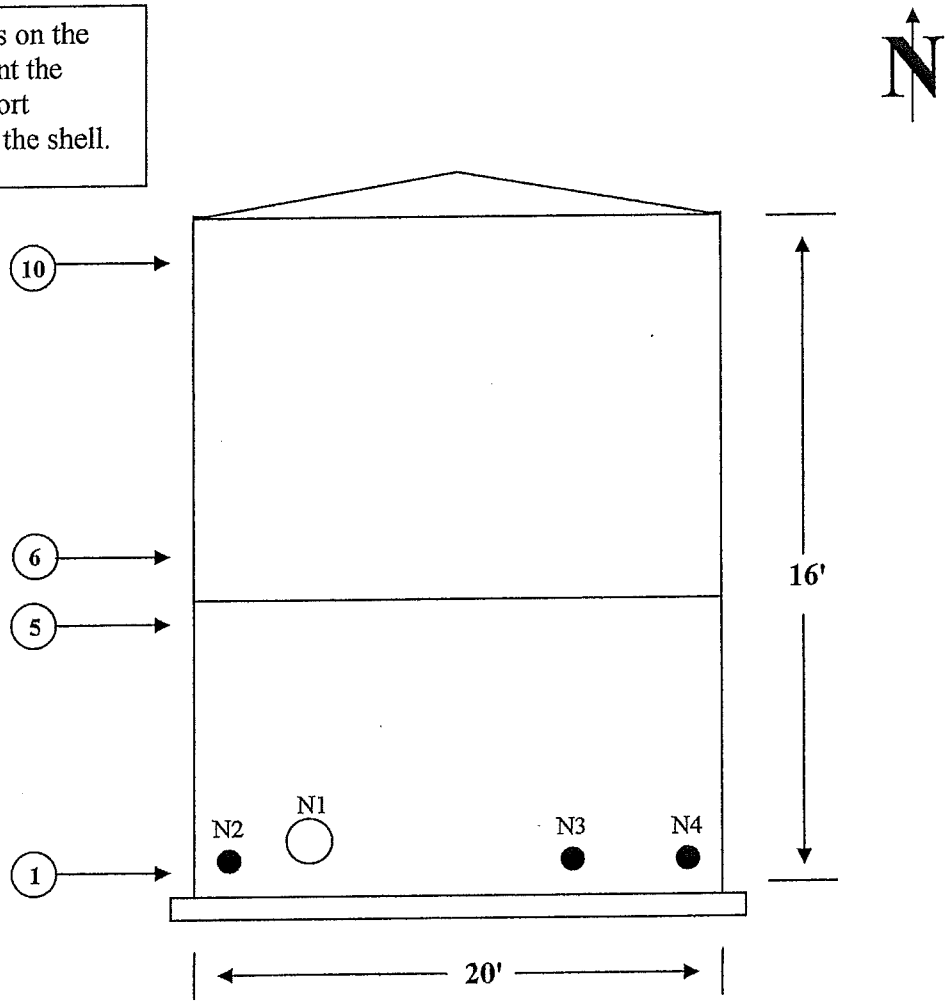
The photos shown are areas around the floor to bottom weld (chime ring). There is minor exterior corrosion taking place along this area showing moisture is present at times.



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NDE and Metallurgical Services

Unit 3 & 4 Clean Oil Tank Inspection Report

The numbers on the tank represent the inspection port locations on the shell.



Location of Nozzles

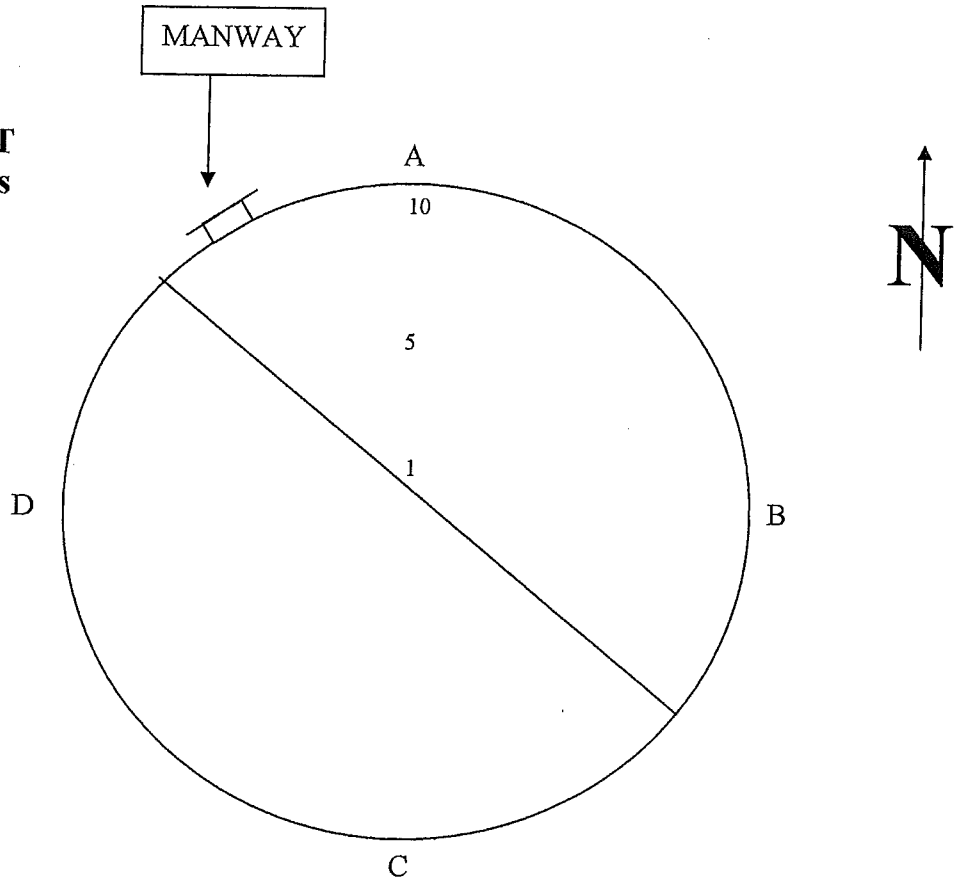
● = South side of tank

○ = North side of tank

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Unit 3 & 4 Clean Oil Tank Inspection Report

Floor UT locations



Imber

US INSPECTION SERVICES
NDE and Metallurgical Services

Evergreen Environmental @ Ghent Power Station

Unit 3 & Unit 4 Dirty Oil Storage Tank Inspection Report

Date of Inspection: October 10, 2006

US INSPECTION SERVICES
NDE and Metallurgical Services

CUSTOMER: Evergreen Environmental @ Ghent Power Station

ADDRESS: Rt. 42 Ghent Kentucky **Lab#:** F 202296

CUSTOMER CONTACTS:	Ron Stewart, Danny Ayler
US INSPECTION PERSONNEL:	Sean Heitman, Jim Willison
DESCRIPTION OF INSPECTION:	Mechanical Integrity Inspection Internal/External
SPECIFICATION:	Guidelines of API 653
ACCEPTANCE:	API 653 and customer info
EQUIPMENT:	DMS 2 S/N: 011MTM HT 400A Velocity: 2330 S/N: 00W6K2
MATERIALS:	1 QT Ultra-Gel

RESULTS: The inspections performed were to find equipment deterioration while in service and deficiencies due to degradation from original fabrication. We also look for modifications or alterations that do not comply with generally accepted good engineering practice. Unit 3 & 4 Dirty oil storage tank is a carbon steel and atmospheric. This tank has no record of construction and was constructed in accordance with UL 142. It is assumed the tank is 35 years old just for calculation purposes. Minor internal corrosion is present and the integrity of the tank is acceptable. It is assumed that the product in the tank has a specific gravity of less than 1. The specific gravity of 1 was used in the calculations listed below. The greatest concern for this tank is the roof has caved in on the north side and on the east side of the tank. The ventilation of this tank is that of a 3" nozzle which needs to be at a minimum of a 4" for adequate ventilation. Please see the recommendations noted below under the roof section.

Inspection Frequency and Intervals:

Routine in service inspections (which may be performed by Kentucky Utilities employees) should be performed at a minimum of on a **monthly** basis per API 653 para 6.3

The next formal External and UT inspection shall be conducted in **5 years** (October 10, 2011).

The next formal Internal inspection shall be conducted in **20 years.** (October 10, 2026). The inspection frequency may be increased to 20 years since very minor corrosion was found.

TECHNICIAN: Sean Heitman API Cert# 26660 DATE: October 10, 2006

US INSPECTION SERVICES
NDE and Metallurgical Services

Unit 3 & 4 Dirty Oil Tank Inspection Report

Shell

Internal Visual/ UT- Internal visual of this tank revealed the tank to be in great condition with very minor corrosion noted. Ultrasonic thickness revealed the tank to have thickness readings ranging from .186"-.208".

External Visual- Visual inspection of the outside revealed the tank to be in good condition. There is no grounding for this tank and product residue is present on some of the exterior. There are no concerns for the outside of the tank at this time.

Recommendations for the Shell:

1. No recommendations at this time.

Roof

Internal Visual- There is no concern at this time (see external visual).

External Visual- The ultrasonic thickness readings were all acceptable. Various UT readings were taken next to the stairs on the roof with a minimum thickness found of .178" thick. A thickness greater than 0.100" is acceptable per API 653. The roof has caved in on the North and East section of the roof from inadequate ventilation. It is assumed that the 3" vent is not capable of venting properly with a 3" drain. The vent should be at a minimum of 1 ½ times the diameter of the drain. Please see the photos below showing the collapsed roof.

Recommendations for the Roof:

1. Install another roof vent to ensure adequate ventilation and proper drainage.
2. Magnetic particle inspect the roof vent weld to be installed. Back welding of the inside of the nozzle to be installed is not mandatory because it is not pressure retaining.

Floor

Internal Visual/UT- Visual inspection revealed the floor to have minor corrosion on the inside. The minimum thickness allowed per API 653 table 6-1 is .050" with means of containment and detection. Ultrasonic thickness revealed the tank to have thickness readings ranging from .252"-.268". The floor has very minor corrosion occurring if any at this time.

External Visual- No grounding strap is in place. The foundation is in good condition with no cracking occurring. There is minor corrosion occurring on the external surface of the chime ring. Moisture may be present at times during operation. Keep this area dry to ensure corrosion stopped to help with the reliability of the tank. Please see the photos below showing external chime ring corrosion.

Recommendations for the Floor:

1. The Floor appears ultrasonically and visually to be in good condition, have all inspections conducted in accordance with API 653 as noted above.
2. Keep the area clean and dry to help slow down the exterior floor corrosion.

US INSPECTION SERVICES
NDE and Metallurgical Services

Unit 3 & 4 Dirty Oil Tank Inspection Report

Ultrasonic Thickness Data

Floor Thickness Results

	North	East	South	West
1	0.252	0.255	0.252	0.252
2	0.256	0.261	0.260	0.257
3	0.261	0.262	0.262	0.259
4	0.265	0.262	0.264	0.260
5	0.265	0.262	0.265	0.260
6	0.267	0.260	0.266	0.262
7	0.265	0.258	0.266	0.262
8	0.261	0.261	0.265	0.258
9	0.266	0.261	0.265	0.266
10	0.261	0.256	0.266	0.267

Shell Thickness Results

	North	East	South	West
1	0.190	0.195	0.200	0.195
2	0.201	0.202	0.210	0.205
3	0.202	0.207	0.211	0.208
4	0.198	0.206	0.205	0.203
5	0.185	0.194	0.199	0.196
6	0.200	0.201	0.193	0.207
7			0.202	
8			0.203	
9			0.197	
10			0.186	

Note: The stairs are on the South side of this Tank

Shell Nozzle Thickness Results

	Top	North	Bottom	South
N1	0.253	0.253	0.253	0.244
N2	0.349	0.349	0.341	0.333
N3	0.297	0.296	0.290	0.299
N4	0.305	0.295	0.294	0.299

US INSPECTION SERVICES
NDE and Metallurgical Services

Unit 3 & 4 Dirty Oil Tank Inspection Report

Calculations

$$T_{min} = \frac{2.6 \times (H-1) \times D \times G}{S \times E}$$

H=	16
D=	20
G=	1
S=	23600
E=	0.7

	Height	Tmin
1ST COURSE	16	0.047
2ND COURSE	8	0.022

No shell sheet shall be less than 0.100" thick in accordance with API 653. These calculations are a representative number showing the life expectancy of the tank if kept in good condition without exterior corrosion taking place.

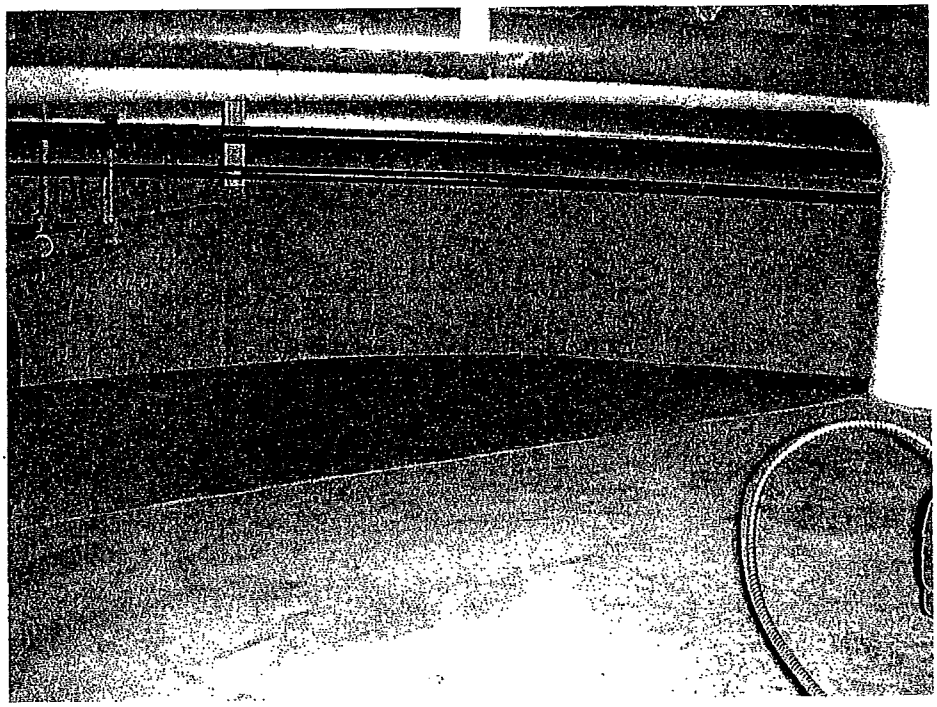
Torig =	0.190
Tact.=	0.185
Yrs. Service =	35
C/R=	0.0001

Torig =	0.18	
Tmin =	0.100	
C/R =	0.0001	
R/L=	850.0	Years

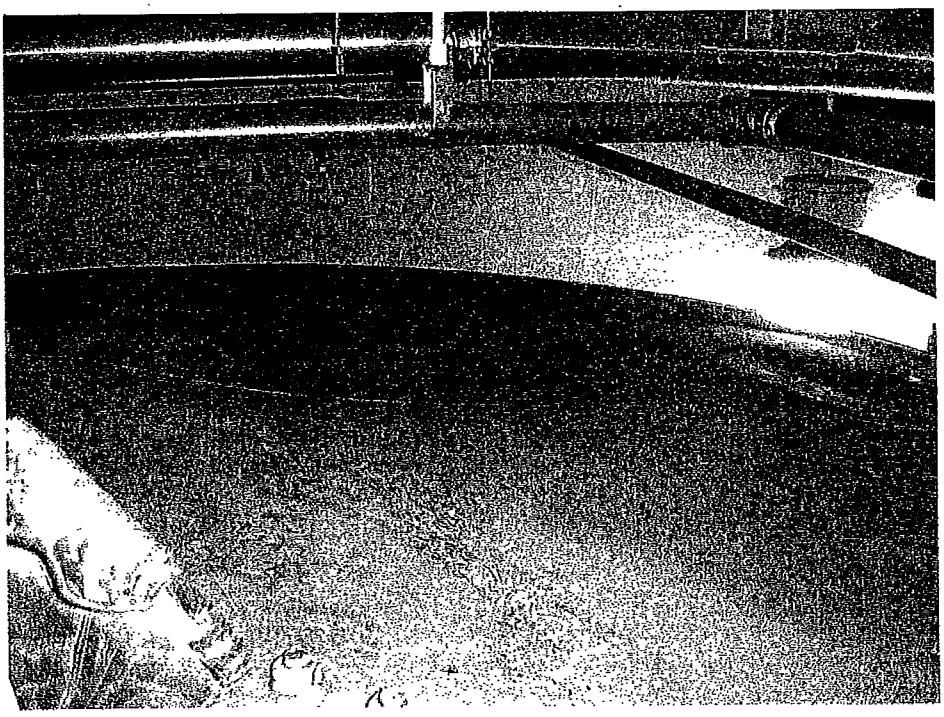
****This tank has a calculated remaining life of 850 years at the continued service. This remaining life is dependent on no changes take place including moisture and product that is stored in this tank.**

US INSPECTION SERVICES
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Unit 3 & 4 Dirty Oil Tank Inspection Report



Photos shown are of the roof that has collapsed in areas. Please see the recommendations above.

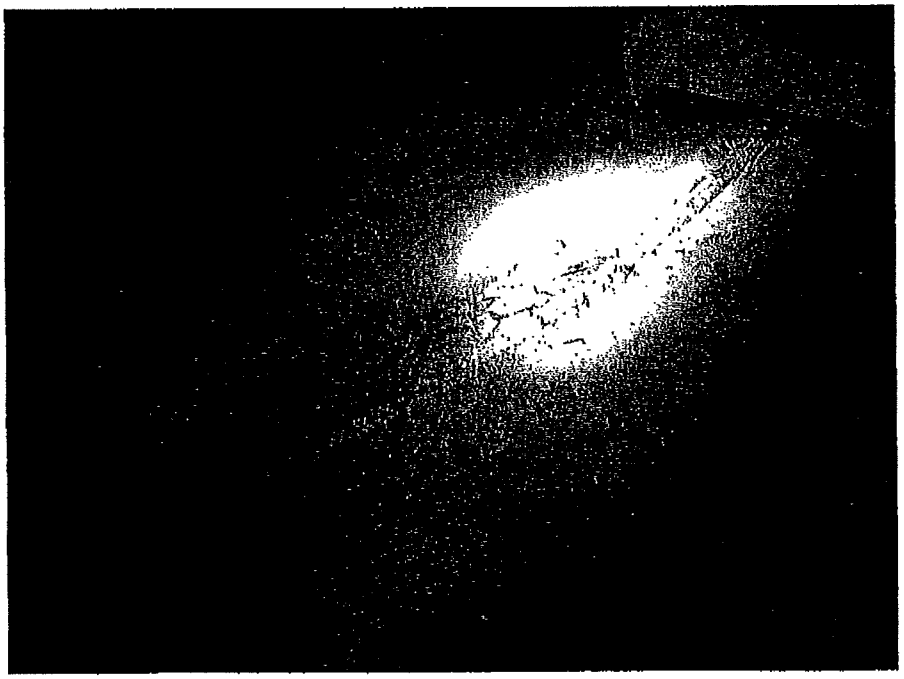


US INSPECTION SERVICES
NDE and Metallurgical Services

Unit 3 & 4 Dirty Oil Tank Inspection Report



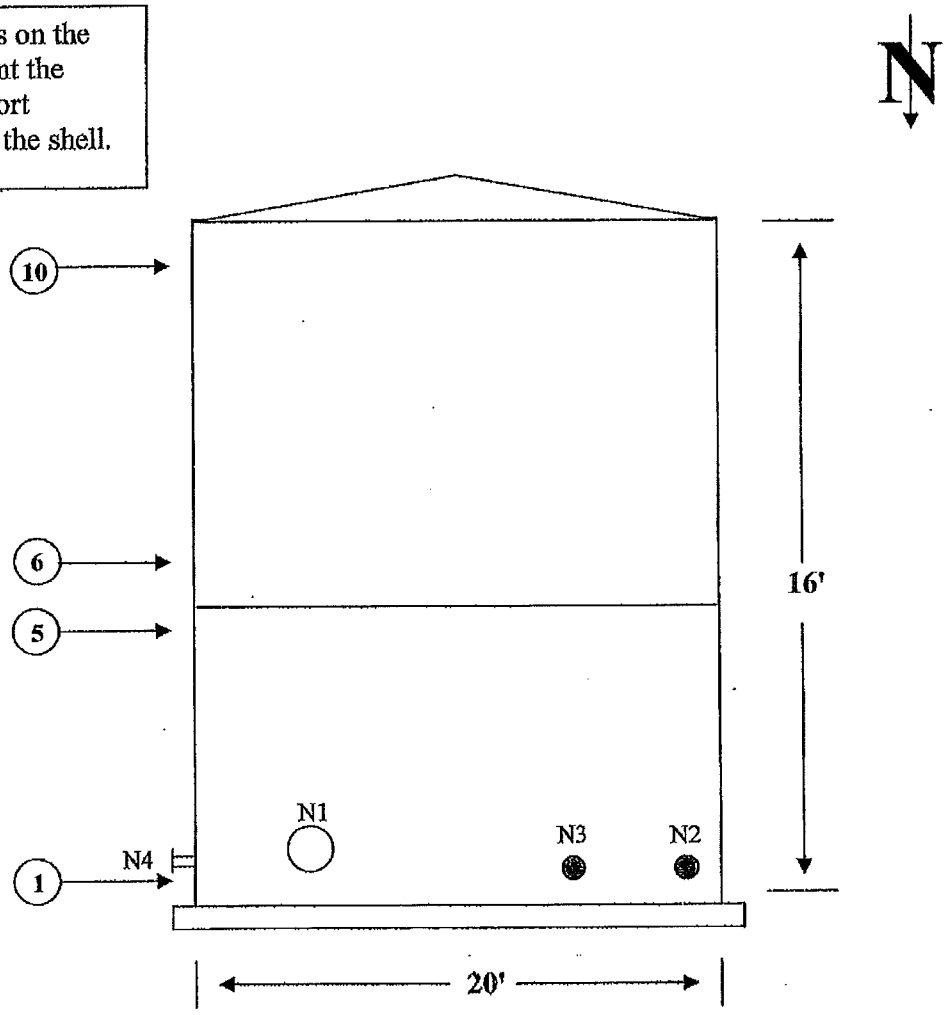
The photos shown are areas around the floor to bottom weld (chime ring). There is minor exterior corrosion taking place along this area showing moisture is present at times.



