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January 20, 2023

Submitted Via Email
Dwayne Harrington
U.S. Environmental Protection Agency
Superfund and Emergency Management Division
Response and Prevention Branch
2890 Woodbridge Avenue
Edison, New Jersey 08837
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Jean H. Regna, Esq.
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290 Broadway – 17th Floor
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Re: In the Matter of Port Hamilton Refining and Transportation, LLLP (PHRT)
Administrative Order on Consent (Consent Order)
Index No. CAA-02-2023-1003

Dear Mr. Harrington and Ms. Regna:

Pursuant to Paragraph 42.e. of the Consent Order, I have enclosed Options Reports prepared by: Specialized Response Solutions, a U.S. Ecology Company (SRS); HPC Industrial (HPC), a Clean Harbors Company; and Clean Harbors. Paragraph 42.e. of the Consent Order requires PHRT's approved contractors to submit their Reports directly to U.S. EPA. Notwithstanding the requirement in Paragraph 42.e., U.S. EPA has directed PHRT to compile and submit the enclosed Reports in a single submission.

The enclosed Report prepared by SRS covers the options for removing ammonia from the Anhydrous Ammonia Drum and LPG from LPG Unit #3. SRS's Report is limited to the preferred removal options for the ammonia and LPG that U.S. Environmental Protection Agency has indicated in a recent email message to be acceptable. HPC's Report focuses on the safe removal of the amine solution and the associated hydrogen sulfide from the Amine Units, and includes modifications and other updates made following our meeting on January 17, 2023. Lastly, the Clean Harbors' report focuses on off-site disposal of each of the Materials at one or more of Clean Harbors' permitted waste disposal facilities.

The SRS and HPC Reports include proposed schedules for completing the removal of the Materials covered therein. As discussed, PHRT proposes to use SRS's and HPC's proposed schedules to create a proposed, integrated master schedule that will also include milestones for various PHRT tasks, such as preparing and submitting necessary permit applications to facilitate SRS and/or HPC's removal of one or more of the Materials, addressing any compliance-related issues with U.S. EPA, and ensuring availability of required equipment that PHRT may be

responsible for obtaining. PHRT expects to complete this proposed master schedule and submit it to U.S. EPA on or before January 27, 2023.

At U.S. EPA's request, PHRT's approved contractor, Advisian, submitted reports related to the requirements in Paragraph 42.d.(1)-(2) directly to U.S. EPA on January 6, 2023.

PHRT sincerely appreciates U.S. EPA's willingness to meet with the PHRT team on several occasions to discuss various options for removing the Materials. Our discussions have been productive and helpful in developing safe, compliant, and expedited options for removing the Materials.

We look forward to preparing and submitting the above-referenced proposed, integrated master schedule. In the meantime, please let us know if you have any questions regarding the enclosed Reports.

Sincerely,

Gary Steinbauer

Enclosures

cc: Fermin Rodriguez
Matthew Morrison, Esq.
Julie Domike, Esq.

SRS Report

Specialized Response Solutions, LP
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"Safe Solutions for Hazardous Situations"

Options Report:

Anhydrous Ammonia Drum and LPG Unit #3

Port Hamilton Refining and Transportation LLLP
Saint Croix, USVI

Prepared for:
U.S. Environmental Protection Agency,
Superfund and Emergency Management Division, Region 2

and

Port Hamilton Refining and Transportation LLLP

Prepared by:
Specialized Response Solutions, a US Ecology Company
Fort Worth, Texas

Table of Contents

1. Introduction:

Specialized Response Solutions (SRS), a US Ecology/Republic Services company presents this Options Report to U.S. EPA, Superfund and Emergency Management Division, Region 2. SRS is prepared to provide consulting, project management, transfer, and clean and purge services for the Anhydrous Ammonia Drum and Liquefied Petroleum Gas (LPG) Unit #3 areas identified in the US EPA Administrative Order on Consent (Consent Order) for Port Hamilton Refining and Transportation, LLLP (PHRT) facility located in Saint Croix, USVI.

SRS is a global leader in managing high hazard emergency response, industrial firefighting, complex environmental remediation challenges, and industrial service solutions in the petroleum and chemical manufacturing, storage, and transportation industries. SRS prides itself on being one of a limited number of companies capable of handling static liquids, PIH/TIH materials, compressed gases, and bulk solids from all the DOT hazard classes. This is all accomplished in a safe, environmentally responsible, and cost-effective manner.

SRS employs' a wide array of individuals with diverse backgrounds ranging from those with advanced technical degrees to equipment operators and response technicians who are considered the "backbone of the company". SRS offers its clients a very broad field of services ranging from those that require a high degree of professional and technical expertise to those that require hard, labor-intensive work. Our strongest commitments are to safety, our employees and their families, and our customers.

2. Project Description:

This options report provides an overview and in-depth review of the best available technologies to remove liquid and gaseous anhydrous ammonia and liquefied petroleum gas from drums, tanks, vessels, and process piping in units identified in the Consent Order. These processes will be done while protecting and minimizing impacts to the site, preventing off-site impact to the neighbors and the environment.

3. Liquefied Petroleum Gas (LPG):

The Consent Order identifies 37,000 pounds of LPG contained in LPG Unit #3. The plant conservatively estimates a total of 249 barrels (10,500 gallons) of liquid remaining in the unit. This liquid volume has been visually verified and is divided between three (3) vessels; D-4860, T-4860, and T-4862. There is some degree of

uncertainty about exactly which vessels in the unit contain liquid hydrocarbon. This is due to the location of the sight glass connections, so the lowest reading on the sight glasses does not correspond to the lowest possible liquid level in the vessel. Liquid levels can be seen in the sight glasses of D-4860, T-4860, and T-4862. Liquid and vapor hydrocarbon of unknown volumes are believed to be in T-4861 but there is no way to visually or through instrumentation readings be verified. Laboratory analysis of the exact makeup of the LPG is not currently available. However, based on PHRT operator knowledge, the makeup is approximately 45% C3s, 40% C4s, and 15% C5s.

3.1 Liquids

All liquid LPG contained in the four (4) vessels; D-4864, T-4860, T-4861, and T-4862 will be pumped from zero drain low points on each vessel or multiple vessel manifolds to two (2) T-50 LPG intermodal containers for shipment to an off-island consignee for sale or proper waste disposal. During the loading of the LPG into the two (2) T-50 intermodal containers, vapor pressure generated in the containers will be vented to a thermal oxidizer (TO) for destruction.

All of the equipment, vapor compressors, pumps, hoses, fittings, and such that will be used for the movement or removal of LPG liquid and gas will be owned and operated by SRS. Some ancillary equipment, including air compressors, process valves and fittings will be supplied by PHRT.

3.2 Vapor

Once the liquid portion of the LPG is removed, the preferred method to clean and purge the four (4) vessels; D-4864, T-4860, T-4861, T-4862 and associated process piping will be through the use of a thermal oxidizer (TO) with a nitrogen sweep of LPG Unit #3.

3.2.1 Thermal Oxidizer:

The thermal oxidizer (TO) technology unit is designed to destroy VOCs through controlled temperature thermal oxidization reactions. The typical TO utilizes a combustion chamber with a one (1) second retention/resistant time to achieve temperatures between 1500 F and 1700 F. These temperatures achieve a high destruction and removal efficiencies (DRE) of the material.

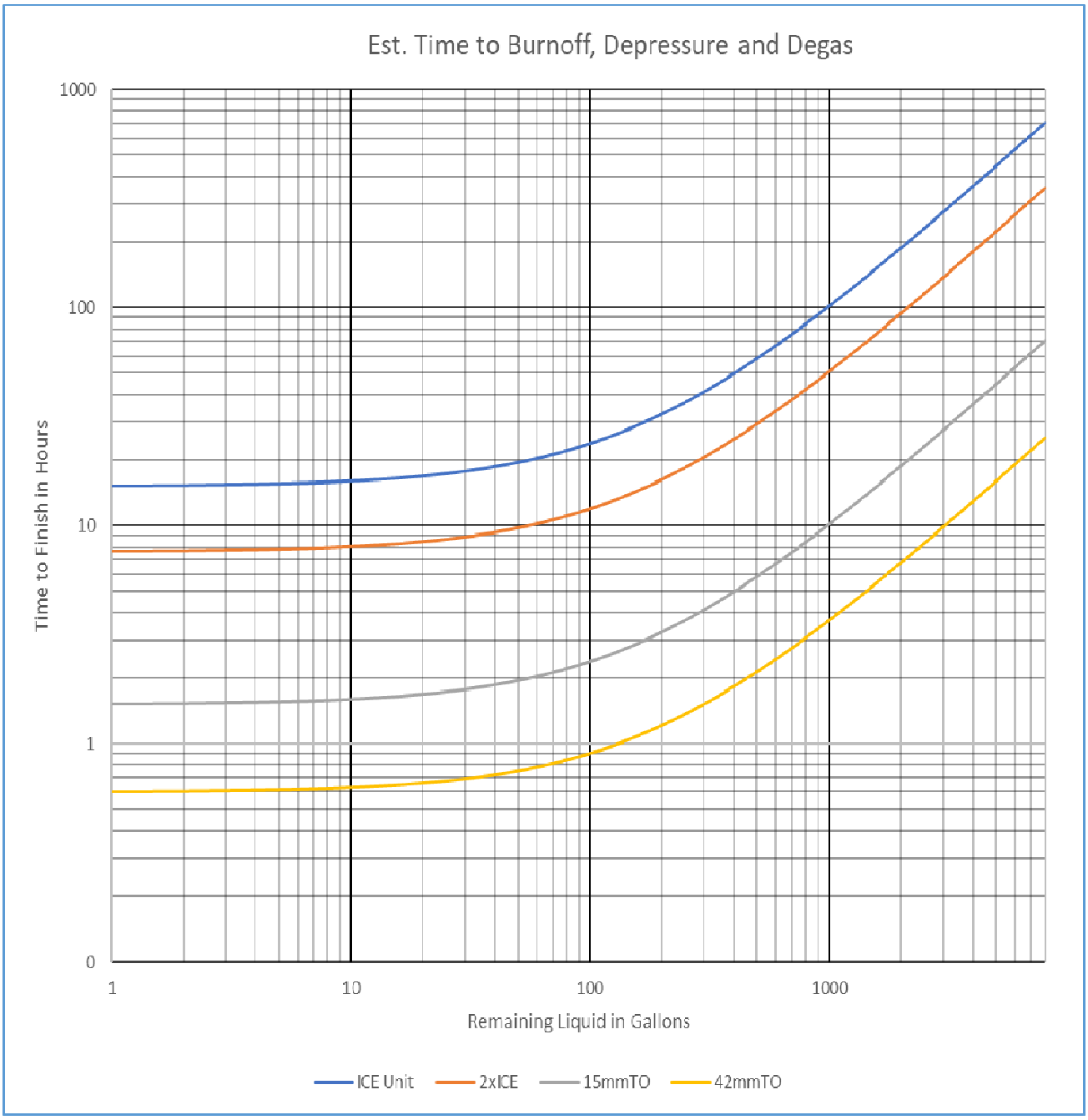
The 15 mm BTU/hour TO is capable of achieving a 4500 SCFM throughput flow rate for incoming gases. This extremely high flow rate and btu/hour combustion throughputs maintain a minimum of a one (1) second retention time in the combustion chamber thus achieving extremely high destruction rates.