US INSPECTION SERVICES
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Unit 3 & 4 Dirty Oil Tank Inspection Report

The numbers on the tank represent the inspection port locations on the shell.



Location of Nozzles

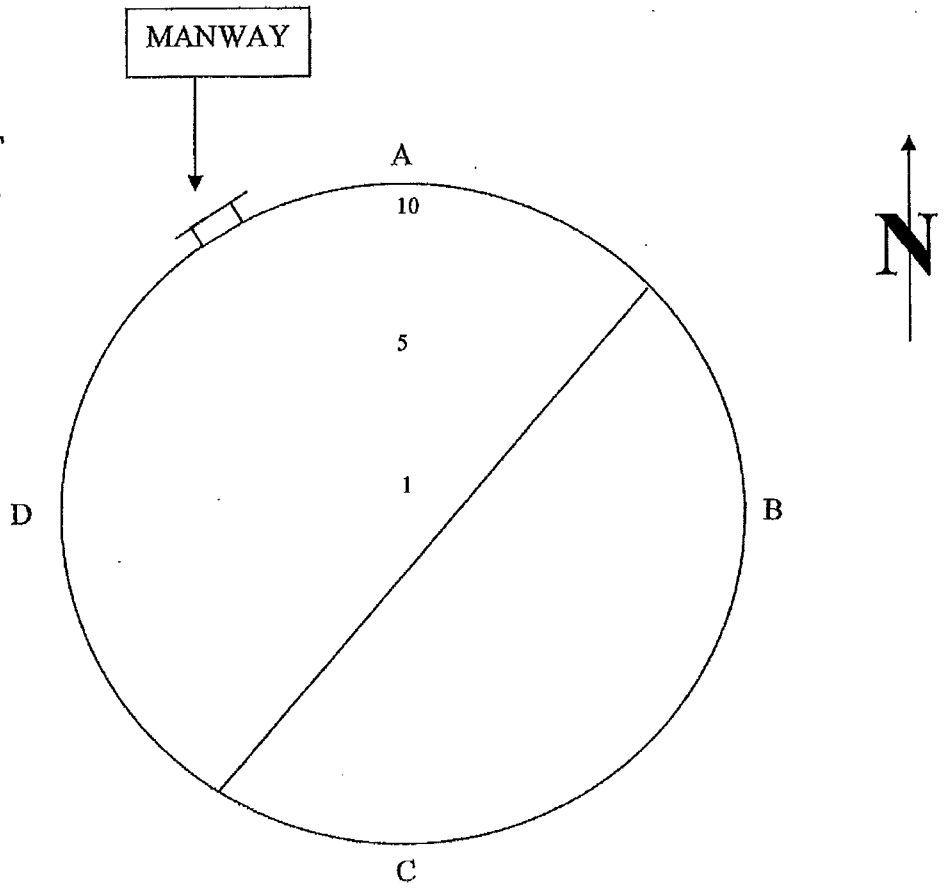
● = South side of tank

○ = North side of tank

US INSPECTION SERVICES
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Unit 3 & 4 Dirty Oil Tank Inspection Report

Floor UT locations



US INSPECTION SERVICES
NDE and Metallurgical Services

Recommendations on repairs for Dirty Oil Storage Tank

Unit 3 & 4 Tank

1. Install a nozzle on the roof for proper ventilation. This extra nozzle should be a minimum of 3" in diameter. The roof has caved in from poor ventilation. The roof nozzle to be installed does not need to be back welded from the inside. The other tank has the same problem and will need a nozzle installed also when the tank is emptied.

NOTE:

1. Use proper welding procedures and qualified welder.
2. Properly prep and repair each weld defect area.
3. Magnetic particle inspect each area noted above prior to putting tank back in service.

Tank T-022
15,000-Gallon Units 3 & 4 Dirty Oil Tank

T22 Dirty Turbine Oil Tank External Inspection

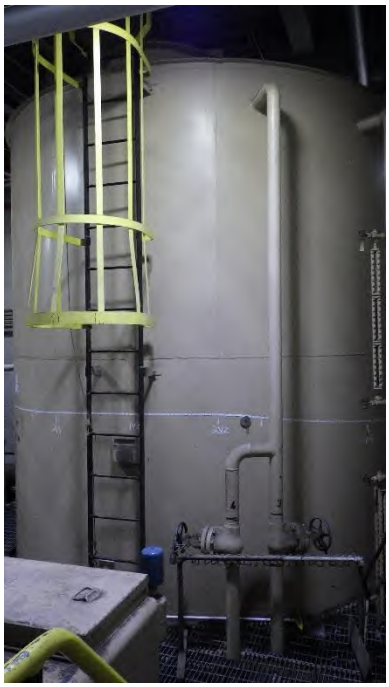
KU-LG&E

Location: Ghent, KY

Inspection Date: August 11, 2022

Report Date: August 29, 2022

Project Number: 2022-03519



DATE	PREPARED BY	APPROVED BY:	APPROVER SIGNATURE
8/25/2022	William Stout	Brian O'Leary	

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2022-05519 Ghent KY T22
9/25/2022

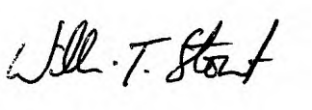
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1.0 INTRODUCTION

On August 11, 2022, Gecko Robotics performed an in-service inspection of Tank 22, a dirty turbine oil tank, for Kentucky Utilities (KU) LG&E in Ghent, KY. The results of this inspection were used to provide an evaluation per the applicable criteria of STI SP001, 6th Edition, January 2018 and API 653, *5th Edition, Addendum 1 April 2018, Addendum 2 May 2020* standard.

Gecko Robotics Personal for Project:



William Stout, Lead API 653 Inspector

Certification Number 25296,

STI SP001 Adjunct Certification #AC44261

Kelly Keil, NDT Level II

2.0 TANK DESCRIPTION

Customer	KU-LG&E	**Location**	Ghent, KY
Tank	T-22	**Project**	2022-03519

GENERAL TANK INFORMATION	
Manufacturer (Repair/Altered)	Unknown
Design Standard	Underwriter's Laboratories (UL)
Product	Dirty Turbine Oil
Cathodic Protection	No
Data Plate	Yes
DOT Regulated Tank	No
TANK DIMENSIONS	
Tank Diameter	12.99 feet
Tank Height (OAL)	16.00 feet
Nominal Capacity	15,862 gallons
TANK DESIGN DETAILS	
Foundation Type	Concrete
Tank Saddles	N/A
Shell Type	Butt Welded, Carbon Steel, Unknown Grade
Roof Type	Lap Welded, Carbon Steel, Unknown Grade, Self-Supporting Cone
Containment	Concrete
CRDM	Yes, Concrete Containment
Release Prevention Barrier	Yes, Concrete Containment
DATES	
Year Manufactured	1971 (per facility records)
Previous Inspection	March 2017
Date of Internal Coating	Unknown
Data of External Coating	Unknown
TANK COATING	
Shell (External)	Beige, thin film epoxy
Shell (Internal)	Unknown

3.0 INSPECTION INTERVALS

Inspection Intervals	
Periodic, by Owner or Owner's designee	Includes weekly, monthly, quarterly, annually as required
Formal External, by Certified Inspector	August 2027
Formal Internal, by Certified Inspector	March 2026 – Scheduled, per facility

Inspection intervals for field-erected ASTs as per STI SP001 5th Ed., Appendix B, Section 2.1-2.4.4.2, Table 2-1.

AST Type and Size	Category 1	Category 2	Category 3
Field-Erected AST	**P, E (5), I(10)**	**P, E & L (5), I (10)**	**P, E & L(5), I(10)**

Designations used above:

P Periodic AST inspection IAW STI SP001, 5th Ed. Section 6

E Formal external inspection by a certified inspector IAW STI SP001, 5th Ed. Section 7

I Formal internal inspection by a certified inspector IAW STI SP001, 5th Ed. Section 8

L Leak testing by the owner or owner's designee IAW STI SP001, 5th Ed. Section 9

(#) Indicates the maximum inspection interval in years

4.0 SHELL THICKNESS DATA

SHELL THICKNESS (MINIMUM AND AVERAGES)

Note – UTT readings via handheld in ten locations, bottom-to-top, at the four cardinal directions in each shell course. Chart should be read as Course 1 (bottom shell course), reading 'A' taken within two inches of the corner weld, then each successive reading spaced evenly up the height of the shell course. Course 2 is the top shell course.

Location		North [in]	West [in]	South [in]	East [in]		
Course	Pos.						
1	A	0.203	-	0.193	0.194	Min	**0.193**
	B	0.209	0.208	0.206	0.199	Max	**0.213**
	C	0.212	0.210	0.205	0.201	Average	**0.205**
	D	0.213	0.211	0.207	0.202		
	E	0.213	0.211	0.207	0.203		
	F	0.211	0.211	0.208	0.202		
	G	0.208	0.210	0.206	0.202		
	H	0.207	0.207	0.204	0.198		
	I	0.203	0.204	0.200	-		
	J	0.199	0.198	0.197	-		
Location		North [in]	West [in]	South [in]	East [in]		
Course	Pos.						
2	A	0.207	0.206	0.201	-	Min	**0.199**
	B	0.208	0.207	0.202	-	Max	**0.209**
	C	0.207	0.207	0.203	-	Average	**0.204**
	D	0.207	0.207	0.204	-		
	E	0.207	0.207	0.204	-		
	F	0.205	0.209	0.203	-		
	G	0.204	0.202	0.202	-		
	H	0.204	0.201	0.201	-		
	I	0.202	0.200	0.199	-		
	J	0.201	0.200	0.200	-		

5.0 LIQUID LOAD CONDITION – FIELD-ERECTED AST

Design Code:		Unknown	STI SP001 Appendix B
Tank Type:		Field-Erected	The following formula is used in calculating the required minimum thickness of shell courses:
Shell Material:		Unknown	
Year Constructed		yr 1971	
Tank Diameter	D	ft 12.99	
Tank Height	H	Ft 16.00	
No. Shell Courses		2	*Note: As taken from STI SP001, Section 2.4.2.1.*
Specific Gravity	G	0.840	
Filling Height	*h*	ft 16.00	

$$t_{min} = \frac{(H-1)DG}{10{,}000}$$

Shell Course	Course Height	Product Height	Allowable Stress	Minimum Calculated t	Minimum Allowable t	Measured t average	Cleared for continued service?
	[ft]	*[ft]*	*[psi]*	*[in]*	*[in]*	*[in]*	
2	8.000	16.000	10,000	0.016	0.100	0.204	OK
1	8.000	16.000	10,000	0.016	0.100	0.205	OK

6.0 OTHER UTT

6.1 Fixed Roof

Fixed Roof ultrasonic testing was completed in four locations around the roof perimeter, due to limited access from a portable ladder.

Tank constructed: 1971
Tank inspected: 2022
Years in service: 51

Plate No.	Thickness Reading			
	Position 1 [in]	Position 2 [in]	Position 3 [in]	Position 4 [in]
1 / 2	0.170	0.170	0.170	0.168

$t_{max\ [in]}$	0.170	t_{min} [in]	0.168	Corrosion Rate [in/yr]	0.000039216
t_{min} per API 653 [in]	0.090	t_{avg} [in]	0.170	Remaining Life [yrs]	1989.00

6.2 External Bottom Plate Projection

UTT of the external bottom plate projection could not be completed due to obstruction by raised floor grating and the presence of oil/water around the tank foundation.

Tank Diameter: 12.99 ft
Number of Measurements: 0
Distance between Measurements: - ft
Measurements taken at Manway entrance and continue counterclockwise around the tank circumference.

Position 1 [in]	Position 2 [in]	Position 3 [in]	Position 4 [in]	Position 5 [in]
-	-	-	-	-
Projection plate as per API 653, section 4.4.5.7; Minimum thickness must be greater than 0.100-in				

7.0 INSPECTION FINDINGS AND RECOMMENDATIONS

Foundation / Supports/ Containment

1. Discussion with facility personnel indicate that there is a water line leak within the wall of the building that causes the water to collect around tank 21 and 22. Water is typically removed by vacuum truck. Ensure liquid is removed from around tanks to prevent deterioration of the tank bottoms and lower shell courses.

External Shell

1. Tank protective coatings were in generally good condition. However, surface staining and some peeling were noted near shell nozzle N1.

External Appurtenances

1. Deteriorated coatings noted at shell nozzle N1.

Tank Roof

1. Tank 21 is equipped with a self-supporting cone roof. Nominal thickness of the roof is believed to be 0.1875-in. Discussion with facility personnel indicated this roof collapsed shortly after being placed in service. Inspector believes the weight of the 36-in roof nozzle caused the roof to collapse. A review of the previous inspection report would indicate that the situation appears static, with no change over time. Inspection of the roof was limited to visual from the fixed vertical ladder. Recommend replacing the roof at the next out-of-service inspection and repair cycle.

8.0 OBSERVATIONS OF INSPECTION FINDINGS

Foundation / Supports/ Containment

1. Discussion with facility personnel indicate that there is a water line leak within the wall of the building that causes the water to collect around tank 21 and 22. Water is typically removed by vacuum truck. Ensure liquid is removed from around tanks to prevent deterioration of the tank bottoms and lower shell courses.



Oily water around tank foundation



Oily water around tank foundation



Oily water around tank foundation

External Shell

1. Tank protective coatings were in generally good condition. However, surface staining and some peeling were noted near shell nozzle N1.



Deteriorated coatings



Deteriorated coatings



Deteriorated coatings

Tank Roof

1. Tank 22 is equipped with a self-supporting cone roof. Nominal thickness of the roof is believed to be 0.1875-in. Discussion with facility personnel indicated this roof collapsed shortly after being placed in service. Inspector believes the weight of the 36-in roof nozzle caused the roof to collapse. A review of the previous inspection report would indicate that the situation appears static, with no change over time. Inspection of the roof was limited to visual from the fixed vertical ladder. Recommend replacing the roof at the next out-of-service inspection and repair cycle.



Roof collapse (left)



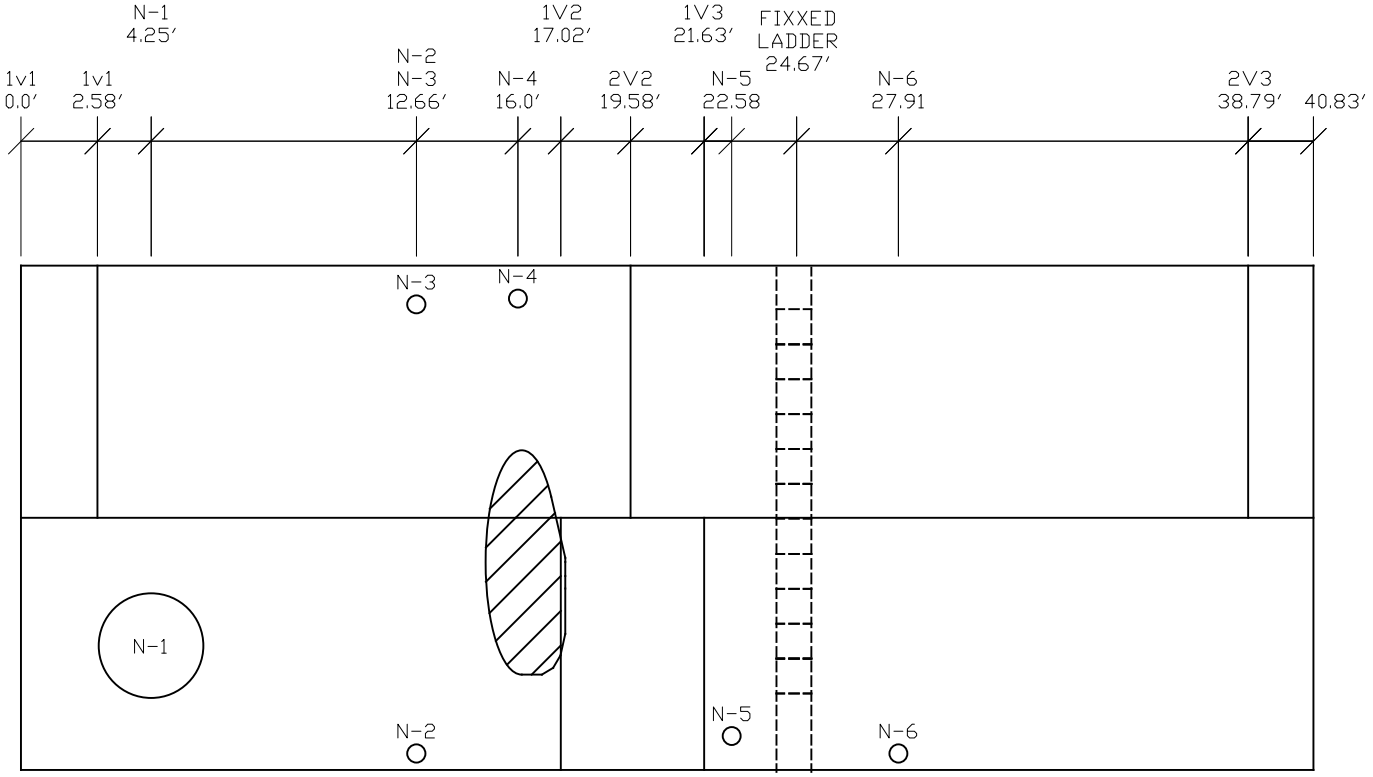
Roof collapse (center)



Roof collapse (right)

9.0 TANK DRAWINGS (SHELL & ROOF)

Please refer to following pages.