This unit requires ground space equivalent of a large semi-trailer. The vertical space must be open in the direction of the current and forecast wind direction due to the volume of heat generated during the combustion process. The unit requires a large auxiliary generator to power the onboard blowers in order to create the vacuum needed to pull the product to the unit. The generator also operates an air injection manifold to maintain peak combustion efficiency. This unit is typically preferred for its high BTUs and high flow applications.

"Fit for Purpose" features 15 mm BTU/hour TO units include:

- Thermjet Ultra low-NOX burner,
- 200-gallon knockout tank equipped with sight glass and level safety interlock,
- In-line process and ambient LEL monitors,
- Process blower (SCFM): 4500,
- Combustion blower (SCFM): 5200,
- Data Logger equipped,
- Destruction efficiency: 99.99%, and
- Supplemental fuel injection for rapid process adjustments available

Utilizing TO technology, the estimated work time to remove and consume the remaining LPG liquid and vapor contained in the LPG Unit #3, reducing the lower explosive limit (LEL) to less than ten percent (<10%) in all known vessels and process piping ranges from 12 to 15 days. This estimate excludes setup and breakdown of equipment.


Est. Time to Burnoff, Depressure and Degas
Time to Finish in Hours
1000
100
10
1
0
1
10
100
1000
Remaining Liquid in Gallons
ICE Unit
2xICE
15mmTO
42mmTO

Thermal oxidizer emissions estimate for C4s.

Estimate Type:	Hours at Max	Hours at 50%	Pounds of C4			Pound Estimate:			Time Est		
Value	12	6	1353						Time to Depressure:		1.53
VOC	0.7	0.2	0.1		Volume	8000	gal				
Nox	39.0	9.7	6.3			1069	Cubic Feet		Starting	65	psig
CO	10.9	2.7	1.8			30	M3			5798	scf
					Pressure	65	psig		Ending	0	psig
						79.7	psia			1069	scf
						549512	pa		Volume	4729	scf
					T =	70	F		BTU/CF	3225	
						294	K		mmBTU	15.3	
	Source Test				R =	8.314462618	m3*pa/k*mol		Time to Degass:		1.0
	VCU 1	VCU 2	Max						Time to boil residual:		2.1
					n =	6801.635674	mole				
VOC In	378.65				mw	58.12	g/mol		Amount:	200	gal
	7.57	6.00			weight	395311.0654	g			26.74	Ft3
Nox	1.64	0.87	1.64	lb/hr		872	lb		Density	36	lb/ft3
	0.22	0.14	0.22	lb/mmbtu	Residual:	100	gal		Pounds	962.5	lbs
CO	0.46	0.004	0.46	lb/hr		13.37	Ft3		mmBTU	20.8	
	0.0607	0.0007	0.0607	lb/mmbtu					Total Time Estimate:		**5.00**
					Density	36	lb/ft3				
VOC	0.0295	0.0153	0.0295	lb/hr	Pounds	481.25	lbs				
	0.004	0.003	0.004	lb/mmbtu	total	1353					

3.3 Anticipated Milestone Schedule LPG Unit #3:

The anticipated schedule for the removal of the LPG liquid phase and the destruction of the vapor phase contained in the process piping and vessels of the LPG Unit #3 to below 10,000 ppm (<10 percent LEL) is contingent upon several things. First, the receipt of all necessary permits, authorizations, and/or approvals from local and federal governmental agencies. Second, availability and delivery of three T-50 intermodal containers specifically fitted for LPG service for containment, transloading, and off-island transportation. Third, delivery of the SRS equipment and supplies to the PHRT site.

Once all approvals and equipment are received, the anticipated time required for equipment set up and removal of the LPG liquid phase contained in LPG Unit #3 is 8 to 10 workdays. Removal of the LPG vapor phase from the process piping and vessels is estimated to require 7 to 10 workdays.

Anhydrous Ammonia:

The Consent Order identifies 40,000 pounds (approximately 8500 gallons) of liquid anhydrous ammonia contained in the Anhydrous Ammonia Drum and a smaller day tank. The anhydrous ammonia is contained in two (2) vessels, D-7305 and D-0005. D-0005 is located upstream of the NOx reduction unit GT-13 (Gas Turbine 13).

All of the equipment, vapor compressors, pumps, hoses, fittings, and such that will be used for the movement or removal of anhydrous ammonia liquid and gas will be owned and operated by SRS. Some ancillary equipment, including air compressors, process valves and fittings will be supplied by PHRT.

4.1 Liquids:

The liquid anhydrous ammonia in both tanks will be pumped, utilizing existing plumbing from the zero-drains located at the bottom of D-7305 and D-0005 to two (2) T-50 intermodal containers for shipment to an off-island consignee for sale or proper waste disposal.

4.2 Vapor:

When the liquid is removed from both storage tanks, the remaining vapor pressure, conservatively estimated to be 1,600 pounds in both D-7305 and D-0005 and associated process piping. The remaining vapor pressure will be transferred to a third T-50 intermodal container utilizing both gas equalization (closed loop) and pressure differential transfer methods.

Once the transfer of the liquid anhydrous ammonia to the two (2) T-50 intermodal containers is complete, all process valves will be isolated/blocked in, and transfer hoses purged to remove ammonia vapor residue. The discharge hose of the ammonia gas compressor will be connected to the T-50 intermodal container liquid valve. A portion of the remaining ammonia vapor in tank D-7305 and associated process piping will be pushed through the ammonia liquid column of the T-50 intermodal container. This process allows some of the ammonia vapor to be absorbed into the liquid column with and the remaining vapor accumulating in the container vapor space. T-50 intermodal containers have a working pressure ranging from 22 bar (319 psig) and 34 bar (499 psig). Once the T-50 intermodal containers for anhydrous ammonia are selected, the stop point for vapor pressure being added to the container will be selected. Typically, that pressure will be less than 50 percent of the pressure relief device “begin to operate” setting.

When the ammonia vapor discharge to the two (2) loaded T-50 intermodal containers is complete, the remaining system vapor pressure will be equalized between D-7305 and the third T-50 intermodal container. When pressure equalization is achieved, the ammonia gas compressor will draw the remaining vapor from D-7305 and process piping system with discharge to the intermodal container. The process for removal of ammonia vapor from D-0005 will require the immediate use of the ammonia gas compressor to draw the remaining vapor from the tank and process piping system with discharge to the intermodal container. T-50 intermodal containers have a working pressure ranging from 22 bar (319 psig) and 34 bar (499 psig).

4.3 Clean & Purge:

Once the third T-50 intermodal container is loaded with anhydrous ammonia vapor, the remaining vapor pressure in the entire ammonia system is anticipated to range between single digit pressure to a slight vacuum. The ammonia system will then be swept with nitrogen, followed by compressed air. Multiple 250-gallon polyethylene tote tanks filled with fresh water and fitted with one (1) inch CPVC sparge bars and transfer hoses will be strategically placed at zero-drain purge points and drops throughout the unit. The transfer hoses will connect the purge point to the tote tanks. This operation will scrub the remaining ammonia vapor from the nitrogen and compressed air sweep. The combination of nitrogen and air sweeping will render the entire ammonia system clean and purged with sufficient operational time allowed. For information, based on experience, the estimated time required to achieve clean and purge of a 30,000-gallon anhydrous ammonia vessel ranges between 12 and 16-hours.

Upon completion of the air sweep of the ammonia system, air monitoring of the interior space will be verified utilizing a direct reading ammonia instrument and or colorimetric tubes. If low concentrations of ammonia vapor remain, a slight vacuum of 2 to 4 inches of mercury will be pulled on the ammonia system, securing it.

4.4 Anticipated Milestone Schedule Anhydrous Ammonia:

The anticipated schedule for the removal of the anhydrous ammonia liquid phase and the recovery of the vapor phase contained in the process piping and vessels of the Anhydrous Ammonia Drum is contingent upon several things. First, the receipt of all necessary permits, authorizations, and/or approvals from local and federal governmental agencies. Second, availability and delivery of three T-50 intermodal containers specifically fitted for anhydrous ammonia service for containment, transloading, and off-island transportation. Third, delivery of the SRS equipment and supplies to the PHRT site.

Once all approvals and equipment are received, the anticipated time required for equipment setup and transloading of the anhydrous ammonia liquid phase contained in the Anhydrous Ammonia drum is 6 to 10 workdays. Removal of the anhydrous ammonia vapor phase from the process piping and vessels with discharge to the T-50 intermodal containers is estimated to require 4 to 6 workdays. The setup, sweeping with both nitrogen and compressed air to 250-gallon polyethylene totes followed by pulling a slight vacuum on the anhydrous ammonia system is estimated to require 6 to 10 workdays.

5. Health and Safety:

The Health and Safety of the workers and the environment is the highest priority on all SRS project sites. Prior to mobilization to the PHRT site, SRS/US Ecology will draft a site-specific Health, Safety, and Work Plan (HSWP) to cover all tasks anticipated for the project. The HSWP will include PHRT site entry and operational requirements along with SRS/US Ecology standard operating practices and guidelines for performing the anticipated scope of work. The draft HSWP will be provided to PHRT EH&S for review and comment prior to mobilization. The final HSWP will be reviewed with all site personnel and signed off on acknowledging they have reviewed and understand the site safety requirements.

All SRS/US Ecology projects start with a Tailgate Safety Meeting to review the days operations and any safety issues identified during the previous shift(s). Tailgate Safety Meetings address specific tasks planned for the day, protective clothing requirements or changes, potential safety issues, current and forecast weather conditions, and any operational near misses that have occurred. If operational changes or issues occur during the workday, a safety stand down will occur to advise all personnel of the change or the issue and the corrective action being undertaken.

6. Confidentiality:

This Options Report has been prepared as required by the Consent Order and as a preliminary plan for the deinventory of the ammonia and LPG systems to be conducted by SRS personnel. This plan has been developed and designed for the use and direction of SRS personnel only. SRS will recommend changes in the field, as necessary, when project challenges arise. These changes will be fully vetted with US EPA, other regulatory authorities and PHRT. This Options Report may not be reproduced without express written permission of SRS.

7. Visual schedule:

The following schedule is presented as a visual depiction of the anticipated time required to perform the operational tasks identified in the Options Report. This schedule is subject to approval by the US EPA, Region 2.

Weeks 1 & 2

Task Name	Week 1							Week 2					
	M	T	W	T	F	S	S	M	T	W	T	F	S
Mobilization of equipment									8d				
Mobilization of personnel									1d				
Onsite EH&S review											2d		
Equipment setup - Ammonia													2d
Liquid ammonia transfer													
Ammonia vapor depressure													
Ammonia system sweep & sparge													
Equipment setup - LPG													
LPG liquid transfer													
LPG system degas to TO													
Demobilization of equipment													

Weeks 3 & 4

Task Name	Week 3							Week 4					
	S	M	T	W	T	F	S	S	M	T	W	T	F
Mobilization of equipment													
Mobilization of personnel													
Onsite EH&S review													
Equipment setup - Ammonia													
Liquid ammonia transfer							5d						
Ammonia vapor depressure													
Ammonia system sweep & sparge													
Equipment setup - LPG													
LPG liquid transfer													
LPG system degas to TO													
Demobilization of equipment													

Weeks 5 & 6

Task Name	Week 5									Week 6			
	S	S	M	T	W	T	F	S	S	M	T	W	T
Mobilization of equipment													
Mobilization of personnel													
Onsite EH&S review													
Equipment setup - Ammonia													
Liquid ammonia transfer													
Ammonia vapor depressure					8d								
Ammonia system sweep & sparge								5d					
Equipment setup - LPG											3d		
LPG liquid transfer													
LPG system degas to TO													
Demobilization of equipment													

Weeks 7 & 8

Task Name	Week 7							Week 8					
	M	T	W	T	F	S	S	M	T	W	T	F	S
Mobilization of equipment													
Mobilization of personnel													
Onsite EH&S review													
Equipment setup - Ammonia													
Liquid ammonia transfer													
Ammonia vapor depressure													
Ammonia system sweep & sparge													
Equipment setup - LPG													
LPG liquid transfer			7d										
LPG system degas to TO													
Demobilization of equipment													

Weeks 9 & 10

Task Name	Week 9							Week 10		
	M	T	W	T	F	S	S	M	T	W
Mobilization of equipment										
Mobilization of personnel										
Onsite EH&S review										
Equipment setup - Ammonia										
Liquid ammonia transfer										
Ammonia vapor depressure										
Ammonia system sweep & sparge										
Equipment setup - LPG										
LPG liquid transfer										
LPG system degas to TO		11d								
Demobilization of equipment										8d

HPC Report

Proposal Prepared for PHRT:

PHRT ARU 4, 5, 6, and 7 Chemical Cleaning

At the St. Croix, U.S. Virgin Islands Facility

January 20, 2023

Prepared by: Daniel Kushaney

REFINING – PETROCHEMICAL – POWER – METALS – PULP & PAPER

HPC Corporate Office | 900 Georgia Avenue, Deer Park, TX 77536 | 800-934-9376 | www.hpc-industrial.com

1/20/2023

Attn: U.S. Environmental Protection Agency, Superfund and Emergency Management Division, Region 2.

Re: ARU System 4, 5, 6, and 7 Chemical Cleaning and System De-inventory

It is my pleasure to extend to you on behalf of HPC Industrial the following preliminary proposal and budgetary estimate to perform chemical cleaning services on the previously discussed equipment at your facility.

The next few pages will provide you with an overview of personnel, equipment and chemistry to be supplied along with a pricing summary and estimated timeline of events. This proposal is based on our interpretation of the supplied information, and previous cleanings of similar systems and the enclosed parameters.

If any additional information is required or if there are any questions, do not hesitate to call. I can be reached any time at 972-746-9102 or by email at Daniel.Kushaney@hpc-industrial.com. Thank you for your continued interest in HPC Industrial and, as always, we look forward to working with everyone at PHRT.

Regards,

Daniel Kushaney
Chemical Cleaning Account Manager / Chemist

620 Howard Drive
Deer Park, TX 77536
Cell: 972.746.9102
Daniel.Kushaney@hpc-industrial.com
http://www.hpc-industrial.com

[redacted]

SCOPE

For the chemical cleaning project, HPC will provide supervisory and operational personnel, equipment, and chemicals to assist with the degassing of the aforementioned equipment to prepare the system for entry, inspection, and repairs. This will assist in restoring the equipment's efficiency to its optimum operating level.

Equipment:	ARU System 4, 5, and 6, 7 and associated piping (Includes associated contactors, amine transfer piping, etc.)
Deposits:	Rich and Lean Amine
Metallurgy:	Carbon Steel, mixed metallurgies
Est. Circulating Volume:	TBD
Est. Waste Volume:	20 - 500 bbl Waste Tanks (volume will likely change)

Prior to beginning the UDCC (Unit Decontamination Chemical Cleaning) of the systems, each unit will need to be de-inventoried to Clean Harbors-Supplied "ISO" Containers (not supplied in this estimate), which will then be transported to the coastal United States for decommissioning. HPC-Industrial will provide all personnel, transfer equipment, and connections to safely transfer the Lean and Rich Amine. It is our intention to vent the containers being filled back into the ARU systems to minimize risks and costs associated with scrubbing equipment and chemicals. The material will be transferred via pneumatic pumps utilizing stainless steel flex hoses. Connections on the container and client process equipment will be equipped with isolation valves, "double block and bleed" manifolds to safely flush lines, and flush nozzles allowing us to disconnect and move to other containers and connections without exposure to personnel or environment (see attached drawing). Temporary drain connections will be installed at locations designated by engineering and pre-planning to ensure total evacuation of the Amine. For the most part, these low points will be the same as those used for the steaming and final cleaning. A detailed step-by-step procedure (for each process) will be developed and approved after the PO (Purchase Order) has been received and execution timeline agreed upon by the EPA, HPC Industrial, and PHRT.

HPC is recommending that the equipment be chemically cleared using a vapor phase method, which includes the following steps:

- Pre-heat Steam Rinse
    - A 5# nitrogen purge will be established by PHRT and maintained throughout the chemical cleaning process
    - A high point vent will be open and unimpeded directly to the vapor cooler and routed to the waste tanks and vapor control. This will allow for positive pressure throughout the process.
    - The system will then be pre-heated to +212F, and flow will be established at each low point
    - Once flow has been established at each low point drain, the detergent stage will begin
    - If there are any interruptions to flow and / or blockages at a low point drain, the site will be required to isolate the low point and correct the impedance to flow to proceed.
- Hydrocarbon & H2S removal / detergent stage using F312 EZE-Clear detergent
    - This will assist in the removal of any residual hydrocarbons and H2S from the system
    - KPIs (Key Point Indicators) include detergent availability, pH, color, temperature, and hydrocarbon breakout
    - Once complete, a steam rinse will be performed until the detergent has been determined to have been removed completely from the system.
    - If there are any indications that there are residual sludge or solids, the low point will be blocked in and the equipment should be boiled with steam until the sludge has been broken up and removed from the equipment.
- Hydrogen sulfide / iron sulfide conversion stage using M514 Sodium Permanganate and liquid M003 soda ash.
    - This will assist in the treatment for any remaining H2S and pyrophorics in the system
    - KPIs include pH, color, temperature, and H2S/FeS mitigation

[redacted]

- The system will be nitrogen purged until each low point has been drained and the system meets the approval requirements (not currently made available to HPC Industrial).

Estimated Effluent Volumes: We anticipate approximately 200,000 gallons of effluent condensate following the clearing and H_2S removal. The effluent will be majority steam condensate and small amounts of the cleaning chemistries M514 & F312 (use quantities are included in the cost spreadsheets). SDS are provided upon request. The solution will also contain some residual Amine. That quantity will largely depend on how successful we are in evacuating the systems. The effluent from this phase of chemical cleaning will be stored in waste tanks with vapor control, however, they can also be offloaded in "ISO" containers for off-site removal as well.