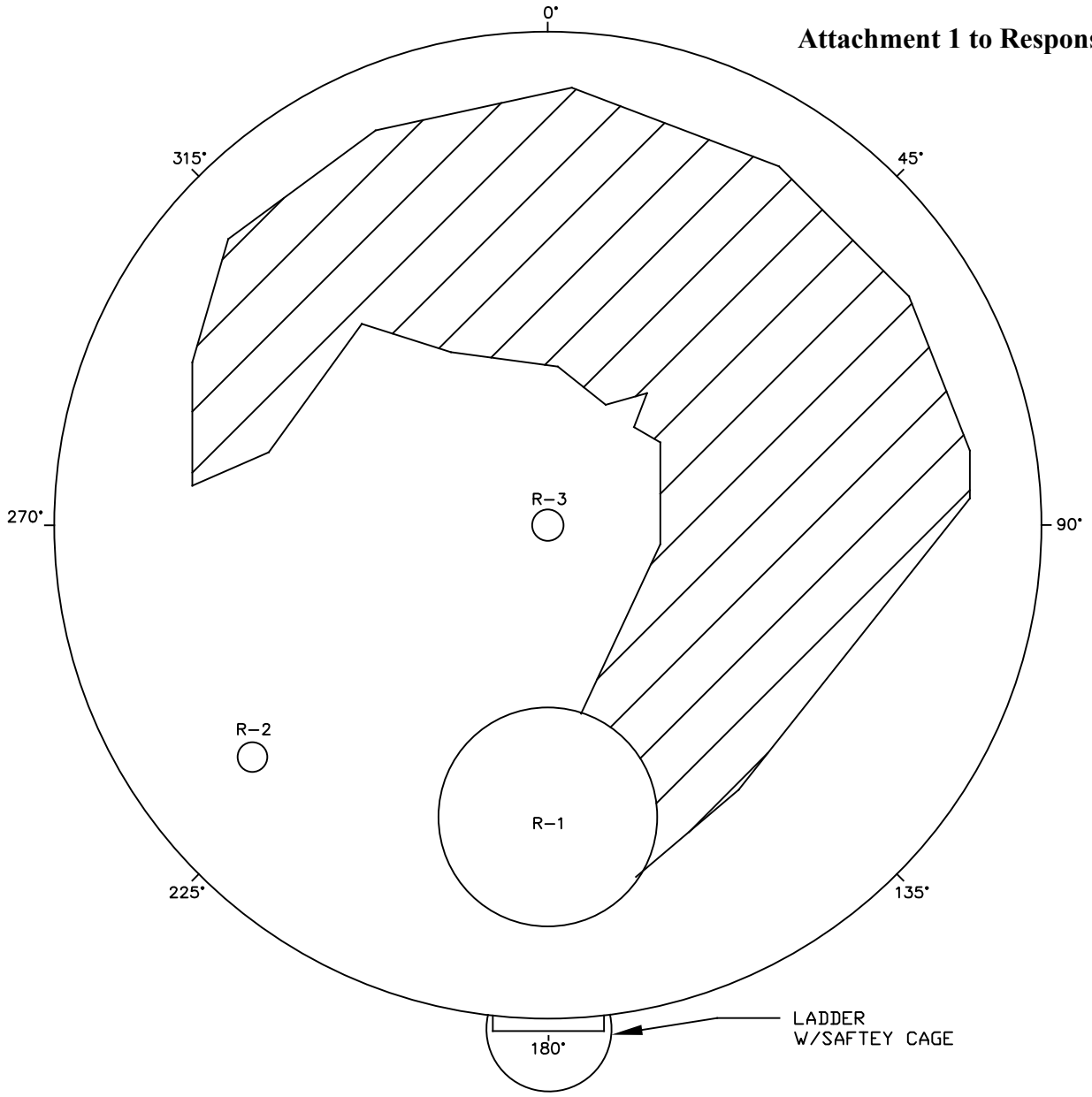
T-21 SHELL ROLLOUT
NTS

NOZZLE SCHEDULE

ID	SIZE
N-1	36'Ø
N-2	4'Ø
N-3	4'Ø
N-4	3'Ø
N-5	3'Ø
N-6	3'Ø

= SHELL BULGE

DRAWN BY: AUSTIN ALVIS	DATE INSPECTED: 08/10/2022	EQ. NUMBER: TANK T-21	CLIENT NAME: KU-LG&E	gecko robotics
DATE DRAWN: 08/10/2022	TECHNICIAN: WILLIAM STOUT	EQ. NAME -	CLIENT LOCATION: GHENT STATION, GHENT, KY	GECKO ROBOTICS 100 S. COMMONS, SUITE 145 PITTSBURGH, PA 15212
FILE NO. 2022-03519	DRAWING: 1 OF 2			



T-21 FIXED ROOF LAYOUT
NTS

NOZZLE SCHEDULE

ID	SIZE
R-1	36"Ø
R-2	3"Ø
R-3	3"Ø

= COLLAPSED ROOF AREA

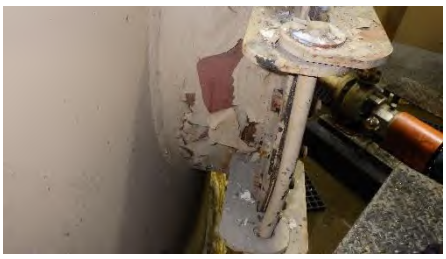
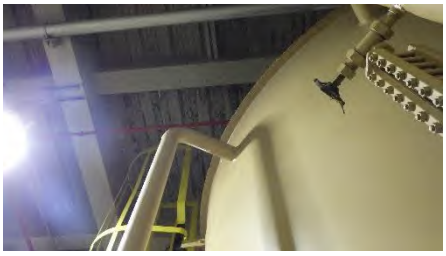
DRAWN BY: AUSTIN ALVIS	DATE INSPECTED: 08/10/2022	EQ. NUMBER: TANK T-21	CLIENT NAME: KU-LG&E	gecko robotics
DATE DRAWN: 08/10/2022	TECHNICIAN: WILLIAM STOUT	EQ. NAME -	CLIENT LOCATION: GHENT STATION, GHENT, KY	GECKO ROBOTICS 100 S. COMMONS, SUITE 145 PITTSBURGH, PA 15212
FILE NO. 2022-03519	DRAWING: 2 OF 2			

10.0 NOZZLE AND APPURTENANCES TABLE

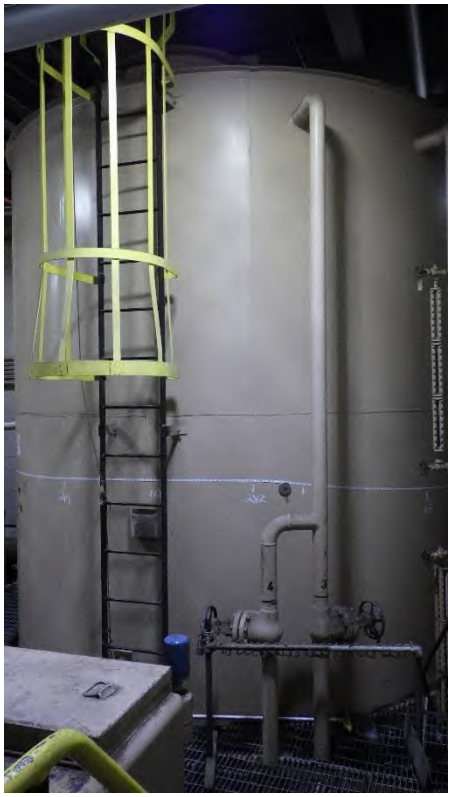
Item	Description	Pipe Size [in]	12:00 [in]	3:00 [in]	6:00 [in]	9:00 [in]	Comments
N1	Manway	36.00	0.250	0.265	0.251	0.253	
N2	Nozzle	3.00	-	-	-	-	*UTT obstructed by grating
N3	Nozzle	3.00	-	-	-	-	*UTT obstructed by grating
N4	Sight Glass (lower)	4.00	-	-	-	-	*UTT obstructed by grating
N5	Sight Glass (upper)	4.00	0.333	0.334	0.345	0.341	
N6	Overflow	3.00	0.309	0.302	0.298	0.306	
R1	Manway	36.00	-	-	-	-	Access limited to visual from ladder
R2	Nozzle	3.00	-	-	-	-	Access limited to visual from ladder
R3	Nozzle	3.00	-	-	-	-	Access limited to visual from ladder

*Roof has collapsed.

11.0 TANK PHOTOS

 Nozzle N1	 Nozzle N1	 Nozzle N1
 Nozzle N2	 Nozzle N3	 Nozzle N3
 Nozzle N4	 Nozzle N4	 Nozzle N5
 Nozzle N5	 Nozzle N6	 Nozzle N6
 Nozzle R1	 Nozzle R2	 Nozzle R3

2022-05519 Ghent KY T22
8/25/2022

 Shell Elevation View		

TEAM QUALSPEC

10540 Chester Road, Woodlawn, OH 45215

INSPECTION REPORT FOR ATMOSPHERIC STORAGE TANK

Form VT.3-1238 Rev. 0

COMPANY:	Kentucky Utilities	LOCATION:	Ghent, KY
UNIT LOCATION:	Inside building turbine oil room	EQUIPMENT NUMBER:	T-22
TEAM W.O. #:	53870350	COMPLETION DATE:	3-22-17
EQUIPMENT NAME:	Unit 3 & 4 Dirty oil tank		

Formal External Inspection with thickness of Unit 3 & 4 Dirty Oil Tank



In accordance with STI SP-001

Site Contact: Ben Zeigler
Inspector: William T. McDaniel API 653 #38330
UTT Technician: Adam Holland

TEAM QUALSPEC
10540 Chester Road, Woodlawn, OH 45215

INSPECTION REPORT FOR ATMOSPHERIC STORAGE TANK

Form VT.3-1238 Rev. 0

COMPANY:	Kentucky Utilities	LOCATION:	Ghent, KY
UNIT LOCATION:	Inside building turbine oil room	EQUIPMENT NUMBER:	T-22
TEAM W.O. #:	53870350	COMPLETION DATE:	3-22-17
EQUIPMENT NAME:	Unit 3 & 4 Dirty oil tank		

INSPECTION SUMMARY

GENERAL:	A formal external inspection with thickness was performed at this time meeting the requirements of STI SP-001. The tank is a 15,000 gallon storage tank that holds used turbine oil. The tank is in a dyke area located inside of a building. There are currently no continuous release detection system in place due to the design of flat bottom tank resting on ground. With the current design the tank is classified as a category 2 tank and will follow the recommendations of STI-SP001 for inspection intervals.
FOUNDATION:	The tank rest on a concrete ring approximately 6" above the concrete floor. The area is surrounded by a concrete wall for secondary containment.
INSULATION:	The tank is not currently insulated.
EXTERNAL:	The collapsed roof appears to have remained unchanged since the prior inspection in 2006. There is notable coating failure on bottom 3" of tank shell and bottom area with minor corrosion at this time.
INTERNAL:	Not performed at this time.

REPAIRS RECOMMENDED FOR TANK (SEE OBSERVATIONS / RECOMMENDATIONS)

[ ] YES - ASAP - PRIOR TO RETURNING TO SERVICE [ ] YES- IN A TIMELY MANNER [X] NONE

NEXT INSPECTION DATE: Option 1 /Option 2

Performed by Inspector	EXTERNAL:	10 years (3-22-27)	/ 5 years (3-22-21)
	INTERNAL:	20 years (3-22-26)	/ Not required
Performed By owner	PERIODIC:	Monthly + Annually	/ Monthly + Annually
	LEAK TEST:	Not required	/ 10 years (3-22-16)

INSPECTOR: *William Trafton McDaniel* DATE: *3-22-17*

SIGNATURE: William T McDaniel API 653 NO: *38330*

TEAM QUALSPEC

10540 Chester Road, Woodlawn, OH 45215

INSPECTION REPORT FOR ATMOSPHERIC STORAGE TANK

Form VT.3-1238 Rev. 0

COMPANY:	Kentucky Utilities	LOCATION:	Ghent, KY
UNIT LOCATION:	Inside building turbine oil room	EQUIPMENT NUMBER:	T-22
TEAM W.O. #:	53870350	COMPLETION DATE:	3-22-17
EQUIPMENT NAME:	Unit 3 & 4 Dirty oil tank		

OBSERVATIONS	RECOMMENDATIONS
The roof has partially collapsed and has been previously noted.	Monitor for any deviation form original or any condition that may cause undo stress on the piping and/or shell of the tank.
Corrosion on the Bottom 3" of tank shell and bottom area	Clean area and recoat to prevent further corrosion

TEAM QUALSPEC
10540 Chester Road, Woodlawn, OH 45215

INSPECTION REPORT FOR ATMOSPHERIC STORAGE TANK

Form VT.3-1238 Rev. 0

COMPANY:	Kentucky Utilities	LOCATION:	Ghent, KY
UNIT LOCATION:	Inside building turbine oil room	EQUIPMENT NUMBER:	T-22
TEAM W.O. #:	53870350	COMPLETION DATE:	3-22-17
EQUIPMENT NAME:	Unit 3 & 4 Dirty oil tank		

Design Data

Year Built: *1971* Service Date: *1971* Fabricator: *Underwriters Labratory*

Tank Type: ☐ Horizontal ☒ Vertical ☐ Jacketed ☐ Insulated Service/Product: *Dirty Oil*

Tank Height / Length: *16'* ☐ SS ☐ T/T ☒ Overall Tank Diameter: *20'*

Name Plate Verified: Yes ☒ No ☐ N/A ☐ Drawing / Documentation Available: Yes ☒ No ☐

Specific Gravity: *1* Design & Operating Press. / Temp.: *Design* *ATM* psig *300* °F / *Operating* *ATM* psig *AMB* °F

Roof / Head Type : ☐ Elliptical ☐ ASME F & D ☐ Domed ☒ Conical ☐ Flat ☐ Pan
Crown Radius _____ Knuckle Radius _____ Head Ratio _____ Joint Efficiency *N/A*

Bottom / Head Type: ☐ Elliptical ☐ ASME F & D ☐ Domed ☐ Conical ☒ Flat ☐ Pan
Crown Radius _____ Knuckle Radius _____ Head Ratio _____ Joint Efficiency *N/A*

Nom. Roof / Head Thickness: _____ Nom. Bottom / Head Thickness: _____ Nom. Shell Thickness: _____

Shell Joint Construction Type:	☒ Butt Welded	☐ Single Lap Welded	☐ Double Lap Welded
Roof / Head Joint Construction Type:	☐ Butt Welded	☒ Single Lap Welded	☐ Double Lap Welded
Bottom / Head Joint Construction Type:	☐ Butt Welded	☒ Single Lap Welded	☐ Double Lap Welded

Other i.e. Riveted :

Corrosion Allowance: Head "A" *N/S* Head "B" *N/S* Shell *N/S*

	Min. Yield	Min. Tensile
Shell Material: Specification / Grade / Type	*Unknown C/S*	
"A" Head Material: Specification /Grade / Type	*Unknown C/S*	
"B" Head Material: Specification /Grade / Type	*Unknown C/S*	

TEAM QUALSPEC
10540 Chester Road, Woodlawn, OH 45215

INSPECTION REPORT FOR ATMOSPHERIC STORAGE TANK

Form VT.3-1238 Rev. 0

COMPANY:	Kentucky Utilities	LOCATION:	Ghent, KY
UNIT LOCATION:	Inside building turbine oil room	EQUIPMENT NUMBER:	T-22
TEAM W.O. #:	53870350	COMPLETION DATE:	3-22-17
EQUIPMENT NAME:	Unit 3 & 4 Dirty oil tank		

External Visual Inspection Results

Item No.	Item	Good	Fair	Poor	N/A	
1	Shell		X			Coating failure and minor corrosion at shell to bottom area
2	Floor / Bottom Head				X	
3	Roof / Top Head			X		Partially collapsed does not appear to have changed from last inspection
4	Nozzles and Fasteners	X				
5	Piping and Components	X				
6	Valves and Components	X				
7	Welds and Seams	X				
8	Davits	X				
9	Manways & Fasteners	X				
10	Stiffner Rings				X	
11	Gauges	X				
12	Sight Glass	X				
13	Platforms/Handrails	X				
14	Ladders/Cages/Stairs	X				
15	Grating/Treads	X				
16	Insulation or Coating	X				
17	Weather Jacket				X	
18	Supports/Base plates				X	Type:
19	Anchors/Support bolts				X	
20	Foundation (Spalling, etc.)	X				
21	Grouting				X	

		Yes	No	COMMENTS
22	Corrosion (Location)		X	
23	Name Plate Attached	X		
24	Visible Leaks		X	
25	Ground Wire		X	
26	Visible Distortion		X	
27	Weep Holes Okay			N/A
28	Blistering		X	
29	Other			

Notes or Comments: The tank is in overall good integral condition with no major concerns at this time. It is recommended To maintain regular inspection frequencies meeting the requirements of STI-SP001.

TEAM QUALSPEC
10540 Chester Road, Woodlawn, OH 45215

INSPECTION REPORT FOR ATMOSPHERIC STORAGE TANK

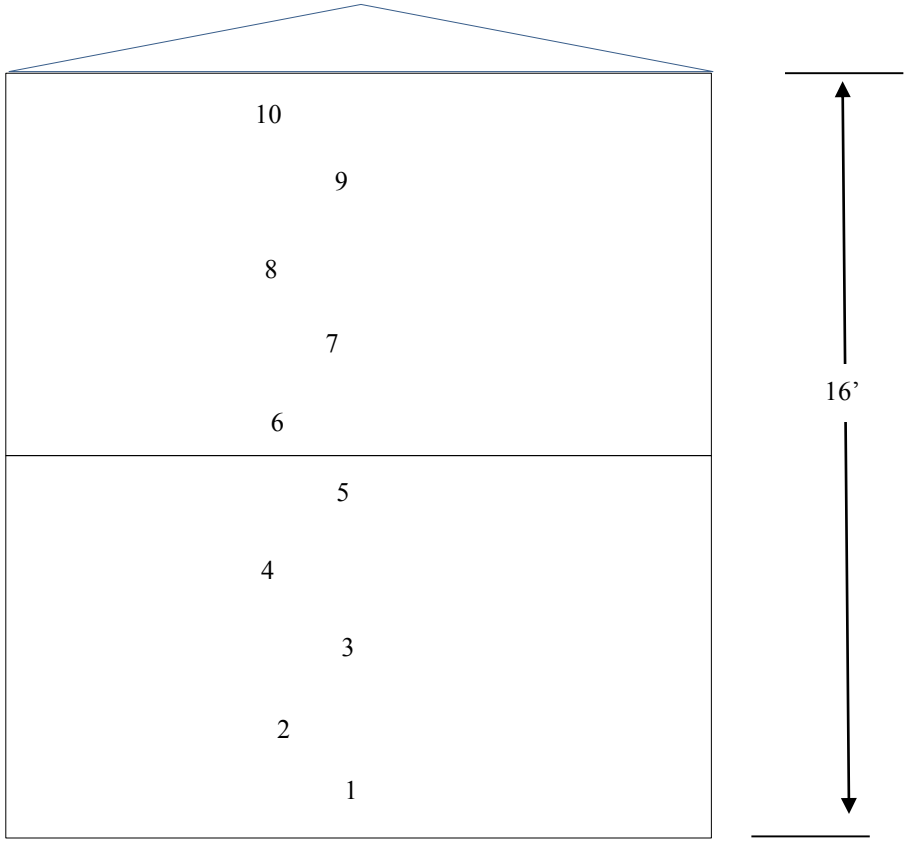
Form VT.3-1238 Rev. 0

COMPANY:	Kentucky Utilities	LOCATION:	Ghent, KY
UNIT LOCATION:	Inside building turbine oil room	EQUIPMENT NUMBER:	T-22
TEAM W.O. #:	53870350	COMPLETION DATE:	3-22-17
EQUIPMENT NAME:	Unit 3 & 4 Dirty oil tank		

UT Calibration Data

Equipment Make:	*GE*	Model # :	*DMS 2*	Serial # :	*01NDJJ*		
Calibration Block Material :	☒ C/S	Serial # :	*09-3799*	☐ S/S	Serial # :		
Transducer Serial # :	*15L00D04*	Size :	*.375*	Frequency:	*7.5*	MHZ	
UT Couplant Type:	*Sonix-UT*	Batch # :	*306-07*				

Sketch



TEAM QUALSPEC

10540 Chester Road, Woodlawn, OH 45215

INSPECTION REPORT FOR ATMOSPHERIC STORAGE TANK

Form VT.3-1238 Rev. 0

COMPANY:	Kentucky Utilities	LOCATION:	Ghent, KY
UNIT LOCATION:	Inside building turbine oil room	EQUIPMENT NUMBER:	T-22
TEAM W.O. #:	53870350	COMPLETION DATE:	3-22-17
EQUIPMENT NAME:	Unit 3 & 4 Dirty oil tank		

UTT DATA

	North	East	South	West
1	0.185	0.188	0.198	0.197
2	0.192	0.199	0.204	0.199
3	0.199	0.2	0.204	0.204
4	0.194	0.195	0.2	0.201
5	0.188	0.189	0.193	0.193
6	0.192	0.195	0.189	0.202
7			0.196	
8			0.197	
9			0.193	
10			0.181	
Roof random average .180"				

TEAM QUALSPEC

10540 Chester Road, Woodlawn, OH 45215

INSPECTION REPORT FOR ATMOSPHERIC STORAGE TANK

Form VT.3-1238 Rev. 0

COMPANY:	Kentucky Utilities	LOCATION:	Ghent, KY
UNIT LOCATION:	Inside building turbine oil room	EQUIPMENT NUMBER:	T-22
TEAM W.O. #:	53870350	COMPLETION DATE:	3-22-17
EQUIPMENT NAME:	Unit 3 & 4 Dirty oil tank		

Calculations per STI SP-001

$$T\text{-}min = \frac{(H-1)DG}{10{,}000}$$

H=16
D=20
G=1(conservative)

= .03”

Torig=.203 (13/64?)
Tact=.1952
Yrs in service=40
LTCR=.0003

Tprevious=.1999
Tact=.1952
Yrs in service=11
STCR=.0004

Tact=.1952
Tmin=.152 (25% loss of Torig)
LTCR=.0004
Remaining life=108 years

TEAM QUALSPEC

10540 Chester Road, Woodlawn, OH 45215

INSPECTION REPORT FOR ATMOSPHERIC STORAGE TANK

Form VT.3-1238 Rev. 0

COMPANY:	Kentucky Utilities	LOCATION:	Ghent, KY
UNIT LOCATION:	Inside building turbine oil room	EQUIPMENT NUMBER:	T-22
TEAM W.O. #:	53870350	COMPLETION DATE:	3-22-17
EQUIPMENT NAME:	Unit 3 & 4 Dirty oil tank		



Typical corrosion on bottom 3” of tank shell to bottom area



Roof collapse

US INSPECTION SERVICES
NDE and Metallurgical Services

Evergreen Environmental @ Ghent Power Station

Unit 3 & Unit 4 Clean Oil Storage Tank Inspection Report

Date of Inspection: December 15, 2006

US INSPECTION SERVICES
NDE and Metallurgical Services

CUSTOMER: Evergreen Environmental @ Ghent Power Station

ADDRESS: Rt. 42 Ghent Kentucky **Lab#:** F58688

CUSTOMER CONTACTS:	Ron Stewart, Danny Ayler
US INSPECTION PERSONNEL:	Sean Heitman, Chad Schmidt
DESCRIPTION OF INSPECTION:	Mechanical Integrity Inspection Internal/External
SPECIFICATION:	Guidelines of API 653
ACCEPTANCE:	API 653 and customer info
EQUIPMENT:	DMS 2 S/N: 011MTM HT 400A Velocity: 2330 S/N: 00W6K2
MATERIALS:	1 QT Ultra-Gel

RESULTS: The inspections performed were to find equipment deterioration while in service and deficiencies due to degradation from original fabrication. We also look for modifications or alterations that do not comply with generally accepted good engineering practice. Unit 3 & 4 Clean Oil Storage tank is a carbon steel and atmospheric. This tank has no record of construction and was constructed in accordance with UL 142. It is assumed the tank is 35 years old just for calculation purposes. Very minor internal corrosion is present and the integrity of the tank is acceptable. It is assumed that the product in the tank has a specific gravity of less than 1. The specific gravity of 1 was used in the calculations listed below. The greatest concern for this tank is the corrosion present around the exterior shell and tank floor. The greatest cause for failures in the storage tank industry is corrosion under the tank floor. This area needs to be kept dry and clean at all times to prolong the corrosion that has already started the tank needs to be properly prepped and painted around the bottom.