Prior to leaving site, HPC shall neutralize all waste tanks, clean up the work area, and close out all permits.

[redacted]

ARU System 4 (EXAMPLE ONLY)					
Stage	**Chemical Summary**	**Water (gal)**	**Temp. (ºF)**	**Est. Time (hrs.)**	**Notes**
Steam Rinse / Pre-heat		15,000 – 19,200	220+	6 - 8	
Detergent	2.0% EZE-Clear	19,200	220 - 230	8	Test for Solids, pH, H2S, detergent availability.
Steam Rinse		4,800	220 - 230	2	
H2S / FeS Mitigation	1.0% Sodium Permanganate / 0.5% Soda ash	9,600	220 - 230	4	Test for color, pH
Steam Rinse	0.25% Sodium Sulfite	4,800	220 - 230	1	Test for color
Steam Rinse /Purge		4,800	<220	1	
Total		62,000		24	

EQUIPMENT LIST (SUBJECT TO CHANGE)			
ARU4	**ARU5**	**ARU6**	**ARU7**
T-4830	T-5830	E-7453A/B	T-7461
E-4830	E-5830	E-7453A/B	D-7461
D-4830	D-5830	S-7453	E-7462A/B
S-4831	S-5831	F-7451	E-7461
E- 4831A/B	E-5831A/B	E-7454	E-7463A/B
D-4833	D-5831		E-7464
D-4832	E-5832A/B/C/D		F-7461
E-4832A/B/C/D	E-5833		F-7462
D-4831			S-7463
E-4833			
LPG Unit1	**LPG Unit2**	**GRU2**	**HP Fuel Gas Treater3**
T-3202	T-4824	T-4850	D-4840
S-3357	S-4824		T-4840
DDU 6	**DDU7**	**Unit 9075 Amine Transfer Piping**	**Coker Unit**
D-4614	D-4311		T-8510
T-4601	T-4302		D-8511

EST. CHEM CLEAN EFFLUENT CONC. (SUBJECT TO CHANGE)		
CHEMICAL	**EST. VOLUME (GAL.)**	**CONCENTRATION**
F312	3415	1.65%
M003	900	0.43%
M514	1787	0.86%
M046	800	0.39%
M045	45	0.02%
L051	550	0.27%
CONDENSATE	200000	96.39%
RICH / LEAN AMINE	0	0.00%
OVERALL	207497	

[redacted]

PREREQUISITES

For HPC to perform the services listed within this proposal, it will be necessary for PHRT to provide or arrange for the following at no expense to HPC:

- Isolation/Blinding of all areas NOT to be included in cleaning.
- Temporary chemical cleaning connections (TBD)
- Mechanical support for loading/unloading of equipment and equipment placement (INCLUDES FORKLIFT WITHIN 15 MINUTES OF REQUEST)
- Adapt all chemical cleaning temporary connections to ¾", 2", or 4" as needed
- **Logistics Transportation to/from 620 Howard Drive Deer Park, TX to Site Location**
- Scaffolding as necessary to access required connection points and valves
- Adequate lighting for night shift
- Sanitary facilities
- Site personnel to operate all site equipment
- First break, final tie-in for chemical cleaning facilities
- Final disposal of all cleaning waste, including triple-rinsed chemical totes
- Acceptable water source (to match boiler feed water requirements mentioned below), nitrogen, air for AOD (air operated diaphragm) pumps, 480V/60AMP/3 ph power source (or to match temporary boiler requirements)
- Temporary office for reviewing and printing drawings, procedures, SDS, etc.
- Safety shower / eye wash within 50' of chemicals
- PWHT (post weld heat treat), if required
- All utility hoses and adapting fittings
- Ensuring that all valves, equipment, piping, etc. are flowing and operational prior to arrival to site. Any restrictions any flow must be resolved by the site.
- QA/QC for Chemical Cleaning temporary facilities
- Agreement for all billing terms and conditions prior to mobilization
- Site contact for Project Manager, questions, management, etc.
- Approval of all design conditions
- 18,000 – 20,000 lbs/hr. steam supply via 500-600 hp temporary boiler
- Fuel for temporary boiler (propane), RO (reverse osmosis) water for boiler
- Requirements for completion standards for chemical cleaning services
- Verification of all pressure protection functionality – contractor is not responsible for site PSV's (pressure safety valves)
- On-site hydrotesting, if required by the site or EPA
- Containers for untreated rich and lean amine (est. 250,000 gallons)
    - Ensure they are adapted to 4" 150#
- 15 - 20 - 500 bbl frac tank for effluent storage from chemical cleaning
    - Adapt to 4" 150#
    - Containment berm
    - Ensure compatibility with chemical cleaning solution
    - Must have 3" NPT vent connection for HPC vapor control group

[redacted]

HPC will provide the following:

- Detailed Chemical Cleaning Package:
    - Sign-off style written procedure
    - Marked up P&ID's identifying injection, vent, and drain locations including connection style requirements
    - Detailed drawings, flow drawings, tie-in points, etc.
    - All information required for MOC and Engineering review
    - Included with 10-day pre-planning activity
    - Plot plans indicating HPC equipment location and spread
- 2 – Engineer/Planners/Process Specialists (additional time for site visits)
- 2 – Project Managers
- 2 – Service Supervisors
- 6 – Equipment Operators
- 6 - Service vehicles
- As needed - Subsistence, per man per day
- 1 – 1" AOD Diaphragm Pump
- 3 – 3" AOD Condensate Drain Pumps
- 2 – Heat Exchangers, Carbon Steel
    - Washouts included as separate line item, adapted to 4" 150#
- As needed – Vapor Phase Equipment
- 3 – AOD Chemical Transfer Poly Pumps, adapted to 2" 150#
- 250 – ¾" Chemical Drain Hose
- 20 – 1" Chemical Transfer Hose
- 75 – 2" 150# x 20', SS 150# Flanged
- 65 – 4" 150# x 20', SS 150# Flanged
- 20 – 2" 150# x 20', Steam Hose
- 25 – 2" 150# x 20', CS 150# Flanged Sections Pipe
- 25 – 4" 150# x 20', CS 150# Flanged Sections Pipe
- As needed - 2", 4" 150# Carbon Steel Pipe, 20' Sections
- As needed – Fittings and valve package
- 15 – Containment berms
- 2 – Temperature guns
- 1 – Wet chemistry kit
- Fuel for fuel-fired equipment (does not include boiler, only OTR vehicles)
- As needed – Tool package
- BNG Kits (bolts nuts and gaskets)
- Safety Plan, spill prevention and containment supplies
    - Each crew member will participate in toolbox safety meetings to discuss information and discuss potential hazards of the work to be completed. They will participate in HPC Industrial safety meetings and be stewards of our Safety Live It 3-6-5 Program. We will also conduct weekly safety stand downs with crews to discuss any incidents or near misses, and how such incidents could be avoided.

[redacted]

EVENT TIMELINE (INCLUDES PRE-PLANNING)

Please note this schedule may change to the extent that any permits, authorizations, and approvals from local and federal governmental agencies are necessary to complete the tasks. Furthermore, the availability of containers, other equipment, travel disruptions, and other variables outside of PHRT's and/or HPC's control may also impact this schedule. HPC also understands that EPA may be discussing a sequenced removal of the materials and that sequencing may impact the schedule.

Est. Day	Event
10	PRE-PLANNING
10	Equipment Picked up @ Deer Park TX and Delivered to St. Croix PHRT
1	HPC Employees Travel from Houston TX to St. Croix PHRT
1	Site Orientation, walk systems, begin set up
2	Set up equipment
4	De-inventory ARU4
2	Set up equipment
4	De-inventory ARU5
3	Set up equipment for UDCC
5	ARU4/5 UDCC
1	Demobilize equipment
3	Set up equipment
4	De-inventory ARU6
2	Set up equipment
4	De-inventory ARU7
2	Set up equipment for UDCC
4	ARU6/7 UDCC
1	Neutralize all waste
2	Demobilize equipment from site
1	HPC Employees Travel from St. Croix PHRT to Houston TX
10	Equipment Picked up @ St. Croix PHRT and Delivered to Deer Park TX
76	Estimated Consecutive Days for completion

[redacted]

Vapor Control Operations Timetable / staffing working 12-hour shifts (pricing and materials not included within this proposal, this is for scheduling purposes only)
Please note this schedule may change to the extent that any permits, authorizations, and approvals from local and federal governmental agencies are necessary to complete the tasks. Furthermore, the availability of containers, other equipment, travel disruptions, and other variables outside of PHRT's and/or HPC's control may also impact this schedule. HPC also understands that EPA may be discussing a sequenced removal of the materials and that sequencing may impact the schedule.

Est. Day	Event
10	Equipment Picked up @ Deer Park TX and Delivered to St. Croix PHRT
1	HPC Employees Travel from Houston TX to St. Croix PHRT
1	Site Orientation, walk systems, begin set up
1	Set up equipment at ARU4 & ARU5
1	Set up equipment at DD Satellite
1	Set up equipment ARU6 & ARU7
1	Set up equipment Coker Unit
30	Vapor Control Operations ARU4/5, UDCC, ARU6/7, Coker Unit
1	Rig Down equipment at ARU4 & ARU5
1	Rig Down equipment at DD Satellite
1	Rig Down equipment ARU6 & ARU7
1	Rig Down equipment Coker Unit
1	Demobilize equipment from site
1	HPC Employees Travel from St. Croix PHRT to Houston TX
10	Equipment Picked up @ St. Croix PHRT and Delivered to Deer Park TX
62	Estimated Days for completion

DISCUSSION

- This estimate is to be considered T&M. Any delays not at fault of HPC will be billed at the indicated and agreed upon contract time and material rates.
- Please note, this is a preliminary proposal and is subject to change once all information is gathered for this project.
- This proposal is valid for a period of 10 days.
- Milestone timeline needs to be shared with HPC for an accurate proposal.
- This proposal does not include waste handling or vapor control services.

CHANGE MANAGEMENT

- A monthly cost estimate will be issued, and payment shall be issued prior to delivery of services.
    - During the month, costs will be tallied and shared frequently with site personnel electronically.
    - At the end of each month, the costs will be reconciled, and positive/negative cost changes will be applied and communicated.
    - If a potential delay or minor scope change is discovered, issued from the site, EPA, etc., the estimated cost for the change will be included in the cost updates and it is the site's responsibility to review and approve of changes.
- Cost updates are as follows:

  "All –

  Please see below for the current estimated cost update for HPC's Chemical Cleaning Project at XXXXXXX.

  Chemical Cleaning (Site orientation, set up, permitting, etc.)
  Estimated Costs Through XXX:

Total Running Labor:	$	XXX.XX
Total Running Equipment:	$	XXX.XX
Total Running Materials:	$	XXX.XX
Total Estimated Cost:	$	XXX.XX

  Please note, this does not cover all potential third parties associated with this work. If you have any questions, concerns, or recommendations, please feel free to reach out via email, text, or phone call. Thank you and stay safe!"

TERMS AND CONDITIONS

All work will be performed under terms and conditions currently agreed upon between HPC and PHRT. [redacted]

SCHEDULE

Our anticipated production schedule is based on performing treating operations 7 days per week, 24 hours per day. Pre-planning is estimated to require 14 days to complete. Please note this schedule may change to the extent that any permits, authorizations, and approvals from local and federal governmental agencies are necessary to complete the tasks. Furthermore, the availability of containers, other equipment, travel disruptions, and other variables outside of PHRT's and/or HPC's control may also impact this schedule. HPC also understands that EPA may be discussing a sequenced removal of the materials and that sequencing may impact the schedule.

INVESTMENT

HPC Industrial has estimated that the project investment is as follows:

[redacted]

This proposal is valid for the duration of the current contract that is in place between PHRT and HPC so long as the rates do not change.

In today's economy it is more important than ever for us to continue open discussion and to continually look for opportunities that enhance each other's overall value. As you can see from the above offer, HPC Industrial wants to be your supplier of choice and we have offered PHRT significant reduction of Total Cost of Operation in return. We hope you will find our proposal to be innovative and one that drives strong mutual benefit. We look forward to discussing our proposal with you in person.

We encourage an opportunity to discuss this proposal in detail with all PHRT contacts as soon as possible. Should you or any of your staff have any questions, please do not hesitate to contact me by email Daniel.Kushaney@hpc-industrial.com or by phone (972-746-9102).

Regards,

Daniel Kushaney
Chemical Cleaning Account Manager / Chemist
620 Howard Drive
Deer Park, TX 77536
Cell: 972.746.9102
Daniel.Kushaney@hpc-industrial.com

[redacted]

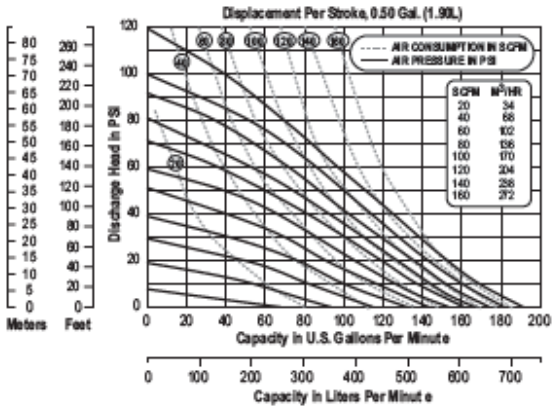
HPC INDUSTRIAL
POWERED BY CLEAN HARBORS

U2 DATA SHEET

SPECIFICATIONS & PERFORMANCE

2" Bolted Plastic
with Plastic Center Sections

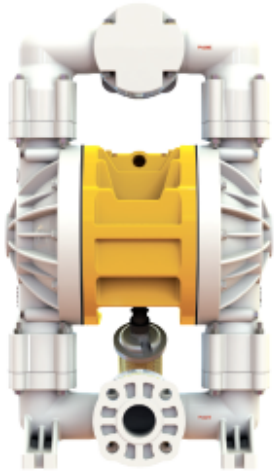
PERFORMANCE



NOTE: Performance based on the following: elastomeric fitted pump, flooded suction, water at ambient conditions. The use of other materials and varying hydraulic conditions may result in deviations in excess of 5%.

SPECIFICATIONS

Flow Rate
Adjustable to . . . 0-192 gpm (727 lpm)
Port Size
Suction . .2" ANSI 150 Class (DIN 50)
Discharge . . . . . .
. . . . . .2" ANSI 150 Class (DIN 50)
Air Inlet . . . . . .1/2" NPT
Air Exhaust . . . . . .3/4" NPT
Suction Lift (Dry)
Rubber . . . . . 20' (6.10 m)
PTFE. . . . . 10' (3.05 m)
Max Solid Size (Diameter)
. . . . . .1/4" (6 mm)
Shipping Weights
Polypropylene . . . . . .67 lbs (30 kg)
. . . w/ center port option 71 lbs (31.8)
PVDF . . . . . .93 lbs (42 kg)
. w / center port option 100 lbs (45.1)



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u2nsm-rev0519

[redacted]

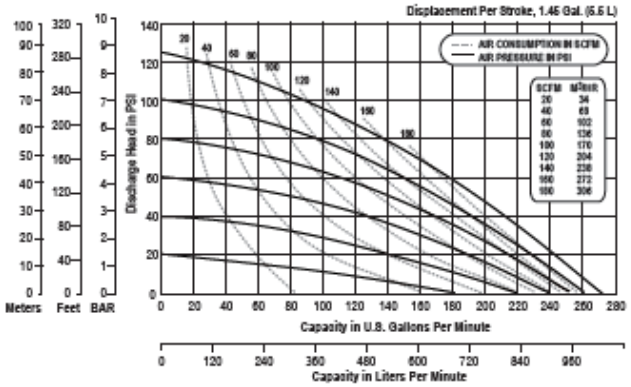
HPC INDUSTRIAL
POWERED BY CLEAN HARBORS

E3 DATA SHEET

SPECIFICATIONS & PERFORMANCE

3" Bolted Metal
with Metal Center Section

PERFORMANCE

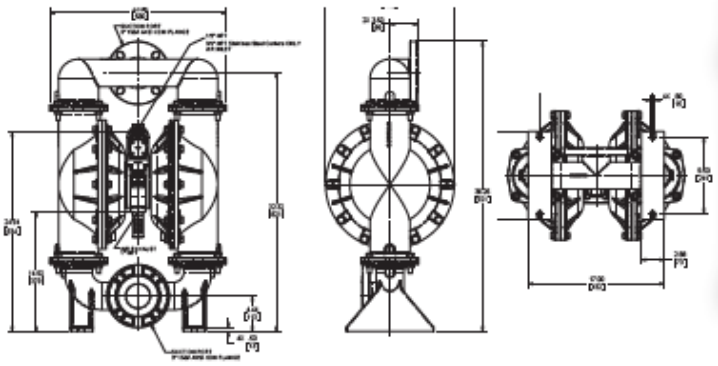


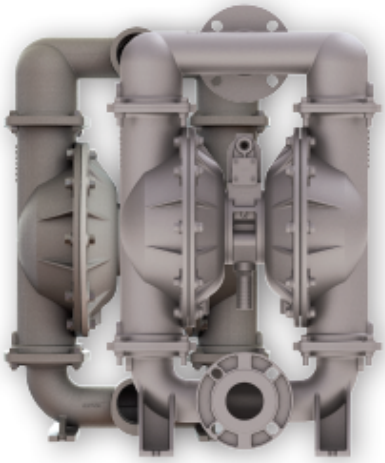
NOTE: *Performance based on the following: elastomeric fitted pump, flooded suction, water at ambient conditions. The use of other materials and varying hydraulic conditions may result in deviations in excess of 5%.*

SPECIFICATIONS

Flow Rate
Adjustable to 0-273 gpm (1,033 lpm)
Port Size
Suction . . . . . .
3" ANSI 150 lbs Class (DIN80)
Discharge . . . . . .
3" ANSI 150 lbs Class (DIN80)
Air Inlet . . . . . 1/2" NPT
Air Exhaust . . . . . .1" NPT
Suction Lift
Dry . . . . . .16' (4.9 m)
Wet . . . . . .31' (9.4 m)
Max Solid Size (Diameter)
. . . . . .3/8" (9.5 mm)
Max Noise Level . . . . . 93 dB(A)
Shipping Weights
Stainless . . . . . 245 lbs (111.1 kg)
** Stainless Center add 50 lbs. (22.7 kg)

DIMENSIONS





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HPC INDUSTRIAL
POWERED BY CLEAN HARBORS

150# SS = 2.2 factor

Pressure Rating

195 psi (at temps > 200F)

Liquid Turbine Flow Meters

Flanged End Connection Flow Meters - ANSI B16.5 Pressure Ratings

ANSI B16.5 Flange Rating			150*		300*		600*		900*		1500*		2500*	
ANSI B16.5 Flange Rating			1.1	2.2	1.1	2.2	1.1	2.2	1.1	2.2	1.1	2.2	1.1	2.2
Design-Operating Temperature Range														
-20 to 100° F (28.8 to 37.7° C)	Max Working Pressure	psi	285	275	740	720	1480	1440	2220	2160	3705	3600	6170	6000
		mPa	1.96	1.89	5.10	4.96	10.2	9.92	15.3	14.9	25.5	24.8	42.5	41.3
-20 to 200° F (28.8 to 93.3° C)	Max Working Pressure	psi	260	240	675	620	1350	1240	2025	1860	3375	3095	5625	5160
		mPa	1.79	1.65	4.65	4.27	9.31	8.54	13.9	12.8	23.2	21.3	38.8	35.5
-20 to 400° F (-28.8 to 204.4° C)	Max Working Pressure	psi	200	195	635	515	1270	1030	1900	1540	3170	2570	5280	4280
		mPa	1.38	1.34	4.38	3.96	8.76	7.09	13.1	10.6	21.8	17.7	36.4	29.5
-20 to 600° F (-28.8 to 315.5° C)	Max Working Pressure	psi	140	140	550	450	1095	905	1640	1355	2735	2255	4560	3760
		mPa	0.96	0.96	3.79	3.10	7.55	6.23	11.3	9.33	18.8	15.5	31.4	25.9
Test Pressure	1.5 times maximum working pressure at -20 to 100° F (28.8 to 37.7° C)													

*Flange Rating 1.1 References Carbon Steel Flanges Flange Rating 2.2 References Stainless Steel Flanges

Using a 2" stainless steel 150# flanged flowmeter

Companion readout instruments for NuFlo turbine flow meters are also available.