Inspection Frequency and Intervals:

Routine in service inspections (which may be performed by Kentucky Utilities employees) should be performed at a minimum of on a **monthly** basis per API 653 para 6.3

The next formal External and UT inspection shall be conducted in **5 years** (October 10, 2011).

The next formal Internal inspection shall be conducted in **20 years**. (October 10, 2026). The inspection frequency may be increased to 20 years since very minor corrosion was found.

TECHNICIAN: Sean Heitman API Cert# 26660 DATE: October 10, 2006

US INSPECTION SERVICES
NDE and Metallurgical Services

Unit 3 & 4 Clean Oil Tank Inspection Report

Shell

Internal Visual/ UT- Internal visual of this tank revealed the tank to be in great condition with very minor corrosion noted. Ultrasonic thickness revealed the tank to have thickness readings ranging from .173"-.207".

External Visual- Visual inspection of the outside revealed the tank to be in good condition. There is no grounding for this tank and product residue is present on some of the exterior. There is corrosion occurring around the tank bottom. This corrosion is not a major concern but needs to be stopped now to prolong the integrity of the tank.

Recommendations for the Shell:

1. Properly prep and re-paint the bottom of this tank to prolong the corrosion present at this time.

Roof

Internal Visual- There is no concern at this time (see external visual).

External Visual- The ultrasonic thickness readings were all acceptable. Various UT readings were taken next to the stairs on the roof with a minimum thickness found of .180" thick. A thickness greater than 0.100" is acceptable per API 653. The roof has caved in on the North and East section of the roof. It is assumed that this condition has been present since construction from talking with many KU employees.

Recommendations for the Roof:

1. No recommendations for the roof at this time.

Floor

Internal Visual/UT- Visual inspection revealed the floor to have minor corrosion on the inside. The minimum thickness allowed per API 653 table 6-1 is .050" with means of containment and detection. Ultrasonic thickness revealed the tank to have thickness readings ranging from .236"-.258". The floor has very minor corrosion occurring if any at this time.

External Visual- No grounding strap is in place. The foundation is in good condition with no cracking occurring. There is minor corrosion occurring on the external surface of the chime ring. Moisture may be present at times during operation. Keep this area dry to ensure corrosion stopped to help with the reliability of the tank. Please see the photos below showing external chime ring corrosion.

Recommendations for the Floor:

1. The Floor appears ultrasonically and visually to be in good condition, have all inspections conducted in accordance with API 653 as noted above.
2. Keep the area clean and dry to help slow down the exterior floor corrosion.

US INSPECTION SERVICES
NDE and Metallurgical Services

Unit 3 & 4 Clean Oil Tank Inspection Report

Ultrasonic Thickness Data

Floor Thickness Results

	North	East	South	West
1	0.250	0.248	0.250	0.250
2	0.255	0.248	0.253	0.255
3	0.257	0.250	0.251	0.255
4	0.257	0.249	0.253	0.257
5	0.257	0.250	0.252	0.255
6	0.257	0.252	0.254	0.254
7	0.254	0.252	0.254	0.254
8	0.258	0.254	0.252	0.254
9	0.258	0.253	0.253	0.249
10	0.257	0.256	0.254	0.236

Shell Thickness Results

	North	East	South	West
1	0.173	0.174	0.188	0.182
2	0.206	0.194	0.202	0.200
3	0.205	0.199	0.204	0.205
4	0.198	0.198	0.198	0.198
5	0.189	0.190	0.191	0.190
6	0.189	0.200	0.205	0.207
7			0.201	
8			0.202	
9			0.198	
10			0.199	

Note: The stairs are on the South/East side of this Tank

Shell Nozzle Thickness Results

	Top	North	Bottom	South
N1	0.270	0.242	0.273	0.274
N2	0.336	0.331	0.322	0.351
N3	0.296	0.306	0.297	0.287
N4	0.291	0.309	0.294	0.289

US INSPECTION SERVICES
NDE and Metallurgical Services

Unit 3 & 4 Clean Oil Tank Inspection Report

Calculations

Tmin = $\frac{2.6 \times (H-1) \times D \times G}{S \times E}$

H=	16
D=	20
G=	1
S=	23600
E=	0.7

	Height	Tmin
1ST COURSE	16	0.047
2ND COURSE	8	0.022

Torig =	0.190
Tact.=	0.173
Yrs. Service =	35
C/R=	0.0005

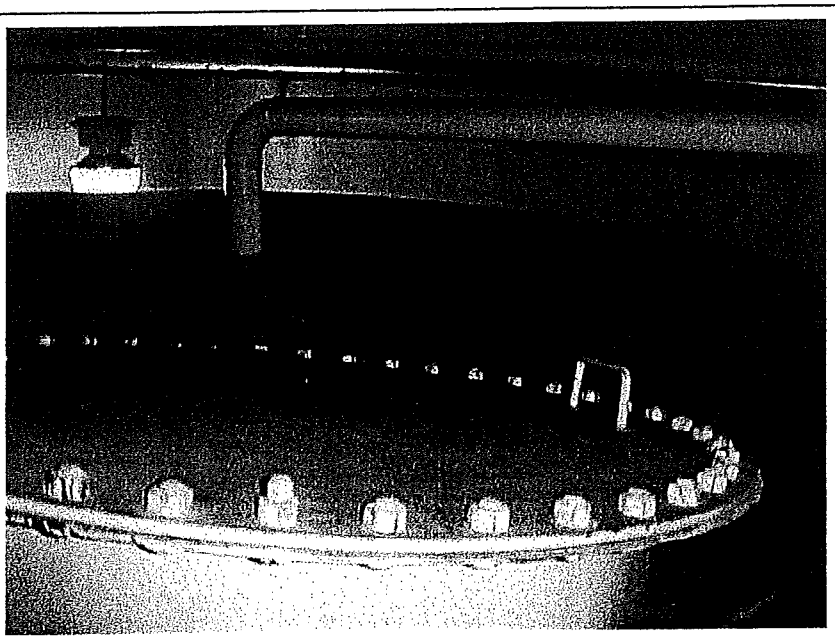
Torig =	0.173	
Tmin =	0.100	
C/R =	0.0005	
R/L=	146	Years

No shell sheet shall be less than 0.100" thick in accordance with API 653. These calculations are a representative number showing the life expectancy of the tank if kept in good condition without exterior corrosion taking place.

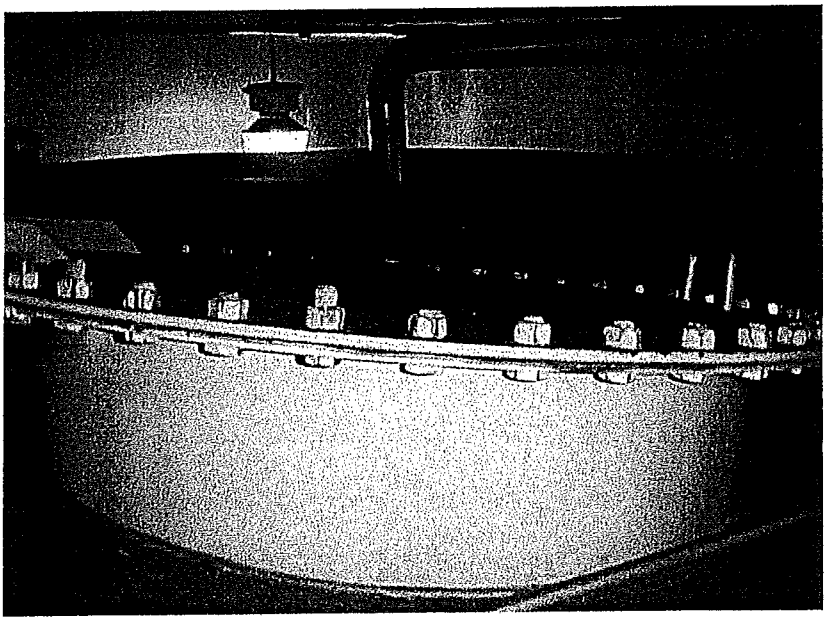
****This tank has a calculated remaining life of 146 years at the continued service. This remaining life is dependent on no changes take place including moisture and product that is stored in this tank.**

US INSPECTION SERVICES
NDE and Metallurgical Services

Unit 3 & 4 Clean Oil Tank Inspection Report



Photos shown are of the roof that has collapsed in areas.

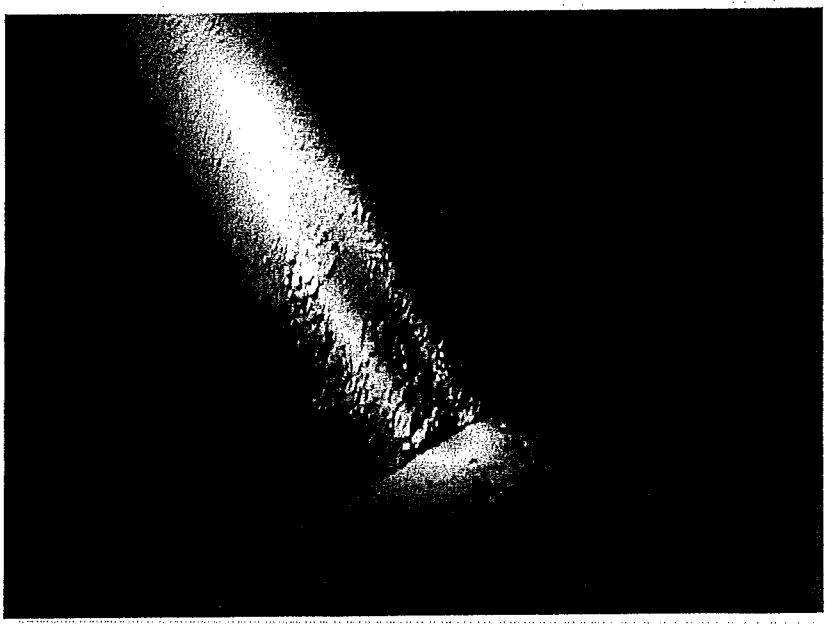


US INSPECTION SERVICES
NDE and Metallurgical Services

Unit 3 & 4 Clean Oil Tank Inspection Report



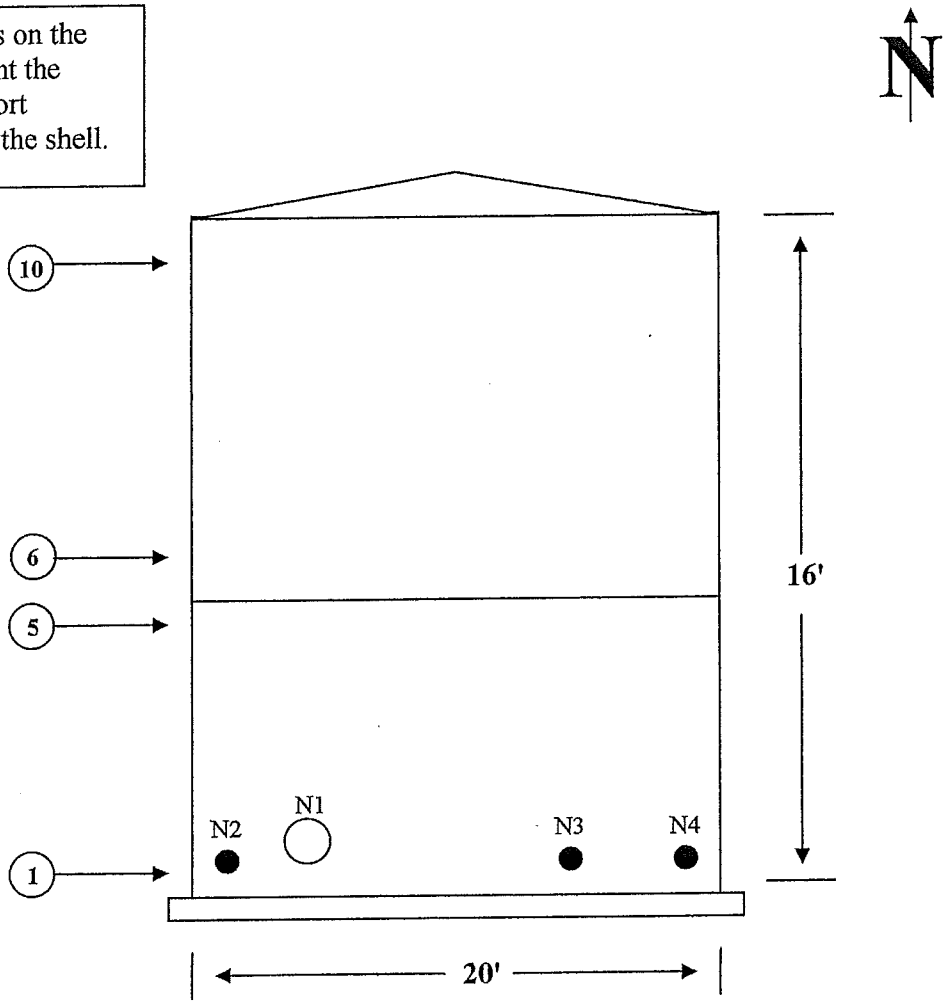
The photos shown are areas around the floor to bottom weld (chime ring). There is minor exterior corrosion taking place along this area showing moisture is present at times.



US INSPECTION SERVICES
NDE and Metallurgical Services

Unit 3 & 4 Clean Oil Tank Inspection Report

The numbers on the tank represent the inspection port locations on the shell.



Location of Nozzles

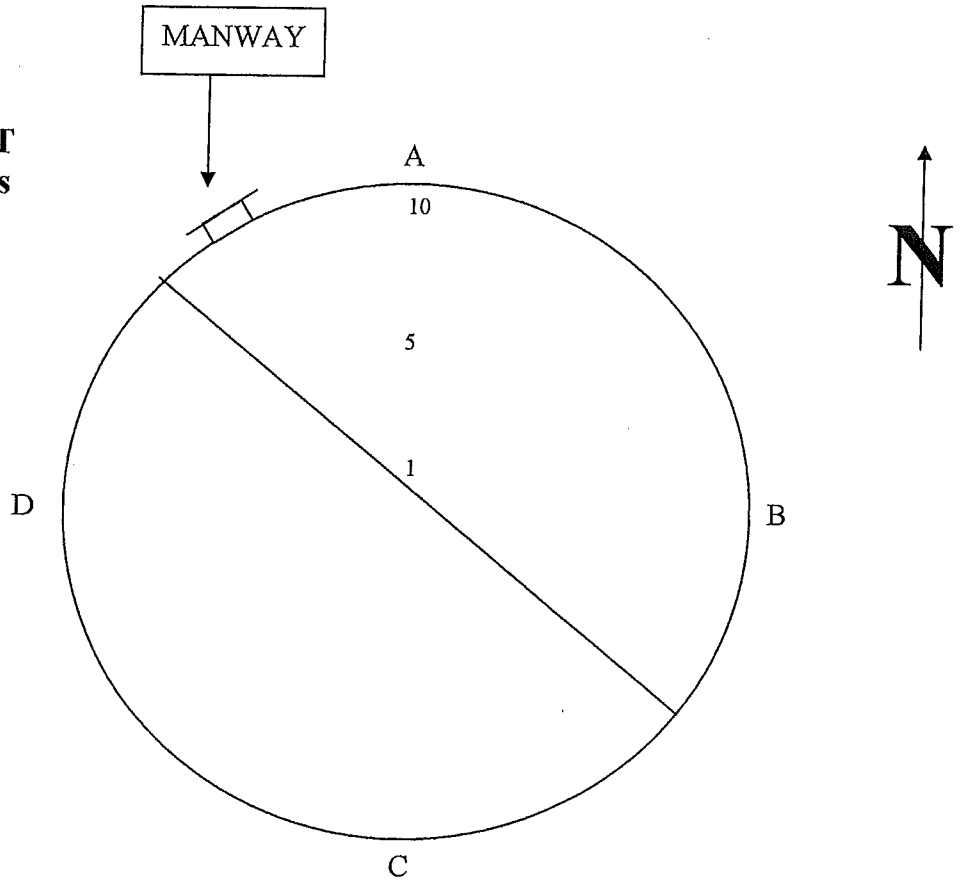
● = South side of tank

○ = North side of tank

US INSPECTION SERVICES
NDE and Metallurgical Services

Unit 3 & 4 Clean Oil Tank Inspection Report

Floor UT locations



Imber

US INSPECTION SERVICES
NDE and Metallurgical Services

Evergreen Environmental @ Ghent Power Station

Unit 3 & Unit 4 Dirty Oil Storage Tank Inspection Report

Date of Inspection: October 10, 2006

US INSPECTION SERVICES
NDE and Metallurgical Services

CUSTOMER: Evergreen Environmental @ Ghent Power Station

ADDRESS: Rt. 42 Ghent Kentucky **Lab#:** F 202296

CUSTOMER CONTACTS:	Ron Stewart, Danny Ayler
US INSPECTION PERSONNEL:	Sean Heitman, Jim Willison
DESCRIPTION OF INSPECTION:	Mechanical Integrity Inspection Internal/External
SPECIFICATION:	Guidelines of API 653
ACCEPTANCE:	API 653 and customer info
EQUIPMENT:	DMS 2 S/N: 011MTM HT 400A Velocity: 2330 S/N: 00W6K2
MATERIALS:	1 QT Ultra-Gel

RESULTS: The inspections performed were to find equipment deterioration while in service and deficiencies due to degradation from original fabrication. We also look for modifications or alterations that do not comply with generally accepted good engineering practice. Unit 3 & 4 Dirty oil storage tank is a carbon steel and atmospheric. This tank has no record of construction and was constructed in accordance with UL 142. It is assumed the tank is 35 years old just for calculation purposes. Minor internal corrosion is present and the integrity of the tank is acceptable. It is assumed that the product in the tank has a specific gravity of less than 1. The specific gravity of 1 was used in the calculations listed below. The greatest concern for this tank is the roof has caved in on the north side and on the east side of the tank. The ventilation of this tank is that of a 3" nozzle which needs to be at a minimum of a 4" for adequate ventilation. Please see the recommendations noted below under the roof section.

Inspection Frequency and Intervals:

Routine in service inspections (which may be performed by Kentucky Utilities employees) should be performed at a minimum of on a **monthly** basis per API 653 para 6.3

The next formal External and UT inspection shall be conducted in **5 years** (October 10, 2011).

The next formal Internal inspection shall be conducted in **20 years.** (October 10, 2026). The inspection frequency may be increased to 20 years since very minor corrosion was found.

TECHNICIAN: Sean Heitman API Cert# 26660 DATE: October 10, 2006

US INSPECTION SERVICES
NDE and Metallurgical Services

Unit 3 & 4 Dirty Oil Tank Inspection Report

Shell

Internal Visual/ UT- Internal visual of this tank revealed the tank to be in great condition with very minor corrosion noted. Ultrasonic thickness revealed the tank to have thickness readings ranging from .186"-.208".

External Visual- Visual inspection of the outside revealed the tank to be in good condition. There is no grounding for this tank and product residue is present on some of the exterior. There are no concerns for the outside of the tank at this time.

Recommendations for the Shell:

1. No recommendations at this time.

Roof

Internal Visual- There is no concern at this time (see external visual).

External Visual- The ultrasonic thickness readings were all acceptable. Various UT readings were taken next to the stairs on the roof with a minimum thickness found of .178" thick. A thickness greater than 0.100" is acceptable per API 653. The roof has caved in on the North and East section of the roof from inadequate ventilation. It is assumed that the 3" vent is not capable of venting properly with a 3" drain. The vent should be at a minimum of 1 ½ times the diameter of the drain. Please see the photos below showing the collapsed roof.

Recommendations for the Roof:

1. Install another roof vent to ensure adequate ventilation and proper drainage.
2. Magnetic particle inspect the roof vent weld to be installed. Back welding of the inside of the nozzle to be installed is not mandatory because it is not pressure retaining.

Floor

Internal Visual/UT- Visual inspection revealed the floor to have minor corrosion on the inside. The minimum thickness allowed per API 653 table 6-1 is .050" with means of containment and detection. Ultrasonic thickness revealed the tank to have thickness readings ranging from .252"-.268". The floor has very minor corrosion occurring if any at this time.

External Visual- No grounding strap is in place. The foundation is in good condition with no cracking occurring. There is minor corrosion occurring on the external surface of the chime ring. Moisture may be present at times during operation. Keep this area dry to ensure corrosion stopped to help with the reliability of the tank. Please see the photos below showing external chime ring corrosion.