NuFlo *Measurement Systems*

A NuFlo Technologies Company

1.800.654.3760 • www.nuflotech.com

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For representation in your area:

Document NF 00001 02 1204

[redacted]

HPC INDUSTRIAL
POWERED BY CLEAN HARBORS

605-5110-01 | Data Sheet

21K Fixed Axle Vapor Tight Lined Tank

Model/Make: FAVTLSM / Modern V-Bottom; Akron build

Product Description

This tank has a smooth interior wall for easy cleaning, and the interior surfaces are lined with a chemical resistant coating for corrosion protection.

WEIGHTS AND MEASURES

Capacity:	500 BBL (21,000 gals.) – Crossing stairway
Height:	11'-0" (grade to top pf P/V valve) 10'-4" (grade to roof plate)
Width :	8'-6" (overall)
Length:	46'-5" (overall) 42'-8" (tank only)
Weight:	29,500 lbs. ±

STRUCTURAL DESIGN

Floor:	¼" thick ASTM A36 carbon steel
Sides/Ends:	¼" thick ASTM A36 carbon steel
Roof Deck:	¼" thick ASTM A36 carbon steel

WETTED MATERIALS (Material Compatibility Check)

Carbon Steel*	Tank walls, bottom, sides; steam coil (if supplied)
Carboline Liner	Tank interior (Could be Phenoline 310 or Phenoline 380 – confirm which)
Buna (Nitrile, NBR)	Manway gaskets, valve seats, P/V valve gasket
Nylon 11	Valve disc
304 Stainless Steel	Float ball

*Theoretically if the tank has an interior liner, no carbon steel should be exposed to the liquid. However, if there are areas of thin or missing liner, bare carbon steel will be exposed. It is always a good idea to check compatibility of carbon steel even if the tank interior is lined.

FEATURES

Valves:	(4)Front & (1)Rear: wafer butterfly valve. Cast iron body, Buna-N seat & seals, 316 SS stem, Nylon 11 coated ductile iron disk, with plug and chain.
Relief Valve:	16 oz./in^2 pressure setting, 0.4 oz./in^2 vacuum setting; Buna-N seal
Rear Drain:	4"-150# FNPT flange
Front Drain:	4"-150# FNPT flange
Top Manway:	22" I.D. min. - ½" flat steel with slotted hinges w/ Buna-N seal (thermally fused to tank)
Front Manway:	22" I.D. min. - 1/2" flat steel with slotted hinges w/ Buna-N seal (thermally fused to tank)
Side Manway:	22" I.D. min. - 1/2" flat steel with slotted hinges w/ Buna-N seal (thermally fused to tank)
Stairway:	Non-slip w/handrails & guardrails; OSHA compliant
Top Fill Conn:	3" sch. 40 pipe with cap & chain
Top Flange:	4" – 150# flange w/ blind
Top Coupling:	2" FNPT sch. 40 coupling with plug
Level Gauge:	Ball float style; 2-8" SS floats

SURFACE DETAILS

Exterior Coating:	High Gloss Polyurethane
Interior Coating:	Chemical resistant lining

Strapping Table: ST306

United Rentals
Fluid Solutions

UnitedRentals.com | 800.UR.RENTS

[redacted]

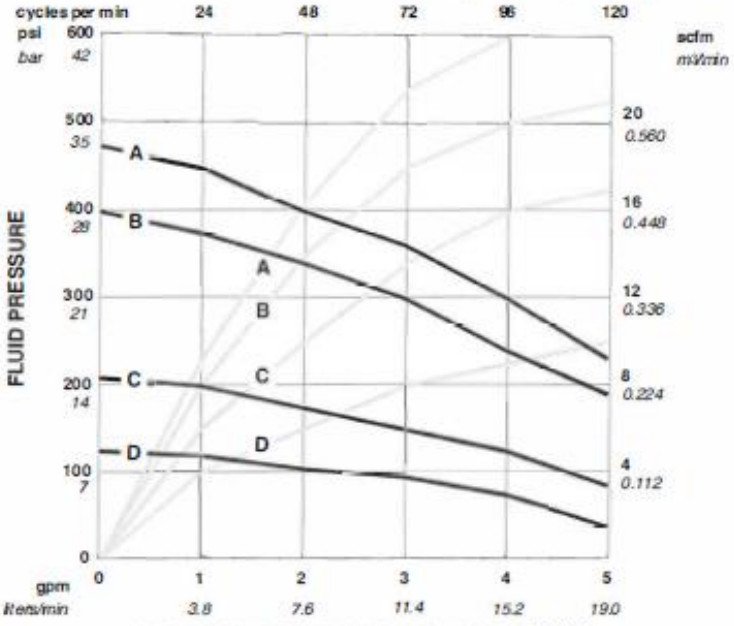
Technical Data

5:1 Monark

Category	Data
Maximum fluid working pressure	600 psi (4.2 MPa, 42 bar)
Maximum air input pressure	120 psi (0.8 MPa, 8.4 bar)
Pump cycles per 1 gallon (3.8 liters)	24
Maximum recommended pump speed for continuous operation	60 cycles/min
Maximum flow at continuous duty	2.5 gallon (9.46 liters) at 60 cycles/min
Recommended speed for optimum pump life	15–25 cycles/min; 0.63–1.04 gpm (2.38–3.94 liters/min)
Air consumption	approx. 8.2 scfm (0.23 m^3/min) at 1 gpm (3.8 liters/min) at 100 psi (0.7 MPa, 7 bar) air pressure
Weight	approx. 20 lb (9 kg)
Wetted parts	AISI 302, 303, 304, 316, and 17–4 PH grades of Stainless Steel; Chrome Plating; PTFE; Ultra–High Molecular Weight Polyethylene

KEY: Fluid Outlet Pressure – Black Curves
Air Consumption – Gray Curves

A 120 psi (0.8 MPa, 8.4 bar) air pressure
B 100 psi (0.7 MPa, 7 bar) air pressure
C 70 psi (0.5 MPa, 4.9 bar) air pressure
D 40 psi (0.3 MPa, 2.8 bar) air pressure



FLUID FLOW (TEST FLUID: NO 10 MOTOR OIL)

To find Fluid Outlet Pressure (bar/psi) at a specific fluid flow (lpm/gpm) and operating air pressure (bar/psi):

1. Locate desired flow along bottom of chart.
2. Follow vertical line up to intersection with selected fluid outlet pressure curve (black). Follow left to scale and read fluid outlet pressure.

To find Pump Air Consumption (m^3/min or scfm) at a specific fluid flow (lpm/gpm) and operating air pressure (bar/psi):

1. Locate desired flow along bottom of chart.
2. Follow vertical line up to intersection with selected air consumption curve (gray). Follow right to scale and read air consumption.

[redacted]

HPC INDUSTRIAL
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PENFLEX

700 Series Corrugated Hose

Penflex 700 series corrugated hose is a high quality general purpose industrial hose designed to provide high resistance to corrosion as well as to allow for good flexibility and sufficient service life in cyclical applications. This hose is available in several configurations (standard, open and close pitch) to satisfy needs and requirements of different applications. This hose is commonly used in Power Generation, Steel, Chemical, Oil and Gas and a number of other industries.