Recommendations for the Floor:

1. The Floor appears ultrasonically and visually to be in good condition, have all inspections conducted in accordance with API 653 as noted above.
2. Keep the area clean and dry to help slow down the exterior floor corrosion.

US INSPECTION SERVICES
NDE and Metallurgical Services

Unit 3 & 4 Dirty Oil Tank Inspection Report

Ultrasonic Thickness Data

Floor Thickness Results

	North	East	South	West
1	0.252	0.255	0.252	0.252
2	0.256	0.261	0.260	0.257
3	0.261	0.262	0.262	0.259
4	0.265	0.262	0.264	0.260
5	0.265	0.262	0.265	0.260
6	0.267	0.260	0.266	0.262
7	0.265	0.258	0.266	0.262
8	0.261	0.261	0.265	0.258
9	0.266	0.261	0.265	0.266
10	0.261	0.256	0.266	0.267

Shell Thickness Results

	North	East	South	West
1	0.190	0.195	0.200	0.195
2	0.201	0.202	0.210	0.205
3	0.202	0.207	0.211	0.208
4	0.198	0.206	0.205	0.203
5	0.185	0.194	0.199	0.196
6	0.200	0.201	0.193	0.207
7			0.202	
8			0.203	
9			0.197	
10			0.186	

Note: The stairs are on the South side of this Tank

Shell Nozzle Thickness Results

	Top	North	Bottom	South
N1	0.253	0.253	0.253	0.244
N2	0.349	0.349	0.341	0.333
N3	0.297	0.296	0.290	0.299
N4	0.305	0.295	0.294	0.299

US INSPECTION SERVICES
NDE and Metallurgical Services

Unit 3 & 4 Dirty Oil Tank Inspection Report

Calculations

$$T_{min} = \frac{2.6 \times (H-1) \times D \times G}{S \times E}$$

H=	16
D=	20
G=	1
S=	23600
E=	0.7

	Height	Tmin
1ST COURSE	16	0.047
2ND COURSE	8	0.022

No shell sheet shall be less than 0.100" thick in accordance with API 653. These calculations are a representative number showing the life expectancy of the tank if kept in good condition without exterior corrosion taking place.

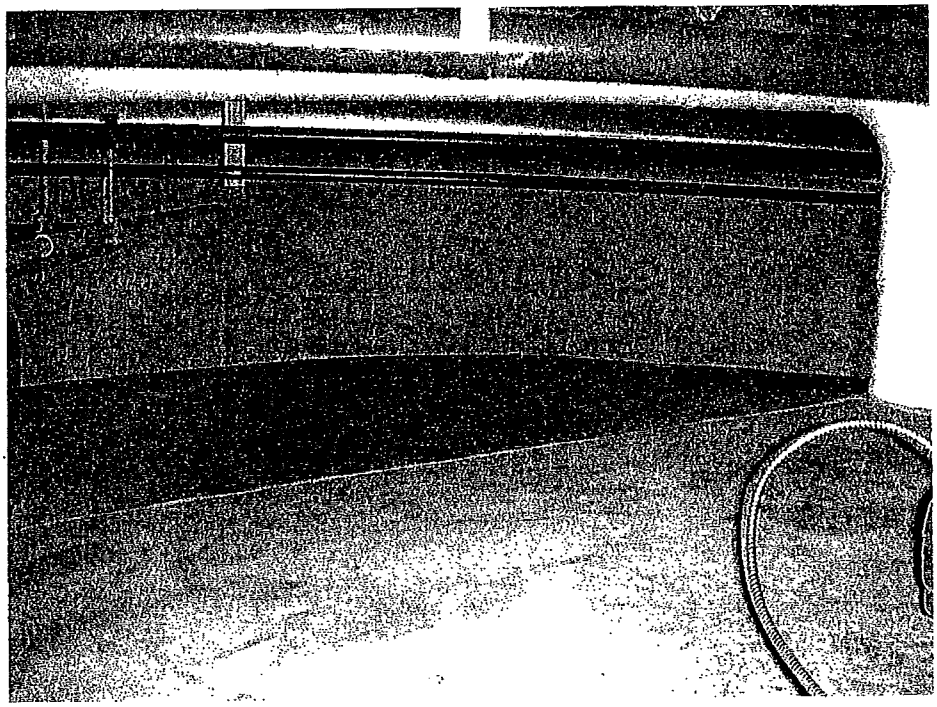
Torig =	0.190
Tact.=	0.185
Yrs. Service =	35
C/R=	0.0001

Torig =	0.18	
Tmin =	0.100	
C/R =	0.0001	
R/L=	850.0	Years

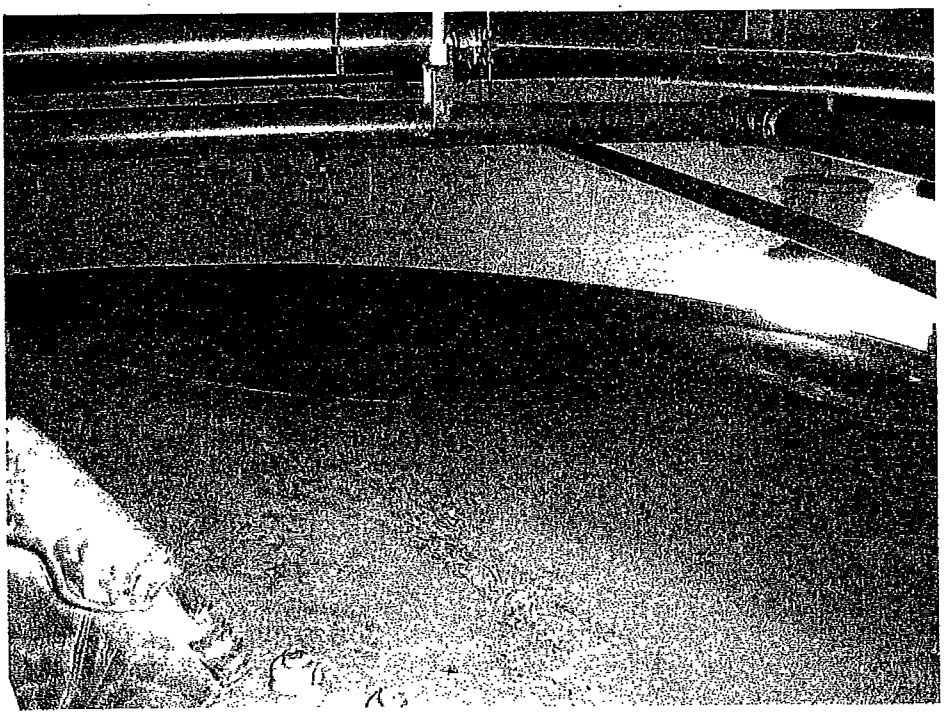
****This tank has a calculated remaining life of 850 years at the continued service. This remaining life is dependent on no changes take place including moisture and product that is stored in this tank.**

US INSPECTION SERVICES
NDE and Metallurgical Services

Unit 3 & 4 Dirty Oil Tank Inspection Report



Photos shown are of the roof that has collapsed in areas. Please see the recommendations above.

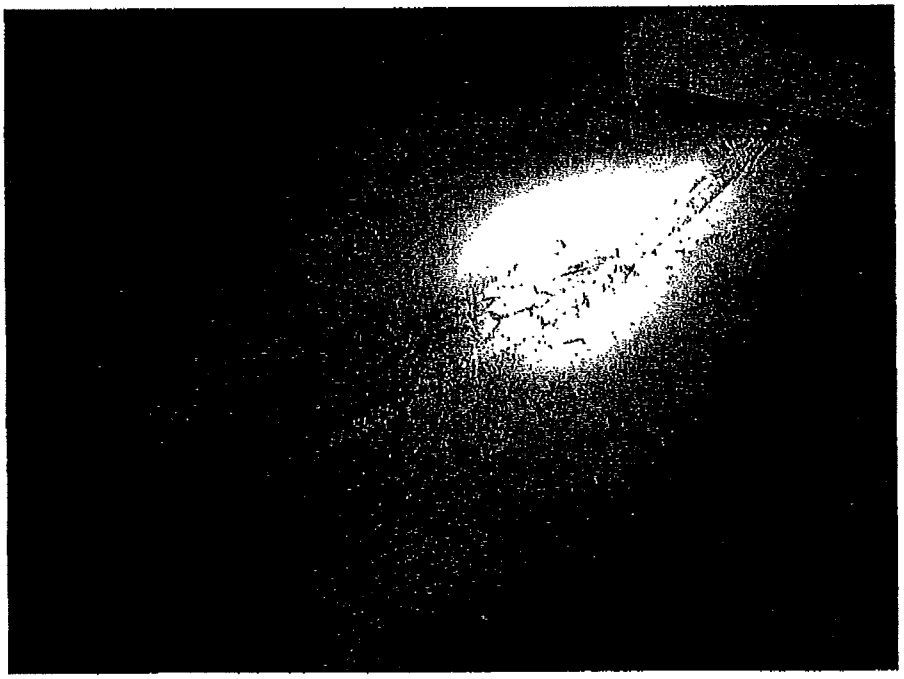


US INSPECTION SERVICES
NDE and Metallurgical Services

Unit 3 & 4 Dirty Oil Tank Inspection Report



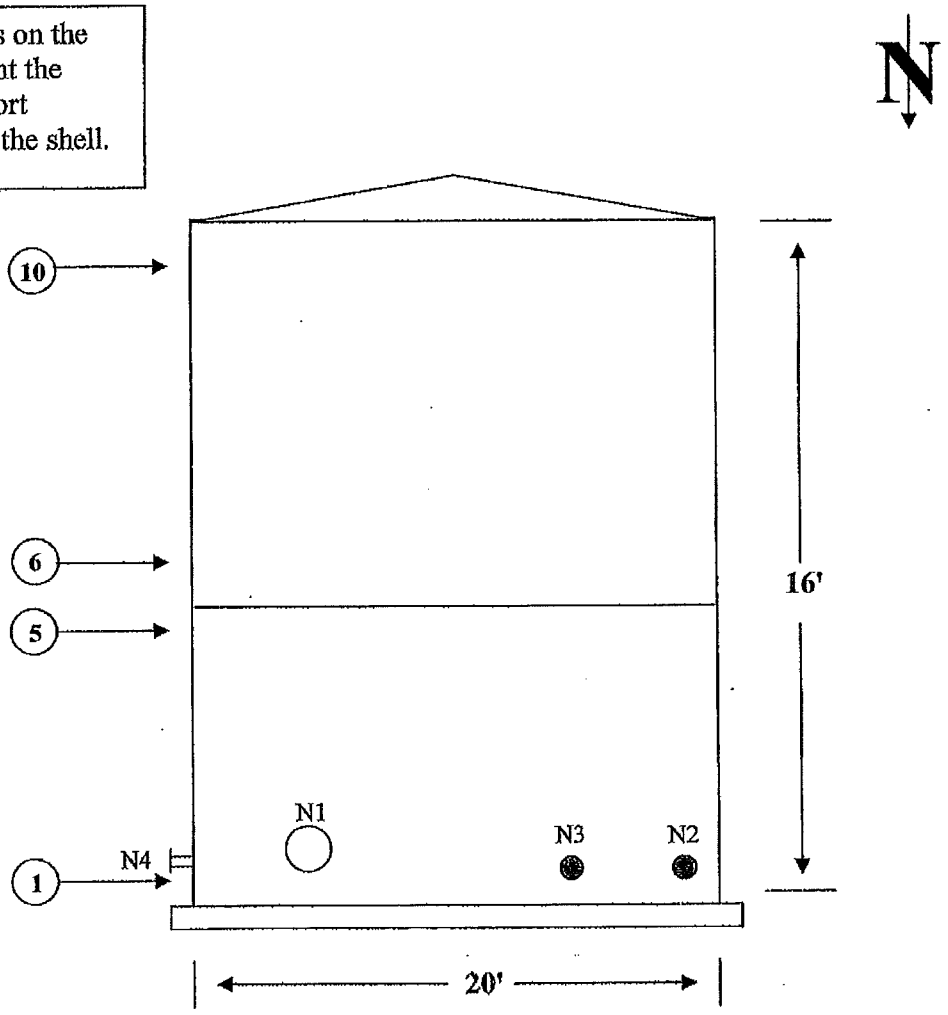
The photos shown are areas around the floor to bottom weld (chime ring). There is minor exterior corrosion taking place along this area showing moisture is present at times.



US INSPECTION SERVICES
NDE and Metallurgical Services

Unit 3 & 4 Dirty Oil Tank Inspection Report

The numbers on the tank represent the inspection port locations on the shell.



Location of Nozzles

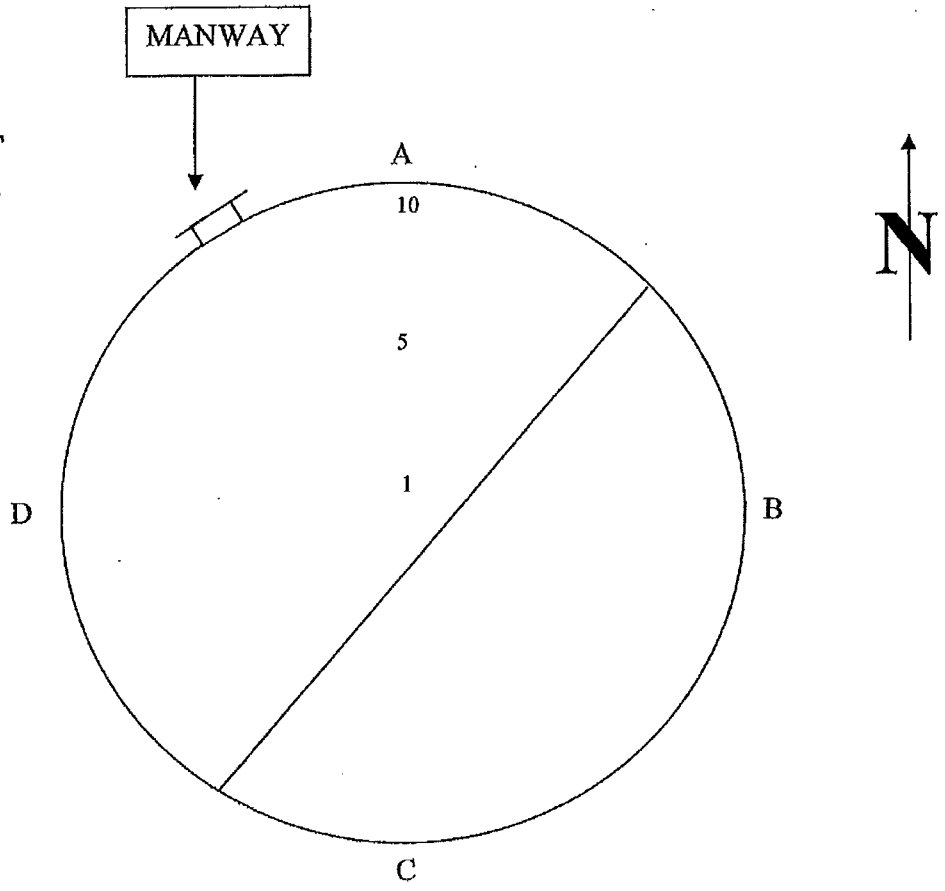
● = South side of tank

○ = North side of tank

US INSPECTION SERVICES
NDE and Metallurgical Services

Unit 3 & 4 Dirty Oil Tank Inspection Report

Floor UT locations



US INSPECTION SERVICES
NDE and Metallurgical Services

Recommendations on repairs for Dirty Oil Storage Tank

Unit 3 & 4 Tank

1. Install a nozzle on the roof for proper ventilation. This extra nozzle should be a minimum of 3" in diameter. The roof has caved in from poor ventilation. The roof nozzle to be installed does not need to be back welded from the inside. The other tank has the same problem and will need a nozzle installed also when the tank is emptied.

NOTE:

1. Use proper welding procedures and qualified welder.
2. Properly prep and repair each weld defect area.
3. Magnetic particle inspect each area noted above prior to putting tank back in service.

Appendix O

Other Information

OSWER 9360.8-38

MEMORANDUM

SUBJECT: Use of Alternative Secondary Containment Measures at Facilities Regulated under the Oil Pollution Prevention Regulation (40 CFR Part 112)

FROM: Marianne Lamont Horinko
Assistant Administrator

TO: Oil National Policy Managers, Regions 1-10

PURPOSE

This memorandum amends the guidance issued on April 29, 1992 (i.e., Use of Alternative Secondary Containment Measures at Facilities Regulated under the Oil Pollution Regulation (40 CFR Part 112), (OSWER 9360.8-37) concerning the potential use of certain double-wall aboveground storage tanks (ASTs) for secondary containment purposes. A copy is attached for your reference. This guidance also clarifies when shop-built double-walled ASTs satisfy the applicable secondary containment requirements in the Spill Prevention, Control, and Countermeasure (SPCC) rule, found at 40 CFR part 112. We take this step because larger shop-built ASTs that use the protective measures described in the 1992 guidance are generally protective of the environment under certain circumstances.

BACKGROUND

On April 29, 1992, EPA issued guidance on how certain shop-built double-wall ASTs may comply with the secondary containment requirements of §112.7(c). The guidance discussed compliance with §112.7(c) only, and did not discuss compliance with other applicable SPCC provisions. We said at the time that "there should be many situations in which protection of navigable waters substantially equivalent to that provided by the secondary containment systems listed in section 112.7(c) could be provided by alternative AST systems that have capacities generally less than 12,000 gallons and are installed and operated with protective measures other than secondary containment dikes."

DISCUSSION

SPCC secondary containment requirements. Section 112.7(c) requires that the owner or operator:

"Provide appropriate containment and/or diversionary structures or equipment to

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prevent a discharge as described in §112.1(b). The entire containment system, including walls and floor, must be capable of containing oil and must be constructed so that any discharge from a primary containment system, such as a tank or pipe, will not escape the containment system before cleanup occurs. At a minimum, you must use one of the following preventive systems or its equivalent:

(1) For onshore facilities:
(i) Dikes, berms or retaining walls sufficiently impervious to contain oil;
(ii) Curbing;
(iii) Culverting, gutters or other drainage systems;
(iv) Weirs, booms or other barriers;
(v) Spill diversion ponds;
(vi) Retention ponds; or
(vii) Sorbent materials.
(2) For offshore facilities:
(i) Curbing, drip pans; or
(ii) Sumps and collection systems."

After nearly a decade of evaluation of the construction, performance, and use of certain shop-built double-wall ASTs, we believe that they may serve as an "equivalent" preventive system for purposes of §112.7(c).

In 1992, we recognized that a shop-built double-wall AST with a capacity "generally less than 12,000 gallons" that was installed and operated with protective measures other than a secondary containment dike might meet the secondary containment requirements of §112.7(c). We described those protective measures as "when the inner tank is an Underwriters' Laboratory-listed steel tank, the outer wall is constructed in accordance with nationally accepted industry standards (e.g., those codified by the American Petroleum Institute, the Steel Tank Institute, and the American Concrete Institute), the tank has overfill prevention measures that include an overfill alarm and an automatic flow restrictor or flow-shutoff, and all product transfers are constantly monitored."

Today, after nearly a decade of experience in which we have seen the construction, performance, and use of shop-built double-wall ASTs, we note a low

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occurrence of discharges from such tanks, including tanks with a capacity of 12,000 gallons or more. In some cases, such tanks provide secondary containment where none existed before, or superior environmental protection to alternative containment systems previously used. We believe that a 12,000 gallon limitation on the use of certain shop-built double-wall ASTs is therefore no longer necessary, and believe that shop-built double-wall ASTs that use the protective measures described in 1992 generally satisfy the secondary containment requirements found in §112.7(c).

Bulk storage secondary containment requirements (§112.8(c)(2)); inspection requirements (§112.8(c)(6)). For the same reasons outlined above, we also believe that shop-fabricated double-wall AST, regardless of size, may generally satisfy not only the secondary containment requirements of §112.7(c), but also the bulk storage secondary containment requirements found at §112.8(c)(2). Section 112.8(c)(6) requires the owner or operator to conduct integrity testing on a regular schedule and whenever he makes repairs. The owner or operator must also frequently inspect the outside of the container for signs of deterioration, discharges, or accumulation of oil inside diked areas. To comply with the requirement to frequently inspect the outside of the tank, an owner or operator must inspect the inner wall and interstitial spaces of a shop-built double-wall AST. We recommend the use of automatic detection devices to detect discharges into the interstitial space. Owners or operators should conduct this integrity testing and inspection in accordance with industry standards, when practicable. One industry standard presently available is "SP001-00, Standard for Inspection of In-Service Shop-Fabricated Aboveground Tanks for Storage of Combustible and Flammable Liquids." Other applicable standards may be developed in the future.

Other applicable SPCC requirements. While shop-fabricated double-wall ASTs may satisfy the requirements of §112.7(c) and §112.8(c)(2), such tanks must also continue to satisfy all other applicable SPCC requirements. For example, the facility owner or operator must satisfy §112.7(h) requirements for tank car and tank truck loading/unloading racks if he transfers oil in bulk to those tanks from highway vehicles or railroad cars. If such transfers occur, where loading/unloading area drainage does not flow into a catchment basin or treatment facility designed to handle spills, a quick drainage system must be used. The containment system must be designed to hold at least the maximum capacity of any single compartment of a tank car of tank truck loaded or unloaded at the facility.

Additionally, any piping, equipment, or device not contained within a double-wall AST is subject to the requirements of §112.8(b)(3) and (4), if such piping, equipment, or device is in an undiked area.

CONCLUSION/IMPLEMENTATION Should you have any questions concerning this memorandum, please contact Hugo Fleischman, of my staff, at 703-603-8769.

OSWER 9360.8-38

Attachment

cc: Michael B. Cook
Elaine Davies
Andrew Gordon
David Drelich
Oil Removal Managers
OERR Records Manager, IMC 5202G
OERR Documents Coordinator, HOSC 5202G
Jeff Josephson, Superfund Lead Region Coordinator, USEPA Region 2
NARPM Co-Chairs
Doug Kodama, Oil Lead Region Coordinator, USEPA Region 2

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C.I.Agent® Barrier Boom





Back-to-grade application.



Installation of Barrier Boom



Completed installation - dike method



Site preparation and installation

BARRIER BOOM DESCRIPTION:

C.I.Agent® Barrier Boom is a proven Secondary Containment System designed to allow the unimpeded flow of water during normal rainfall or snow melt events, but becomes an impervious barrier in the event of an oil release. Barrier Boom is constructed from non-woven geotextile materials filled with C.I.Agent® Granules, a proprietary blend of several USDA food-grade polymers, and backed with Agent-X, a non-woven geotextile material with C.I.Agent® embedded within the fabric. C.I.Agent® Barrier Boom has become the accepted solution for SPCC Secondary Containment by professional engineers across the nation.

BARRIER BOOM APPLICATIONS:

C.I.Agent® Barrier Boom is the ideal solution for providing Secondary Containment as required by 40 CFR 112, SPCC. C.I.Agent® Barrier Boom has been installed and PE Certified more than 7,500 times over the past decade in substations for the electric utility industry. Other applications for Secondary Containment with C.I.Agent® Barrier Boom include pad-mounted transformers, oil-filled equipment storage areas, bulk fuel and oil storage areas — all without the use of concrete walls, sump pumps, and oil-water separator systems. C.I.Agent® Barrier Booms can be used with clay and vinyl liner systems.

BARRIER BOOM PERFORMANCE SPECIFICATIONS:

- Hydrocarbon flow rate: 0 GPM (100% containment)
- Solidifies approximately a half gallon of oil per square foot depending on oil viscosity
- Service life of installed product: Life of equipment
- UV resistance of 70%
- Oxidation resistance of 80%
- Contains 12 to 16 oz. of loose C.I.Agent polymers per square foot

BARRIER BOOM BENEFITS:

- Meets SPCC requirement 40 CFR 112
- Barrier Boom is designed to meet your site's needs
- Ease of installation: typically completed in one day
- No special tools required
- Your equipment remains fully energized
- Little or no maintenance required
- Eliminates the need for concrete walls, sump pump systems, and oil-water separators
- Reduces containment cost by 50% to 80% (on average)

11760 Commonwealth Dr. • Louisville, KY 40299 **office** 502.267.0101 **toll free** 866.242.4368 **fax** 502.267.0181 **web** www.ciagent.com

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"We were impressed with the product because it is a reliable, low-cost alternative to other products. C.I.Agent was estimated to provide a 50-75% cost savings over equivalent solid concrete containment. We have been very pleased with the product and the supplier."
Jude Beyerle, Group Leader, Substation Engineering, E. On U.S.





Dike installation for large equipment.



Pad mount for smaller containment.







Water gate install to process water.

The front of the C.I.Agent® Barrier Boom is a basic geotextile made from a patented blend of recycled synthetic materials that is both hydrophobic and oleophilic. The material wicks the oil throughout its fibers and has a tremendous load capability per square inch.

C.I.Agent® is a non-toxic, non-hazardous, and environmentally friendly blend of cross-linking polymers that encapsulates transformer oils into a cohesive rubber-like mass.



Agent-X makes up the back wall of the C.I.Agent® Barrier Boom. It is made of two layers of a geotextile with C.I.Agent® polymers laminated between the layers. The material itself has a tremendous filtering effect and keeps oil from passing through this unique final outside wall.

A unique quilting pattern (not shown) keeps the C.I.Agent® polymers from shifting during handling and installation.

BARRIER BOOM AVAILABILITY:

C.I.Agent® Barrier Boom is manufactured to the specific requirements of the containment site. In most cases the C.I.Agent® Barrier Boom can be delivered within two to four weeks from date of the order.

ENVIRONMENTAL INSURANCE POLICY

C.I.Agent Solutions carries a $2 Million Product Liability and $2 Million Environmental Insurance policy on C.I.Agent® Barrier Boom.

For additional information call C.I.Agent® Solutions.

11760 Commonwealth Dr. • Louisville, KY 40299 **office** 502.267.0101 **toll free** 866.242.4368 **fax** 502.267.0181 **web** www.ciagent.com

GH S 00752

(20ft)(476.5-473)(48-3-1-3-1)
(20)(3.5)(40)
2800 ft³ (7.48)
20,944 gal

(20ft)(3.5ft)(3 ft)
210 ft³ (7.48)
1,571 gal

22,515 gal

TOP PLAN

SECTION - 1

SECTION - 2
FOR LOCATION SEE DWG. M-670

SECTION - 3

SECTION - 7

SECTION - 8
SCALE 3/4"=1'-0"

SECTION - 12

SECTION 6

DETAIL - 4
N.T.S.

DETAIL - 9
SCALE 1 1/2"=1'-0"

DETAIL - 10
N.T.S.

DETAIL - 13
N.T.S.

DETAIL - 5
SCALE 3"=1'-0"

DETAIL 18 (C-6-5949)
SCALE 1"=1'-0"

REINFORCING LAP LENGTH AND ANCHORAGE SCHEDULE
GRADE 60 STEEL

BAR SIZE	3500 P.S.I. CONCRETE			
	LAP SPLICE LENGTH		ANCHOR LENGTH	
	TOP BARS	OTHER BARS	TOP BARS	OTHER BARS
#4	1'-11"	1'-5"	1'-5"	1'-0"
#5	2'-5"	1'-9"	1'-5"	1'-0"
#6	2'-10"	2'-1"	1'-9"	1'-2"
#7	3'-11"	2'-10"	2'-4"	1'-8"
#8	5'-2"	3'-8"	3'-0"	2'-2"

NOTES

1. ALL WORK SHOWN ON THIS DRAWING SHALL BE FURNISHED AND INSTALLED IN ACCORDANCE WITH JOB SPEC. G-3045 BY GENERAL CONTRACTOR UNLESS OTHERWISE NOTED
2. ALL EXPOSED CONCRETE TO HAVE ¾" CHAMFER.
3. ALL MISCELLANEOUS STEEL SHALL BE GALVANIZED.
4. ALL WORK ON THIS DRAWING DESIGNATED TILT-UP SHALL BE IN ACCORDANCE WITH SPEC. G-3949
5. FOR SPEC. G-3949 GENERAL NOTES SEE DWG. G-3948
6. FOR SPEC. G-3949 GENERAL NOTES SEE DWG. G-3948
7. TEMPORARY SHORING SHALL BE PROVIDED FOR CONCRETE WALL AT LOCATION OF REVISED SLAB OPENING. SHORING SHALL BE IN PLACE PRIOR TO REMOVAL OF CONCRETE AND STEEP TO ADEQUATELY RESIST LATERAL EARTH PRESSURES AND LIVELOADS OF 250 PSF.
8. SAW CUTS SHALL BE MADE AT EDGES OF REVISED SLAB OPENING.
9. REMOVE TOP OF EXISTING SLAB BEYOND SAW CUT LEAVING REINFORCING STEEL IN PLACE. CONSULTING ENGINEERS SHALL BE NOTIFIED IF ANY REINFORCING STEEL IS CUT OR DAMAGED.
10. AT SLAB REINFORCING STEEL SHALL BE SET TO MAINTAIN 2" MIN COVER @ EDGE OF NEW CONCRETE WORK.
11. PIPE SPACING SHOWN IS NOT FINAL. SEE NOTE 11 ON G-752.
12. FOR FINAL GRADE ELEVATIONS SEE DWGS G-3946 & G-3947.
13. ■ INDICATES WORK TO BE DONE BY SHEFFIELD STEEL.

REFERENCE DRAWING

M-670	DEVELOPMENT PLAN - WASTE TREATMENT MODIFICATIONS
C-70 THRU C-79	SITE COMPLETION WORK, STORM SEWER, OILY, SANITARY & POTABLE WATER PIPELINES - PLAN SHEETS 1 THRU 6

ANY MODIFICATION OR ADDITION TO THIS DRAWING BY AN ORGANIZATION OTHER THAN SARGENT & LUNDY IS NOT THE RESPONSIBILITY OF SARGENT & LUNDY.

DRAWING RELEASE RECORD

REV.	DATE RELD.	PREPARED	REVIEWED	APPROVED	PURPOSE	FILM
J	10-10-86	[illegible]	[illegible]	[illegible]	FOR CONSTRUCTION, SPEC G-3949	X
K	11-10-88	R. Angier	T. Hesselle	—	UPDATED DESIGN DRAWING, JOB NO. 5097-33	X
L	7-11-88	L	—	—	SENT TO CLIENT (BY E-Mail)	

DRAWING RELEASE RECORD

REV.	DATE RELD.	PREPARED	REVIEWED	APPROVED	PURPOSE	FILM
A	12-1-76	H. JOTA			GENERAL WORK BIDS SPEC. G-3045	X
B	12-28-76	M. PETERSEN			ADDENDUM #1 SPEC. G-3045 (UNDRAWN)	X
C	2-28-77	M. PETERSEN	C.Engewald	Quinton Lemke	FOR CONSTRUCTION SPEC. G-3045	X
D	3-17-77	C.E.	C.E.	W.E. Robbins	VERT. WALL CONSTR. JTS SELEC. EQUIPMENT SLAB ADDED	X
E	6-23-77	M. PETERSEN	C.E.	W.E. Robbins	SWITCHED DOTT. SLAB REINF. ON SECT. 1, REV. SECT. 5 & RELEASED HOLD	X
F	8-8-77	M. PETERSEN	C.E.	W.E. Robbins	ADDED OPNGS. IN SLAB	X
G	6-6-79	M. PETERSEN	C.E.	W.E. Robbins	CHANGED ELEVATION OF OPNG.	X
H	01-21-86	R. Angier	T. Hesselle	[illegible]	BIDS - SPEC. G-3549	X

DRAWING RELEASE RECORD

REV.	DATE	PREPARED	APPROVED	PURPOSE
—	12/01/76			Original Drawing Release
M	06/29/05	ALG		DMS SETUP

DRAWING RELEASE RECORD

REV.	DATE	PREPARED	APPROVED	PURPOSE

STATE OF KENTUCKY — J. M. McLAUGHLIN — 9039 — REGISTERED PROFESSIONAL ENGINEER

SCALE 1/4"=1'-0"
PROJECT NUMBER 4971, 5097-33, 5097-33

WATER POLLUTION CONTROL FACILITIES
OIL SEPARATOR AND SUMP
GHENT GENERATING STA. UNIT 1 & 2
KENTUCKY UTILITIES CO.
GHENT, KENTUCKY

SARGENT & LUNDY ENGINEERS CHICAGO
DRAWING NO. S-752 REV. L
SHEET OF

SCALE 1/4"=1'
PROJECT NUMBER 5097 33

Title
WATER POLLUTION CONTROL FACILITIES OIL SEPARATOR & SUMP

Location and Unit
Ghent Unit 1

Kentucky Utilities Company
an E.ON company

Drawing No. GH S 00752 Rev. M

Maintenance Work Order

Facility ***GHAP-***

W.O. # 6746997
Number
PROJECT # GHFUELHDL
RES. CENTER # 016520
JOB PLAN #
P.M. #
TAG #
OUTAGE ID

CONTROL ROOM ALARM:

STATUS: CLOSE **TAG LOCATION:**

PRIORITY: 0 **WORK TYPE:** CORRECTIVE **REPORT DATE:** 1/4/2016

REPORTED BY: E012982 Wilson Jr., Robert **PHONE:**

LOCATION: GHAP-FULFOBALLTNKATATA500 **NAME:** FUEL OIL STORAGE TANK 500,000 GAL

EQUIPMENT: 100008713 **NAME:** FUEL OIL STORAGE TANK 500,000 GAL

DESCRIPTION: INSTALL AN OVERFLOW LINE IN THE 525K GAL FUEL OIL STORAGE TANK AT 450K GAL LEVEL JOB REQUESTED BY T. BICKERS PER SPCC

WHERE:

FAILURE CLASS: TANK **PROBLEM CODE:** OTHER

CREW: GHBM **MSL:** E012982 Boilermakers

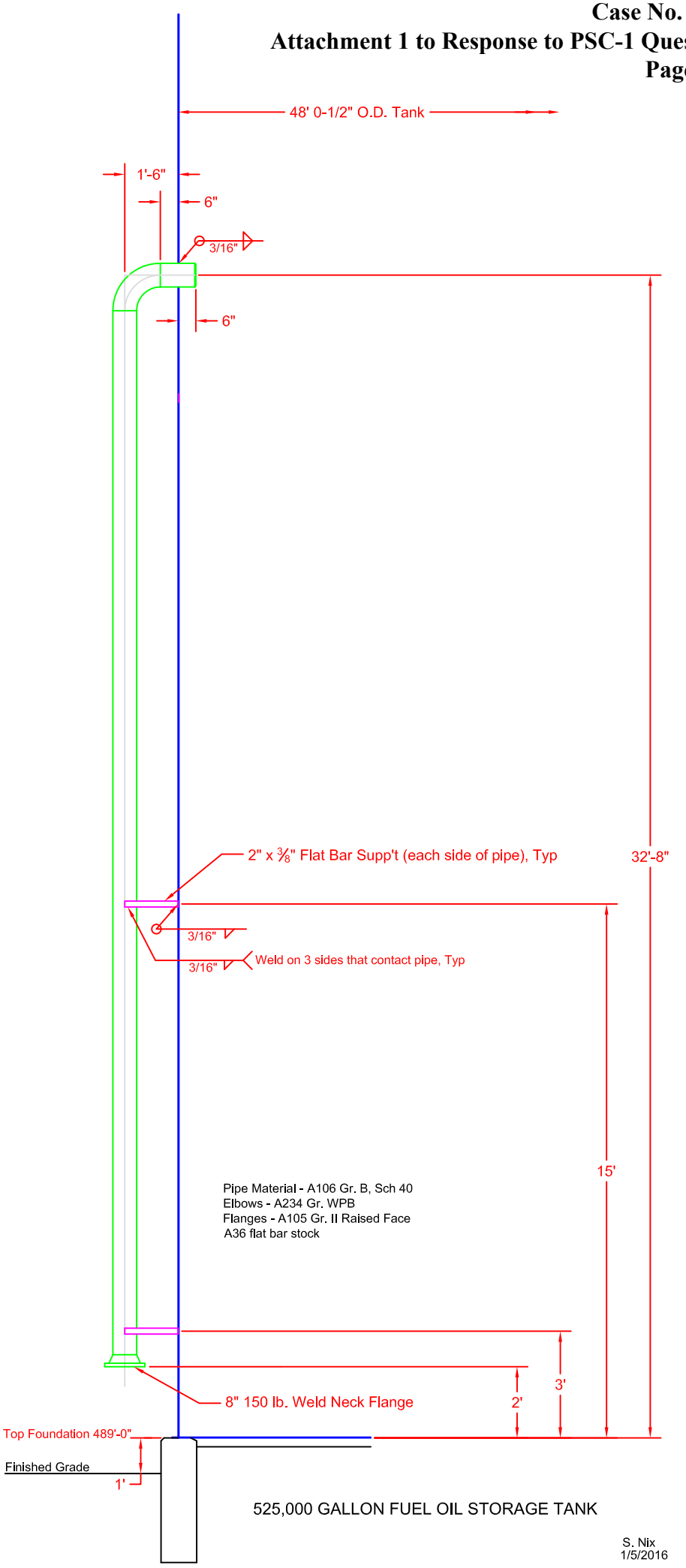
SCHEDULE DATE: 1/7/2016 **LABOR TYPE:** MECH **RESOURCE:** **CREW SIZE:** 4

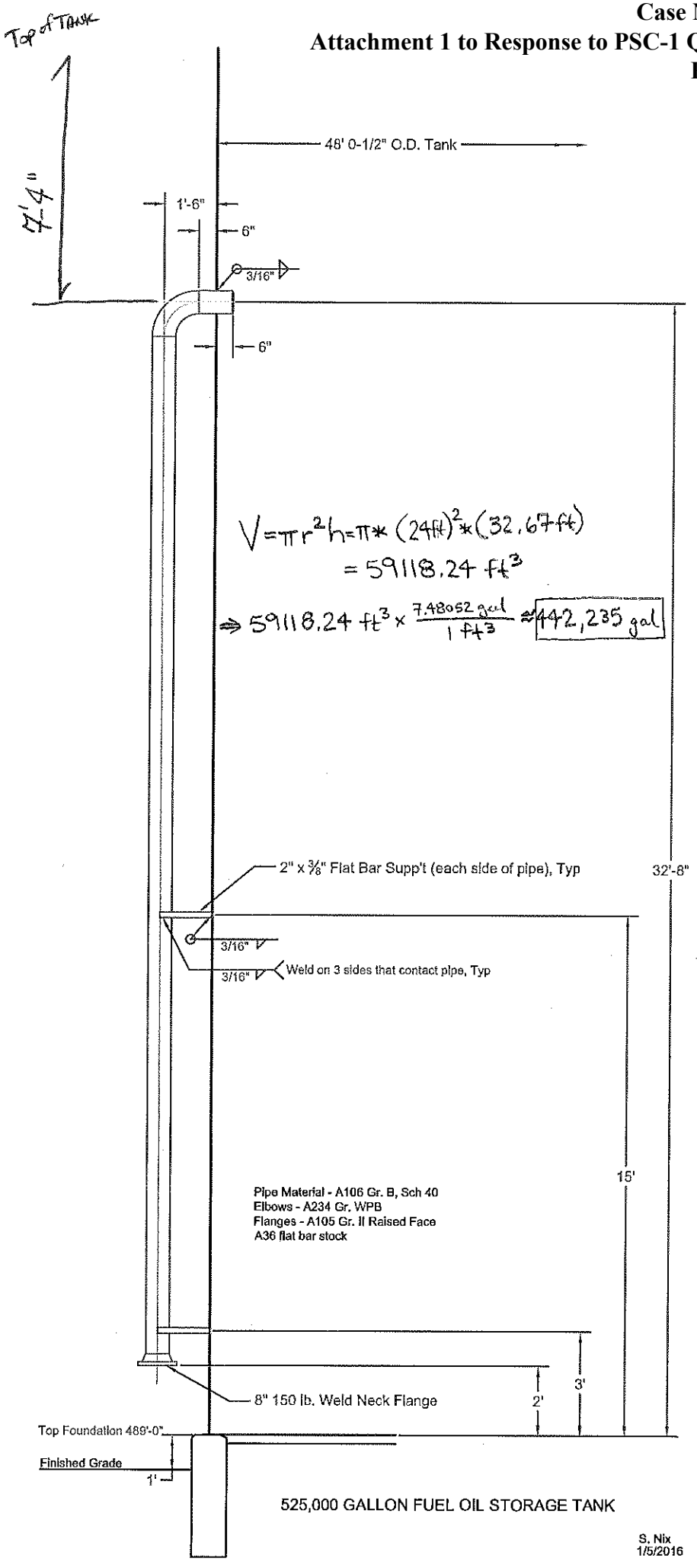
ACTUAL HRS: 110.50 **EST. PERSON HRS:** 30.00

REMARKS: 1/19/2016
1/7/16 - MATERIAL MOVED TO LS PREP. WELDING MACHINE STAGED. MCS
1/8/16 - FINISHED SET UP. STARTED WELDING AND PREFABBING PIPE. MCS 1/11/16 - FINISHED WELDING OU PIPE. MCS 1/13/16 - LAID OUT FOR HOLE AND SUPPORTS TO BE LEAD ABATED. MCS 1/14/16 - LEAD ABATEM COMPLETE. CUT HOLE AND PREPPED. MCS 1/15/16 - LINE INSTALLED, HANGERS COMPLETE. MCS 1/15/16 - OPERATED PICKER FOR MCS. JM - OMM

WORK LOG:
11/27/2017 1/7/16 - MATERIAL MOVED TO LS PREP. WELDING MACHINE STAGED. MCS

TYPE	FAILURECODE
PROBLEM	OTHER
CAUSE	OTHER
REMEDY	OTHER


48' 0-1/2" O.D. Tank
1'-6"
6"
3/16"
6"
2" x ⅜" Flat Bar Supp't (each side of pipe), Typ
32'-8"
3/16"
3/16"
Weld on 3 sides that contact pipe, Typ
15'
Pipe Material - A106 Gr. B, Sch 40
Elbows - A234 Gr. WPB
Flanges - A105 Gr. II Raised Face
A36 flat bar stock
3'
2'
8" 150 lb. Weld Neck Flange
Top Foundation 489'-0"
Finished Grade
1'
525,000 GALLON FUEL OIL STORAGE TANK
S. Nix
1/5/2016