Nom I.D. (in.)	Part Number	Braid Layers	Nom O.D. (in.)	Braid Construction	Max. Pressure @70°F (psig) Work	Test	Burst	Bend Radius (in.) Dyn.	Static	Weight /Foot (lb.)
1/4"	7xx-004	0	0.48	----	180	270	----	5.00	1.00	0.09
	7xx-1SB-004	1	0.57	24 x 5 x .014	2,116	3,844	8,464			0.17
	7xx-2SB-004	2	0.64		3,125	4,687	12,500			0.26
3/8"	7xx-006	0	0.63	----	100	150	----	5.50	1.25	0.13
	7xx-1SB-006	1	0.74	24 x 7 x .014	1,501	2,251	6,004			0.25
	7xx-2SB-006	2	0.81		2,401	3,602	9,604			0.36
1/2"	7xx-008	0	0.82	----	80	120	----	6.00	1.50	0.23
	7xx1SB-008	1	0.89	24 x 7 x .014	1,075	1,613	4,301			0.34
	7xx-2SB-008	2	0.96		1,720	2,580	6,880			0.46
3/4"	7xx-012	0	1.21	----	70	105	----	8.00	2.25	0.39
	7xx-1SB-012	1	1.28	36 x 8 x .014	792	1,188	3168			0.59
	7xx-2SB-012	2	1.35		1,267	1,901	5,069			0.79
1"	7xx-016	0	1.51	----	40	60	----	9.00	2.75	0.53
	7xx-1SB-016	1	1.58	36 x 9 x .014	571	857	2,285			0.75
	7xx-2SB-016	2	1.65		914	1,370	3,654			0.98
1-1/4"	7xx-020	0	1.85	----	25	38	----	10.50	3.50	0.76
	7xx-1SB-020	1	1.93	48 x 7 x .016	531	797	2,125			1.07
	7xx-2SB-020	2	2.02		850	1,274	3,398			1.37
1-1/2"	7xx-024	0	2.19	----	20	30	----	12.00	4.00	0.84
	7xx-1SB-024	1	2.28	48 x 9 x .016	472	708	1,887			1.23
	7xx-2SB-024	2	2.37		755	1,133	3,021			1.63
2"	7xx-032	0	2.60	----	15	23	----	15.00	5.00	0.90
	7xx-1SB-032	1	2.72	48 x 9 x .020	516	774	2,064			1.52
	7xx-2SB-032	2	2.84		826	1,239	3,302			2.14
2-1/2"	7xx-040	0	3.23	----	12	18	----	20.00	8.00	1.16
	7xx-1SB-040	1	3.33	72 x 7 x .020	387	581	1,548			1.86
	7xx-2SB-040	2	3.43		619	929	2,477			2.56
3"	7xx-048	0	3.78	----	10	15	----	22.00	9.00	1.21
	7xx-1SB-048	1	3.88	72 x 8 x .020	316	474	1,264			2.00
	7xx-2SB-048	2	3.98		506	758	2,022			2.80
3-1/2"	7xx-056	0	4.32	----	9	14	----	24.00	10.00	1.62
	7xx-1SB-056	1	4.45	72 x 10 x .020	297	445	1,188			2.61
	7xx-2SB-056	2	4.58		475	712	1,900			3.60
4"	7xx-64	0	4.85	----	8	12	----	27.00	13.00	1.69
	7xx-1SB-064	1	4.98	72 x 10 x .020	232	348	927			2.68
	7xx-2SB-064	2	5.10		371	557	1,485			3.68
5"	7xx-080	0	5.90	----	6	9	----	31.00	18.00	2.50
	7xx-1SB-080	1	6.03	72 x 8 x .025	191	286	764			3.75
	7xx-2SB-080	2	6.15		306	458	1,222			5.00
6"	7xx-096	0	6.87	----	5	8	----	36.00	19.00	3.47
	7xx1SB-096	1	7.10	96 x 12 x .020	165	247	660			4.75
	7xx-2SB-096	2	7.33		264	396	1,056			6.04
8"	7xx-128	0	9.09	----	6	9	----	40.00	20.0	5.56
	7xx-1SB-128	1	9.19	96 x (21 x .024)	234	350	934			9.44
	7xx-2SB-128	2	9.28		374	561	1,495			13.36
10"	7xx-160	0	11.18	----	5	8	----	50.0	25.00	6.80
	7xx-1SB-160	1	11.32	96 x (25 x .028)	230	344	918			12.90
	7xx-2SB-160	2	11.45		367	551	1,469			19.00
12"	7xx-192	0	13.23	----	3	5	----	60.00	30.00	9.02
	7xx-1SB-192	1	13.37	96 x (25 x .028)	161	241	643			14.83
	7xx-2SB-192	2	13.50		257	386	1,029			20.64

800-232-3539 610-367-2260 Fax 877-647-4011 www.penflex.com sales@penflex.com

[redacted]

TEMPORARY BOILER EMISSIONS INFORMATION

1341-300605
5-1038
995

testo 330-2 LL
V2.14 02171338/USA

Protocol
04/03/2018 02:56:36

Fuel: Natural Gas
O2ref. 25.0 %
CO2 Max: #1 11.7 %

Combustion test
395.1 °F Temp. stack
9.30 % CO2
83.9 % Eff. net
4.3 % Oxygen
14 ppm CO
26 ppm NO
27 ppm NOx
18 ppm CO Air Free
83.9 % Eff. gross
77.5 °F Ambient temp
132.0 °F Dewpoint
26 ppm NO

5.0 % NO2 addition

50%

testo 330-2 LL
V2.14 02171338/USA

Protocol
04/03/2018 03:11:01

Fuel: Natural Gas
O2ref. 25.0 %
CO2 Max: 11.7 %

Combustion test
383.0 °F Temp. stack
8.29 % CO2
83.4 % Eff. net
6.1 % Oxygen
12 ppm CO
25 ppm NO
26 ppm NOx
17 ppm CO Air Free
83.4 % Eff. gross
77.4 °F Ambient temp
128.7 °F Dewpoint
25 ppm NO

5.0 % NO2 addition

LO

testo 330-2 LL
V2.14 02171338/USA

Protocol
04/03/2018 03:15:17

Fuel: Natural Gas
O2ref. 25.0 %
CO2 Max: 11.7 %

Combustion test
343.4 °F Temp. stack
7.46 % CO2
83.6 % Eff. net
7.6 % Oxygen
18 ppm CO
25 ppm NO
26 ppm NOx
28 ppm CO Air Free
83.6 % Eff. gross
77.5 °F Ambient temp
125.7 °F Dewpoint
25 ppm NO

5.0 % NO2 addition

75%

testo 330-2 LL
V2.14 02171338/USA

Protocol
04/03/2018 03:02:23

Fuel: Natural Gas
O2ref. 25.0 %
CO2 Max: 11.7 %

Combustion test
406.6 °F Temp. stack
8.63 % CO2
83.1 % Eff. net
5.5 % Oxygen
14 ppm CO
26 ppm NO
27 ppm NOx
19 ppm CO Air Free
83.1 % Eff. gross
75.7 °F Ambient temp
129.7 °F Dewpoint
26 ppm NO

5.0 % NO2 addition

25%

testo 330-2 LL
V2.14 02171338/USA

Protocol
04/03/2018 03:12:48

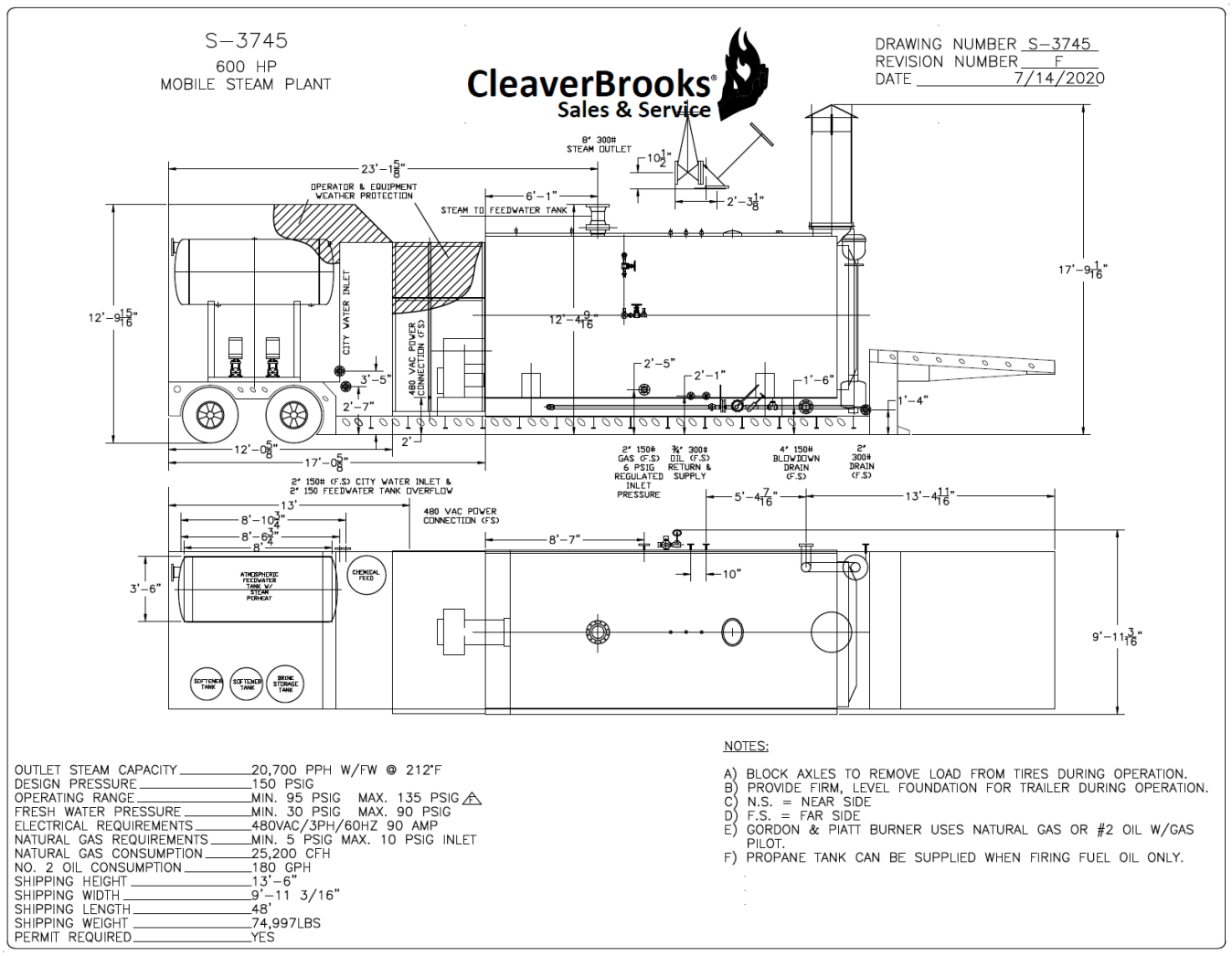
Fuel: Natural Gas
O2ref. 25.0 %
CO2 Max: 11.7 %