525,000 GALLON FUEL OIL STORAGE TANK

S. Nix
1/5/2016

Ghent Generating Station
Facility Drainage Areas and Discharge/Outfalls Details

Sub-Drainage Area ID	Drainage Area Description	Sub Area Drainage Controls (Primary)	Sub Area Drainage Controls (Secondary)	Downstream Drainage Area ID	Sub-Drainage Area Comments
GH-01.a	Outfall 001 Process Pond - North Impoundment, Slopes & Roadways	Basin (Retention-normally wet) w/skimmer	Diffuser	SW-OR	North Process Pond
GH-01.b	Future-Outfall 001 Process Pond - South Impoundment, Slopes & Roadways	Basin (Retention-normally wet) w/skimmer	NA	GH-01.a	Not yet constructed yet. Holds gypsum in 2020
GH-01.c	Outfall 001 Process Ponds - South Uphill Slopes (Vegetated)	Vegetated Buffer	NA	GH-01.b	
GH-01.d	Outfall 001 Process Channel (to Process Ponds) - Water Flow, Inward Slopes and Roadways	Ditch (normally wet)	Sediment Trap	GH-01.a	In future 1.d will be routed to 1.b South process pond
GH-01.e	Outfall 001 Closed/Capped ATB-1 South Area (65+% Total of Original ATB-1)	Vegetated Buffer	Ditch (normally wet) w/check dam	GH-01.d	Bypasses sediment trap, Construction 2020
GH-01.f	Outfall 001 Process Channel - South Uphill Slopes (Vegetated)	Vegetated Buffer	Silt Fence	GH-01.d	Bypasses sediment trap
GH-01.g	Outfall 001 Coal Pile West Basin	Basin (Retention-normally wet)	NA	GH-01.d	Submerged effluent pump to Process Sediment Trap and Ditch
GH-01.h	Outfall 001 Coal Pile Areas Draining to West Basin	Ditch (normally dry)	NA	GH-01.g	Pumped to KO/Process Channel. 1.h.2 area converted to coal pile
GH-01.i	Outfall 001 Coal Pile Handling Areas & Process WW/Tank Farm Area Runoff	NA	NA	GH-01.g	Mixture of surface ditches and underdrains to Basin 1.g
GH-01.j	Outfall 001 PWS Area Runoff East Basin (previous east coalyard)	Basin (Retention-normally wet)	NA	GH-01.d	Pumped to KO/Process Channel.
GH-01.k	Outfall 001 PWS - Process Water Treatment System Area Runoff	NA	NA	GH-01.j	Flows to East Basin (1.j)
GH-01.l	Outfall 001 CCRT Area Runoff Pond	Basin (Retention-normally wet)	NA	GH-01.d	Pumped to KO/Process Channel.
GH-01.m	Outfall 001 CCRT - Coal Combustion Residuals Transport Area	NA	NA	GH-01.l	Flows to 1.l basin
GH-01.n	Outfall 001 Oil-Water Separator Units 1-4 Plant Runoff Areas	Oil Water Separator	NA	GH-01.d	Combines with U1 Cooling Tower blowdown, sed trap and ditch
GH-01.o	Outfall 001 Units 1-4 Cooling Towers Roof Drains (to Basin and to Blowdown/Outfall 001)	NA	NA	NA	Combines with recirculating process cooling waters
GH-01.p	Outfall 001 Active Landfill - Leachate Pond (Pumped to Process Channel)	Basin (Retention-normally wet)	NA	GH-01.d	Lined basin w/submerged effluent pump to KO/Process Channel
GH-01.q	Outfall 001 Active Landfill Area with Underdrain System to Landfill Leachate Pond	NA	NA	GH-01.p	Flows to lined leachate Pond 1.p
GH-01.r	Outfall 001 Landfill Main Haul Road Runoff Pond (Pumped to Process Pond)	Basin (Retention-normally wet)	Riprap or erosion protection	GH-01.d	Submerged effluent pump/Changed route during construction to 1.d KO/Process Channel
GH-01.s	Outfall 001 Landfill Main Haul Road (Bermed to Runoff Pond)	Ditch (normally dry) w/check dam	Silt Fence	GH-01.r	Flows to basin 1.r
GH-01.t	Outfall 001 DTLS (Dual Truck Loading Station) Runoff Pond (to Process Channel)	Basin (Retention-normally wet)	NA	GH-01.d	Flows to 1.d KO/Process Channel
GH-01.u	Outfall 001 DTLS Diked Area Runoff to Pond	NA	NA	GH-01.t	Bermed with collection system to 1.t
GH-02.a	Outfall 002 Uncontaminated Runoff Areas to 002	Stormwater collection system w/catchment basins	NA	SW-OR	Non-contact cooling water and uncontaminated stormwater runoff.
GH-03.a	Outfall 003 Uncontaminated Runoff Areas to 003	Stormwater collection system w/catchment basins	NA	SW-OR	Non-contact cooling water and uncontaminated stormwater runoff
GH-04	Outfall 004 – Removed, Previously Sewage Treatment Plant Discharge (plant sanitary piping now connected to local/public system)	NA	NA	NA	Removed
GH-05	Outfall 005 – Boiler Chemical Cleaning Wastewaters (area not designated) discharge to Process Pond or Outfall 001.	NA	NA	GH-01.d	Internal Outfall
GH-06	Outfalls 006-1, 006-2, 006-3, 006-4 – Units 1-4 Cooling Tower Blowdowns to Internal Outfalls to Process pond and Outfall 001 (so runoff area 6 not designated)	NA	NA	GH-01.d	Internal Outfall
GH-07	Outfall 007 – Plant Ohio River Water Intake (area not designated)	NA	NA	NA	Ohio River Water Intake
GH-08	Outfall 008 – PWTS- Process Water Treatment System Discharge of Treated FGD Wastewaters (area not designated)	NA	NA	GH-01.a	This is PWT effluent. In future Outfall 008 will pump to process channel upstream of South process pond (bypasses sed trap)
GH-09.a	Outfall 009 Secondary Pond - Water, Slopes, & Roadways	Basin (Retention-normally wet) w/skimmer	NA	SW-OR	Will get cleaned out, lined and new outfall structure in 2020/21
GH-09.b	Outfall 009 Capped ATB-1 (North 1/3) Runoff and Ditches to Secondary Pond	Ditch (normally dry)	Vegetated Buffer	GH-09.a	Percolation trench
GH-10.a	Future Outfall 010 Runoff Pond - Impoundment, Inner Slopes-to-Roadway	Basin (Retention-normally wet)	NA	SW-BRC	Stormwater runoff from the NW portion of ATB-2 capped area and from portions of west haul road
GH-10.b	Future Outfall 010 West Haul Road to ATB-2 Crest - Sloped Drainage to Runoff Pond	Ditch (normally dry)	NA	GH-10.a	
GH-10.c	Future Outfall 010 West Haul Road, Valley from Pond-to-Dam-to East Haul Road Area	Vegetated Buffer	NA	GH-10.a	
GH-10.d	Future Outfall 010 ATB-2 Dam Face	Riprap or erosion protection	NA	GH-10.a	
GH-10.e	Future Outfall 010 ATB-2/North - Cap, Perimeter Access Road, & Lined Inner Drain Ditches	Vegetated Buffer	Riprap or erosion protection	GH-10.a	
GH-11.a	Future Outfall 011 Runoff Pond - Impoundment and Inner Slopes	Basin (Retention-normally wet)	Riprap or erosion protection	SW-AC	Stormwater runoff from the SE portion of ATB-2 capped area to UT of Agniels Creek
GH-11.b	Future Outfall 011 Landfill - Perimeter Access Road & Inner Drain Ditches to Pond	Vegetated Buffer	Riprap or erosion protection	GH-11.a	
GH-12.a	Outfall 012 Stormwater Runoff Pond - Impoundment and Inner Slopes	Basin (Retention-normally wet)	Riprap or erosion protection	SW-BRC	Landfill stormwater runoff to Stephens Branch
GH-12.b	Outfall 012 Main Drainage Channel and Access Road to Runoff Pond	Ditch (normally dry) w/check dam	Riprap or erosion protection	GH-12.a	
GH-12.c	Outfall 012 Perimeter Access Road & Capped Inner Drain Ditches	Ditch (normally dry) w/check dam	Riprap or erosion protection	GH-12.a	

Ghent Generating Station
Facility Drainage Areas and Discharge/Outfalls Details

Sub-Drainage Area ID	Drainage Area Description	Sub Area Drainage Controls (Primary)	Sub Area Drainage Controls (Secondary)	Downstream Drainage Area ID	Sub-Drainage Area Comments
GH-13.a	Outfall 013 Temporary Stormwater Runoff Pond - Basin Surface and Inner Slopes	Basin (Retention-normally wet)	Riprap or erosion protection	SW-AC	Temporary stormwater pond for future/undeveloped landfill areas
GH-13.b	Outfall 013 Inner Slopes to Pond	Riprap or erosion protection	NA	GH-13.a	
GH-13.c	Outfall 013 Undeveloped Landfill Areas Uphill of Pond - Above Main Access Road & Extending to DTLS	Vegetated Buffer	Riprap or erosion protection	GH-13.a	
GH-14.a	Limestone Pile Areas pumped to LS Tanks	NA	NA	NA	Runoff collected and pumped to Limestone slurry tanks
GH-15.a	West Plantsite Areas to Black Rock Creek	Stormwater collection system w/catchment basins	Ditch (normally dry)	SW-BRC	
GH-15.b	System Lab Areas to Black Rock Creek	Ditch (normally dry)	NA	SW-BRC	
GH-16.a	Vegetation-River Bank Above Normal Water Mark	Vegetated Buffer	NA	SW-OR	
GH-16.b	River (water surface) - Low Shoreline Areas Below Normal Water Mark	NA	NA	SW-OR	
GH-16.c	Intake Pier (Units 1-2) Road Stucture and Conveyors	Berm - Other	NA	SW-OR	
GH-17.a	Plant Fence Areas to US-42 Drainage Ditch to Black Rock Creek	Vegetated Buffer	Ditch (normally dry)	SW-BRC	
GH-17.b	Plant Fence Plant Areas to US-42 Drainage Ditch to Agniels Creek	Ditch (normally dry)	NA	SW-AC	
GH-18.a	West US-42 Roadside Areas to Drainage Ditch to Black Rock Creek	Vegetated Buffer	Ditch (normally dry)	SW-BRC	Flows south
GH-18.b	Railway-to ATB-1 Berm Areas	Berm - Other	Ditch (normally dry)	SW-OR	Most flow enters mix box and Outfall 001 discharge pipe. North areas (last few hundred yards along US-42) may flow to Agniels Creek
GH-18.c	East US-42 Roadside-to-Railway (South of US-42) Areas	Vegetated Buffer	Ditch (normally dry)	SW-AC	
GH-19.a	CCRT Dewatering Facilities/Buildings Roofs (Drainage to Black Rock Creek)	Stormwater collection system w/catchment basins	NA	SW-BRC	Drain to creek
GH-19.b	Ammonia Tanks Facilities - Building & Pavement	Ditch (normally dry)	NA	SW-BRC	Maintenance includes accumulated material removal
GH-19.c	CCRT Perimeter Vegetated Areas- North/East (including Unnamed Trib. to Block Rock Creek)	Vegetated Buffer	NA	SW-BRC	
GH-20.a	Substation (Fenced) Drainage - Northward Towards U.S. 42	Valve - Other	Berm - Absorbent Media	SW-BRC	
GH-21.a	Security Entrance Gate Area Drainage to US-42 Roadside Ditch	Ditch (normally dry)	NA	SW-BRC	
GH-21.b	Substation Southward Perimeter Area & Access Roads Areas - Drainage to Unnamed Trib to Black Rock Creek	Ditch (normally dry)	NA	SW-BRC	
GH-21.c	South Access Road Areas (to ATB-2) - Drainage to Unnamed Tributary to Black Rock Creek	Vegetated Buffer	NA	SW-BRC	External western grassy slopes of ATB-1
Gh-22.a	East Haul Road - East Pond 1 and Bermed Road Area - Drainage to US-42 Agniels Creek	Basin (Detention-normally dry)	NA	SW-AC	
GH-22.b	East Haul Road - Middle Pond 2 and Bermed Road Area - Drainage to US-42 Agniels Creek	Basin (Detention-normally dry)	NA	SW-AC	
GH-22.c	East Haul Road - South Pond 3 and Bermed Road Area - Drainage to US-42 Agniels Creek	Basin (Detention-normally dry)	NA	SW-AC	
GH-22.d	Hills/Woods Areas East of East Haul Road extending to ATB-2 & North/East of Landfill Areas	Berm - Other	Ditch (normally dry) w/check dam	SW-AC	
GH-23	Pipe Conveyor & Woods/Fields Areas West of CCRT & West Haul Road to ATB-2 Areas - Drainage to Black Rock Creek	Vegetated Buffer	NA	SW-BRC	
GH-24	Pipe Conveyor & Woods/Fields Areas West of Landfill & West Haul Road - Drainage to Black Rock Creek	Vegetated Buffer	NA	SW-BRC	
GH-25.a	Hilly Woods-Fields Areas Northeast of Landfill to ATB-2 (South Perimeter)	Vegetated Buffer	NA	SW-AC	
GH-26	Hilly Woods-Fields Areas Surrounding Landfill East/South/West Perimeters - Drainage to Stephens Branch	Vegetated Buffer	NA	SW-SB	
GH-27.a	Phase III Future Landfill Hills/Fields Downhill of Main Haul Road (not draining into pond) Runoff Area	Vegetated Buffer	NA	SW-AC	Future Pond
GH-27.b	Phase III Future Landfill Area for Future Leachate & Stormwater Ponds Area	Vegetated Buffer	NA	GH-27.a	
NA	Not Applicable. No surface water discharge	NA	NA	NA	May drain into on-site processes
SW-AC	Surface Water-Agniels Creek	NA	NA	SW-OR	
SW-BRC	Surface Water-Unnamed Tributary to Black Rock Creek	NA	NA	SW-OR	
SW-OR	Surface Water-Ohio River	NA	NA	SW-OR	
SW-SB	Surface Water-Stephens Branch	NA	NA	SW-OR	

Revisions

OUTFALL 001
OUTFALL 008
NORTH PROCESS POND
OUTFALL 001
SOUTH PROCESS POND
PWS TREATMENT AREA
OUTFALL 009
SECONDARY POND
COAL PILE
EAST HAUL ROAD
AGNIELS CREEK
STEPHENS BRANCH
MONTGOMERY ROAD
OUTFALL 007
OHIO RIVER
CLOSED/CAPPED ATB-1
OUTFALL 011
OUTFALL 013
LEACHATE POND
STORM POND
OUTFALL 012
ACTIVE LANDFILL
OUTFALL 002
PROCESS CHANNEL KNOCK-OUT CHAMBERS
CLOSED/CAPPED ATB-1
OUTFALL 007
OUTFALL 003
TRANSMISSION SUBSTATION
WEST HAUL ROAD SEDIMENT POND
CCR-DTLS TRUCK LOADING
OUTFALL 010
CCR TRANSPORT
LIMESTONE PILE
LEWIS ROAD
UNNAMED BRANCH TO BLACK ROCK CREEK
SYSTEM LAB
BLACK ROCK CREEK
BLACK ROCK ROAD
739861977

LEGEND

- T-# TANK (OIL) & ADJ. TRANSFER AREA (EXCEPT OTHERWISE INDICATED)
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- R-# RESERVOIRS (OIL)
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- STORM SEWER
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- CATCH BASIN
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- PLANT PROPERTY BOUNDARY

SYMBOL I.D. NUMBERS PROVIDED FROM SPCC/PLANT MATERIAL INVENTORY WHICH INCLUDES CONTENTS & CAPACITIES.

DOTTED OR DASHED = UNDERGROUND DOUBLE LINES = GENERAL FLOW DIRECTION
TANKS/EQUIPMENT SPILL DIRECTIONS INTO DRAINS WHERE SYMBOL OVERLAPS LINES (e.g.,SEWERS etc.)

DIGITAL IMAGERY PROVIDED BY: AGE Engineering Services Inc., Dated August 2019

0 300' 600' 1200'
SCALE: 1"=600'

N

Location and Unit: GHENT COMMON
Scale: 1"=600'
Contract No.: n/a
Engineering discipline: Environmental
Drawing type: MISC.

LG&E/KU — Louisville Gas & Electric Company / Kentucky Utilities Company

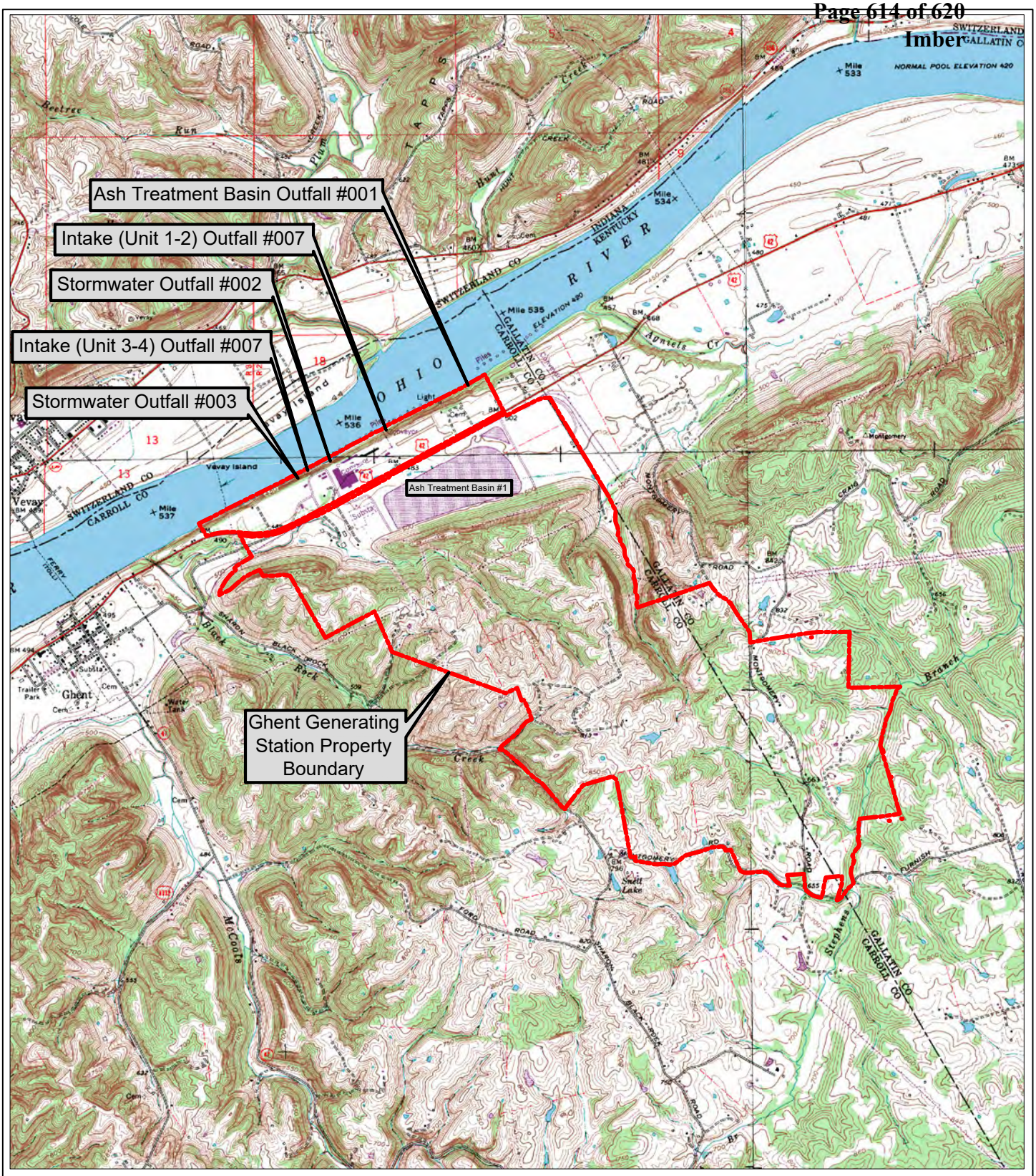
Title
SPCC/BMP – GHENT STATION
TANK AND MATERIAL INVENTORY LOCATIONS
TOTAL SITE OVERVIEW

Originator: ENVIRONMENTAL AFFAIRS
Job or Project No.:
Drawing No.: GH0-C-
Rev.:

Drawn: MBJ, JJJ
Checked:
7/29/2020
Approved: Roger Madison
Released for: Review
Alternate Drawing No:

DMS Version 2.0

Figures



GHENT GENERATING STATION

KENTUCKY UTILITIES COMPANY
GHENT, CARROLL COUNTY, KENTUCKY
SANDERS, KY-VEVAY SOUTH-VEVAY NORTH, IND-KY, IND-KY-FLORENCE, IND-KY, USGS QUADRANGLE MAPS
Scale: 1"=3500'

Revisions

OUTFALL 001
OUTFALL 008
NORTH PROCESS POND
OUTFALL 001
SOUTH PROCESS POND
OUTFALL 009
SECONDARY POND
COAL PILE
EAST HAUL ROAD
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STORM POND
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CCP SILOS TRUCK LOADING
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BLACK ROCK ROAD
UNNAMED BRANCH TO BLACK ROCK CREEK
BLACK ROCK CREEK
739861977

LEGEND

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Location and Unit: GHENT COMMON
Scale: 1"=600'
Contract No.: N/A
Engineering discipline: Environmental
Drawing type: MISC.

LG&E/KU

Drawn: XXX XXX
Checked: 7/29/2020
Approved: Megan Medina
Released for: Review
Alternate Drawing No.

Title:
SPCC/BMP – GHENT STATION
TANK AND MATERIAL INVENTORY LOCATIONS
TOTAL SITE OVERVIEW

Originator: ENVIRONMENTAL AFFAIRS
Job or Project No.:
Drawing No.: GHO-C-
Rev.

DWG Version 2.0

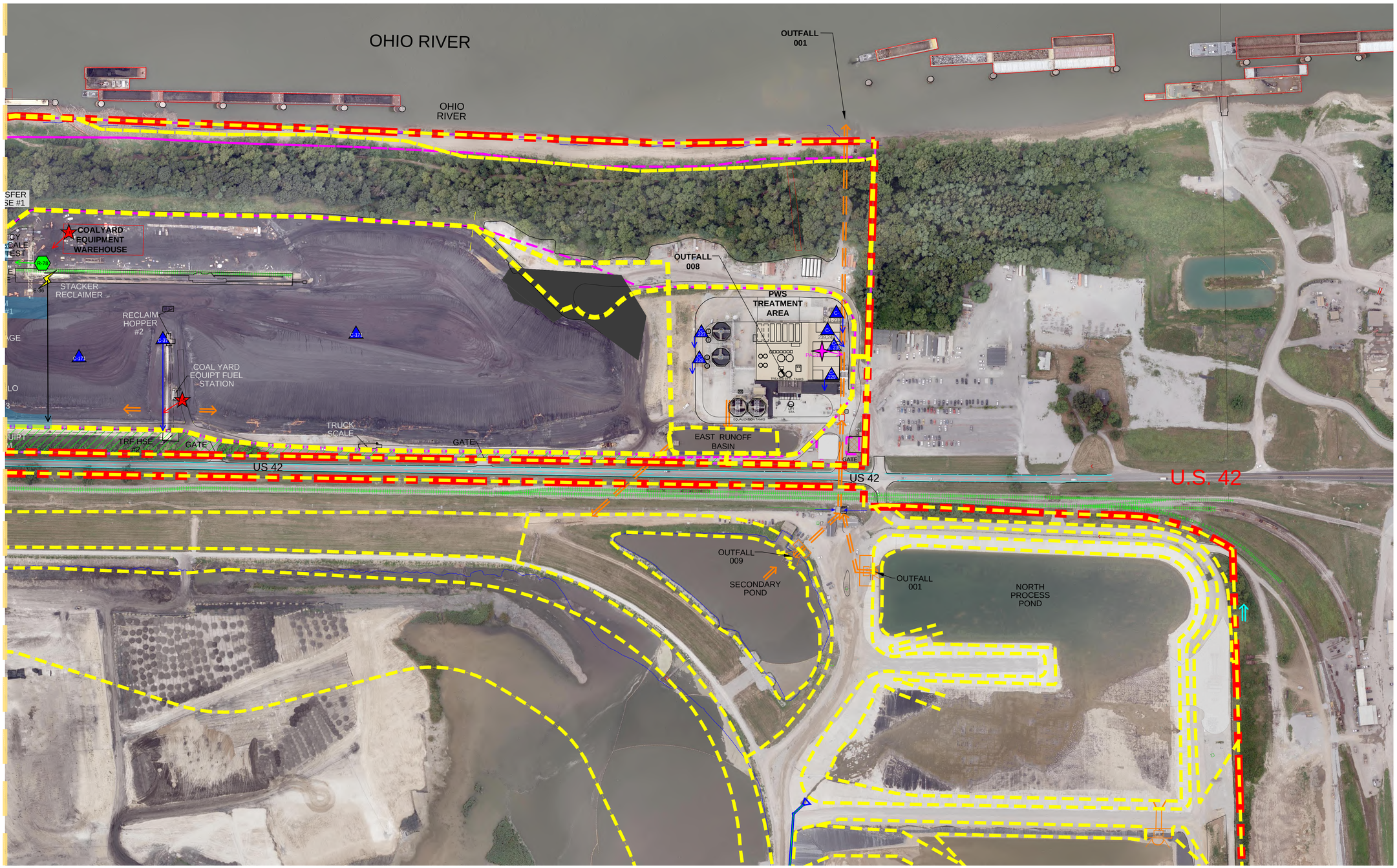
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Revisions

A	Project:	SPCC

Added Coalyard Eq. Warehouse
Added T-17, Removed T-104
Moved C-235 to current location

Revd:	Kyle Hellkamp	12/19/22
Chkd:	Danielle Glacken	12/19/22
Appd:	Patricia Mason	12/19/22



LEGEND

- TANK (OIL) & ADJ. TRANSFER AREA (EXCEPT OTHERWISE INDICATED) (T-#)
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SCALE: 1"=150'

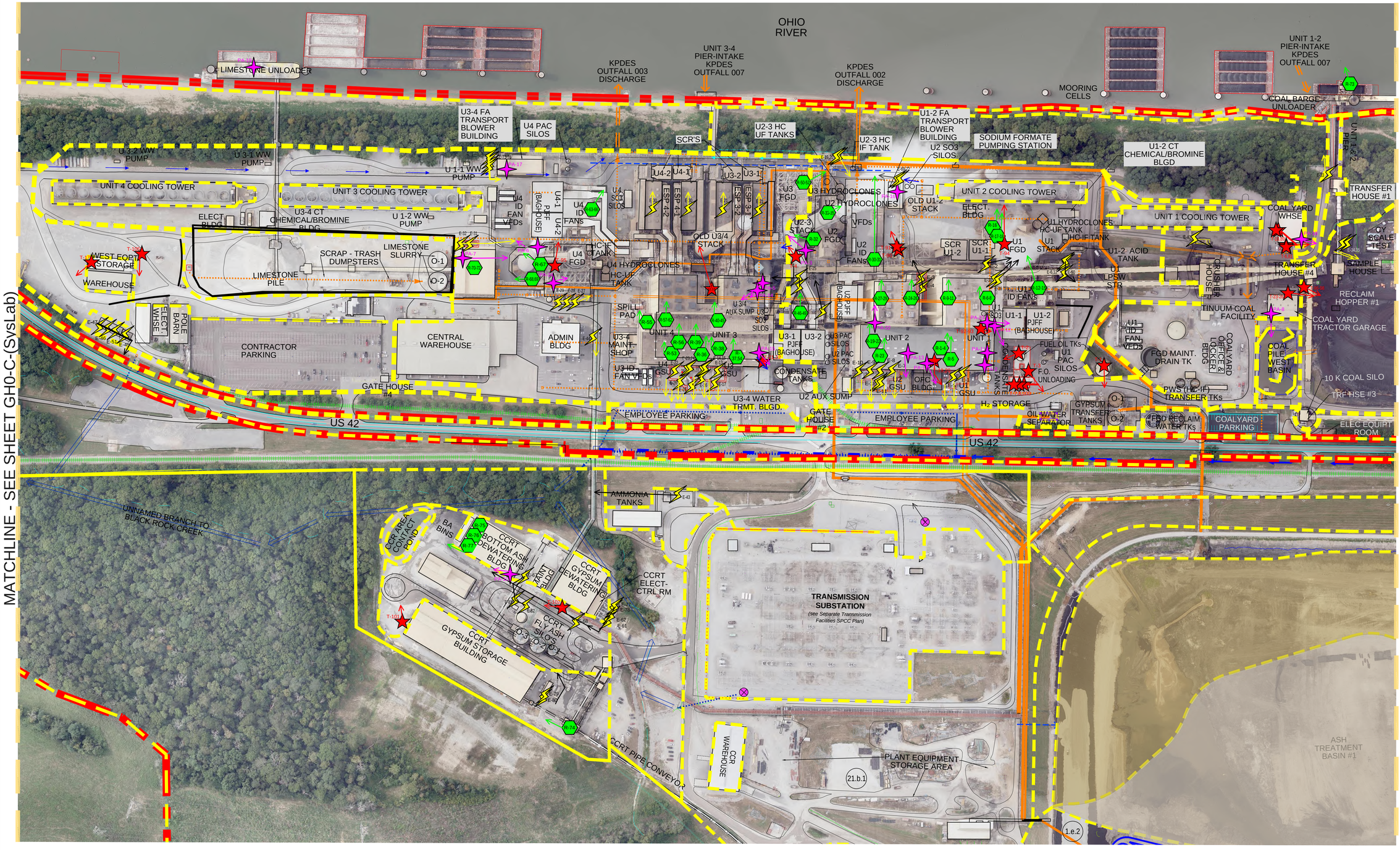
Location and Unit: GHENT COMMON	Drawn: XBJ JJJ
Scale: 1"=150'	Contract No. n/a	Checked:
Engineering discipline: Environmental	Drawing type: MISC.	1/27/2021
		Approved: Roger Madison
Originator: ENVIRONMENTAL AFFAIRS	Job or Project No.	Released for: Review
	Drawing No.: GH0-C-	Alternate Drawing No.
		Rev.

Title
SPCC/BMP – GHENT STATION
TANK AND MATERIAL INVENTORY LOCATIONS
COAL PILE & PWTS AREAS

DWG Version 2.0

Revisions

A	Project:	SPCC	
Added T-105 and C-263 Moved E-39 Removed T-99, C-235 Retired E-37			
Revd:	Kyle Hellkamp		12/19/22
Chkd:	Danielle Glacken		12/19/22
Appd:	Patricia Mason		12/19/22



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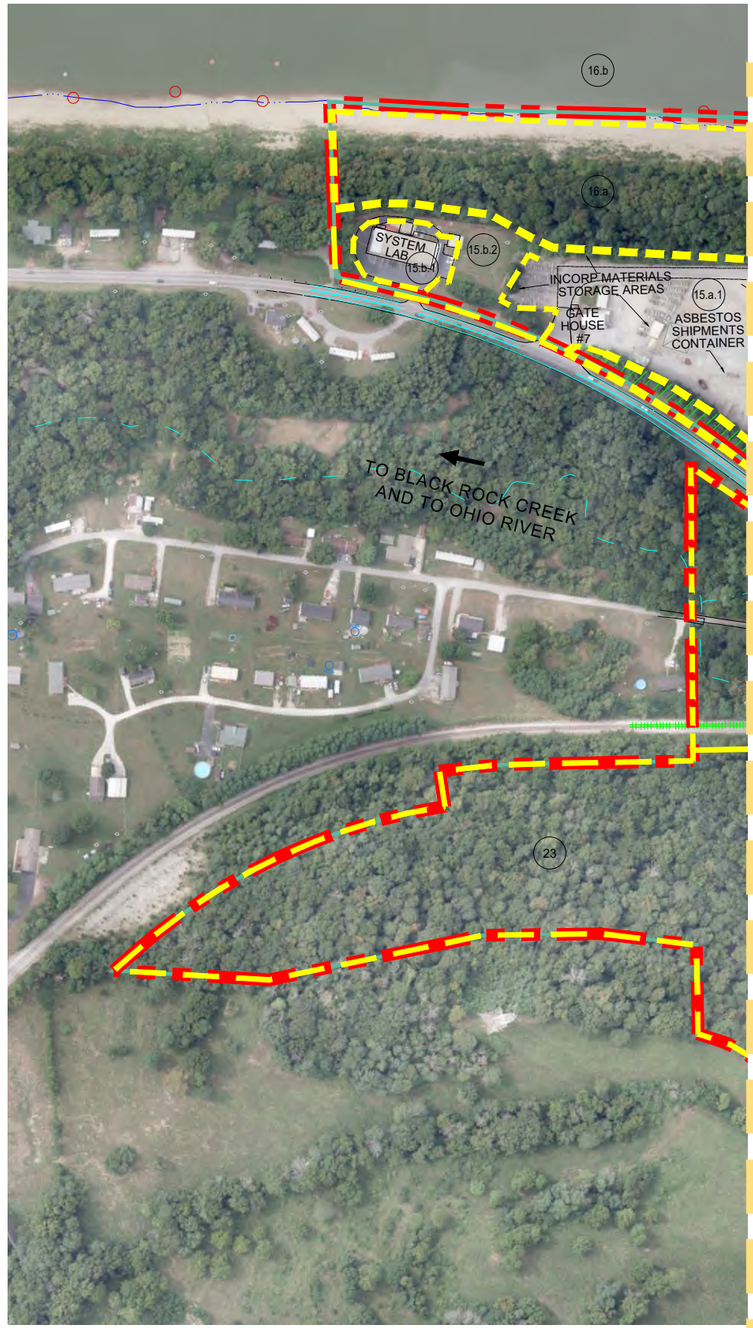
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SCALE: 1"=150'

Location and Unit: GHENT COMMON		LG&E/KU	Drawn: M Johnson 333 4/14/2021
Scale: 1"=150'	Contract No. n/a		Checked: Patricia Mason 5/4/2021
Engineering discipline: Environmental	Drawing type: MISC.		Approved: Patricia Mason 5/10/2021
Title: SPCC/BMP – GHENT STATION TANK MATERIAL INVENTORY LOCATIONS MAIN UNIT AREAS			Released for: Review
Originator: ENVIRONMENTAL AFFAIRS	Job or Project No:	Drawing No: GH0-C-	Rev.

Alternate Drawing No:
DMS Version 2.0

Revisions



MATCHLINE - SEE SHEET GH0-C-(UNITS)

LEGEND

PLANT LAYOUT, BUILDINGS AND EQUIPMENT SHOWN CONSISTENT WITH SPCC/BMP/GPP SERIES DRAWINGS. CONSTRUCTION ACTIVITIES OF 2012 ADDED SEPARATELY.

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- SANITARY SEWER MANHOLE
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DIGITAL IMAGERY PROVIDED BY: AGE Engineering Services Inc., Dated AUGUST 2019

STORMWATER RUNOFF AREA DESCRIPTION	COEFFICIENT OF RUNOFF
- VEGETATED - WOODS & GRASS AREAS	0.25
- UNCOMPACTED GRAVEL/LIMESTONE & GYPSUM	0.25
- COMPACTED GRAVEL, COALPILE, TRAFFIC AREAS	0.50
- IMPERVIOUS PAVEMENT, ROOFS, COOLING TOWER	0.85
- IMPOUNDMENT BASIN SURFACES	1.0

0 75' 150' 300'
SCALE: 1"=150'

Location and Unit: GHENT COMMON
Scale: 1"=150'
Contract No.: n/a
Engineering discipline: Environmental
Drawing type: MISC.
Drawn: XGJ JJJ
Checked:
1/27/2021
Approved: Roger Wadow
Released for: Review
Alternate Drawing No.

Title
KPDES STORMWATER MANAGEMENT-GHENT STATION
STORMWATER RUNOFF AREAS IDENTIFICATION
SYSTEM LAB & WEST PLANT AREAS

Originator: ENVIRONMENTAL AFFAIRS
Job or Project No:
Drawing No: GH0-SKC-storm-D
Rev.
BMS Version2.0

Revisions

OUTFALL 001
OUTFALL 004
OUTFALL 007
OUTFALL 008
OUTFALL 009
OUTFALL 010
OUTFALL 011
KNOCKOUT CHAMBERS
BLACK ROCK CREEK
US 42

LEGEND

PLANT LAYOUT, BUILDINGS AND EQUIPMENT SHOWN CONSISTENT WITH SPCC/BMP/GPP SERIES DRAWINGS. CONSTRUCTION ACTIVITIES OF 2012 ADDED SEPARATELY.

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- IMPOUNDMENT BASIN SURFACES	1.0

N

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SCALE: 1"=300'

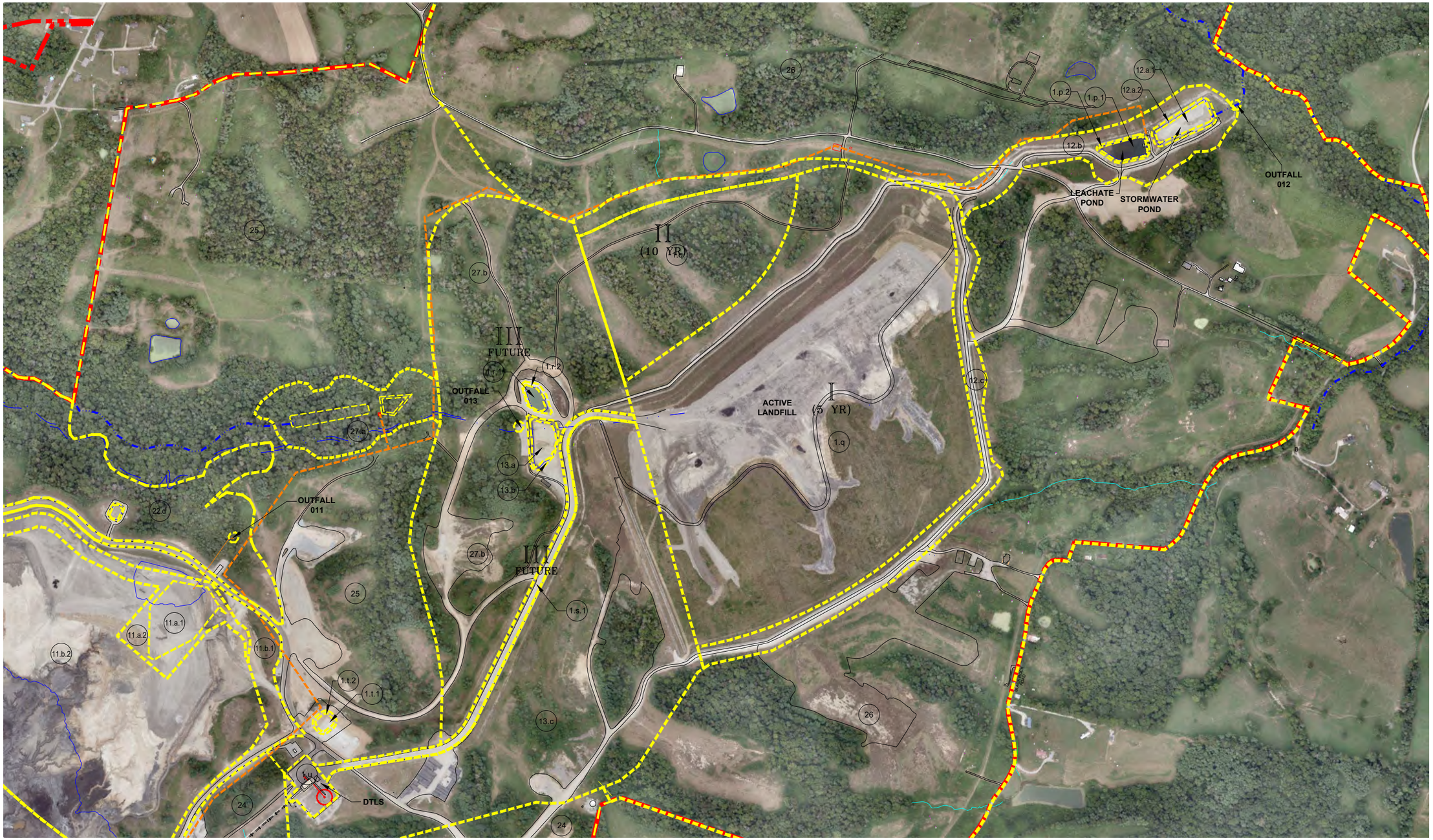
Location and Unit: GHENT COMMON
Scale: 1"=300'
Contract No.: n/a
Engineering discipline: Environmental
Drawing type: MISC.
LG&E/KU — an PPL and EON company
Drawn: XXJ XXJ
Checked:
1/27/2021
Approved: Megan Madura
Released for: Review
Alternate Drawing No.:

Title: KPDES STORMWATER MANAGEMENT-GHENT STATION STORMWATER RUNOFF AREAS INDENTIFICATIONS CCR PIPE CONVEYOR, ATB-1 & ATB-2 AREAS

Originator: ENVIRONMENTAL AFFAIRS
Job or Project No.:
Drawing No.: GH0-SKC-storm-E
Rev

BMS Version 2.0

Revisions



LEGEND

PLANT LAYOUT, BUILDINGS AND EQUIPMENT SHOWN CONSISTENT WITH SPCC/BMP/GPP SERIES DRAWINGS. CONSTRUCTION ACTIVITIES OF 2012 ADDED SEPARATELY.

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DIGITAL IMAGERY PROVIDED BY: AGE Engineering Services Inc., Dated AUGUST 2019

0 150' 300' 600'
SCALE: 1"=300'

Location and Unit: GHENT COMMON	Drawn: KBJ JJJ
Scale: 1"=300'	Contract No. n/a
Engineering discipline: Environmental	Drawing type: MISC.
Checked:	1/27/2021
Approved: Bryan Madera	
Released for: Review	
Alternate Drawing No.	

Title: KPDES STORMWATER MANAGEMENT-GHENT STATION STORMWATER RUNOFF AREAS IDENTIFICATION CCR LANDFILL AREAS

Originator: ENVIRONMENTAL AFFAIRS	Job or Project No:	Drawing No: GHO-SKC-storm-F

Rev.

DMS Version2.0