Combustion test
361.2 °F Temp. stack
7.79 % CO2
83.5 % Eff. net
7.0 % Oxygen
15 ppm CO
26 ppm NO
27 ppm NOx
23 ppm CO Air Free
83.5 % Eff. gross
77.4 °F Ambient temp
126.9 °F Dewpoint
26 ppm NO

5.0 % NO2 addition

[redacted]

TEMPORARY BOILER DRAWINGS



OUTLET STEAM CAPACITY 20,700 PPH W/FW @ 212°F
DESIGN PRESSURE 150 PSIG
OPERATING RANGE MIN. 95 PSIG MAX. 135 PSIG
FRESH WATER PRESSURE MIN. 30 PSIG MAX. 90 PSIG
ELECTRICAL REQUIREMENTS 480VAC/3PH/60HZ 90 AMP
NATURAL GAS REQUIREMENTS MIN. 5 PSIG MAX. 10 PSIG INLET
NATURAL GAS CONSUMPTION 25,200 CFH
NO. 2 OIL CONSUMPTION 180 GPH
SHIPPING HEIGHT 13'–6"
SHIPPING WIDTH 9'–11 3/16"
SHIPPING LENGTH 48'
SHIPPING WEIGHT 74,997LBS
PERMIT REQUIRED YES

NOTES:

A) BLOCK AXLES TO REMOVE LOAD FROM TIRES DURING OPERATION.
B) PROVIDE FIRM, LEVEL FOUNDATION FOR TRAILER DURING OPERATION.
C) N.S. = NEAR SIDE
D) F.S. = FAR SIDE
E) GORDON & PIATT BURNER USES NATURAL GAS OR #2 OIL W/GAS PILOT.
F) PROPANE TANK CAN BE SUPPLIED WHEN FIRING FUEL OIL ONLY.

WATER QUALITY GUIDELINES FOR TEMPORARY BOILER

[redacted]

HPC INDUSTRIAL
POWERED BY CLEAN HARBORS

TABLE 1: ASME WATER QUALITY GUIDELINES

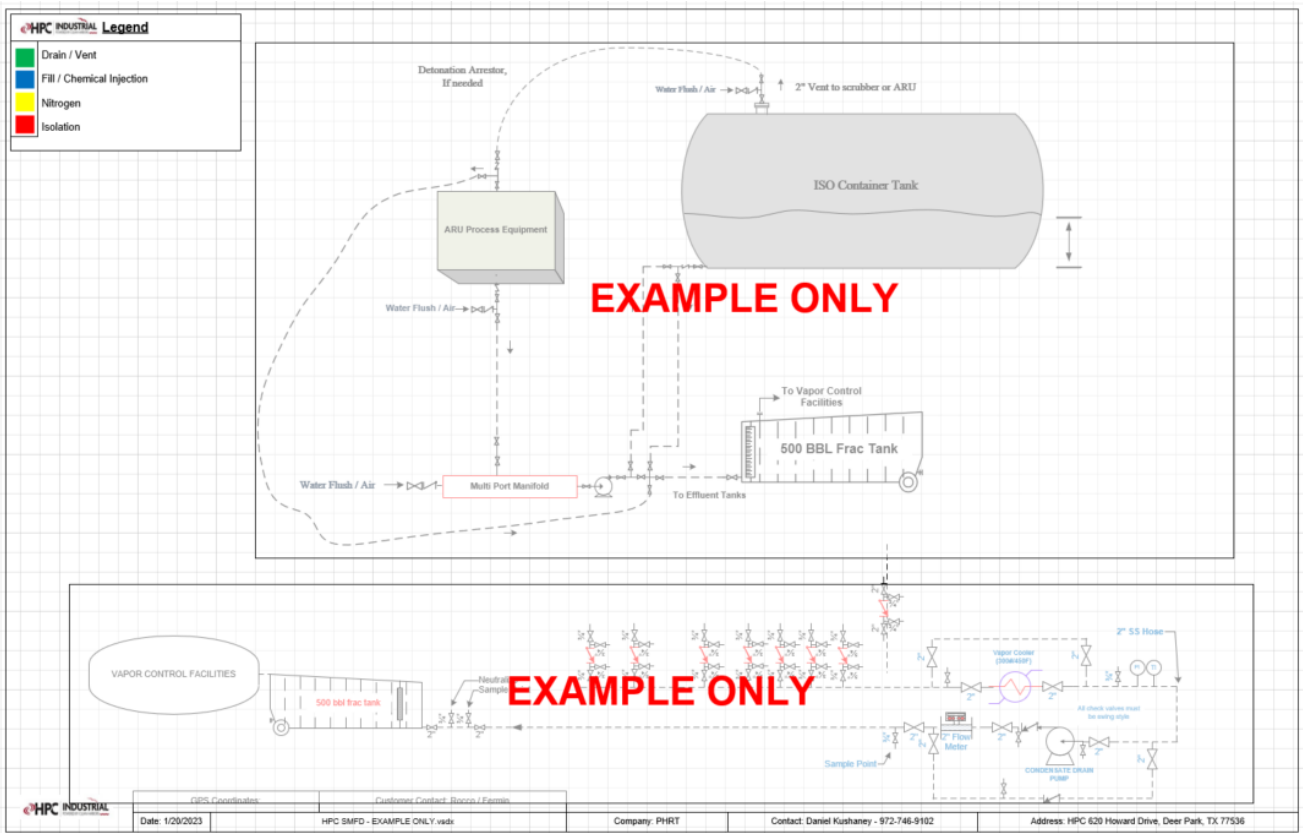
ASME Document No. CRTD (Vol. 34)
"Consensus on Operating Practices for the Control of Feedwater & Boiler Water Chemistry in Modern Industrial Boilers"

Drum operating pressure, psig	0–300	301–450	451–600
Feedwater			
Dissolved oxygen ppm (mg/L)			
O_2 measured before chemical oxygen scavenging	<0.007	<0.007	<0.007
Total iron ppm (mg/L) Fe	<0.1	<0.05	<0.03
Total hardness ppm (mg/L)*	<0.3	<0.3	<0.2
pH at 250°C	8.3–10.0	8.3–10.0	8.3–10.0
Boiler water			
Silica ppm (mg/L)	<150	<90	<40
Total alkalinity ppm (mg/L)*	<700	<600	<500
Total Dissolved Solids in Steam			
TDS (maximum) ppm	1.0–0.2	1.0–0.2	1.0

*as $CaCO_3$

[redacted]

EXAMPLE DEINVENTORY AND CHEMICAL CLEANING FACILITIES



[redacted]

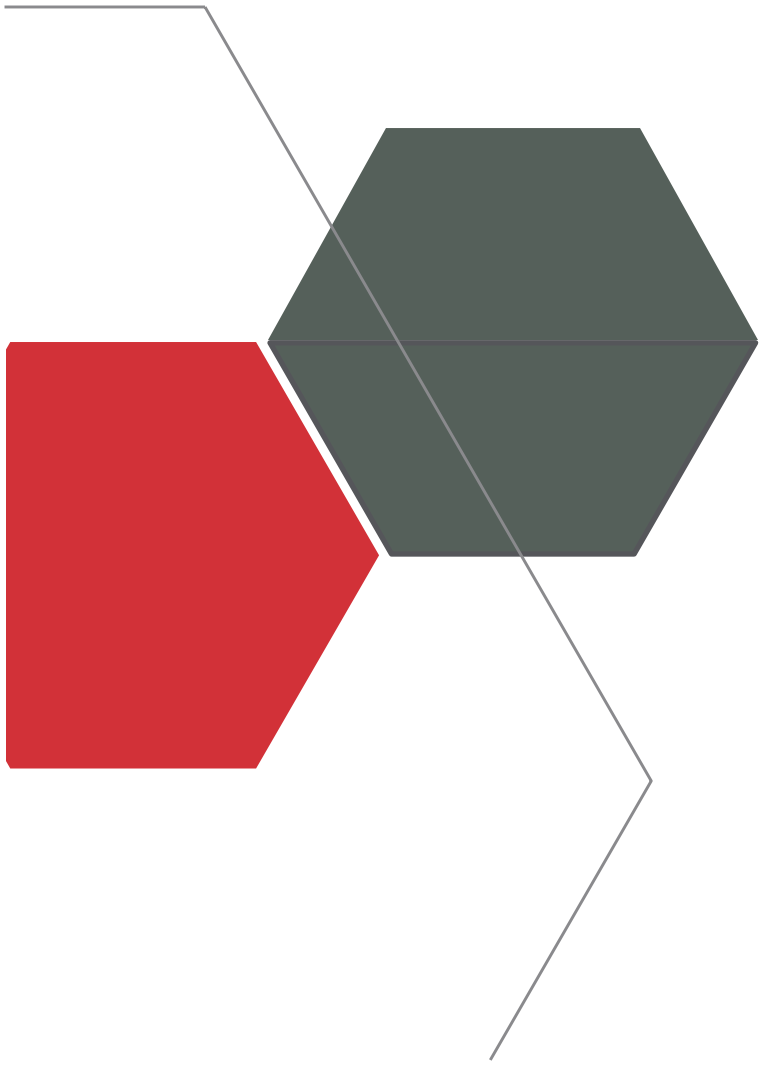
Clean Harbors Environmental Services, Inc.
42 Longwater Drive, P.O. Box 9149
Norwell, MA 02061-9149
781.792.5000
www.cleanharbors.com

RFP Response Provided To:

U.S. Environmental Protection Agency, Superfund and Emergency Management Division, Region 2.

Phase 2 Vapor Control Measures and Operations

January 6, 2023



Submitted by:
Paul Kaup
Director – Technical Sales
HPC Industrial | VCM
Phone: 281.467.0049
Paul.Kaup@HPC-Industrial.com

Clean Harbors Environmental Services, Inc.
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January 6, 2023

U.S. Environmental Protection Agency, Superfund and Emergency Management Division, Region 2.

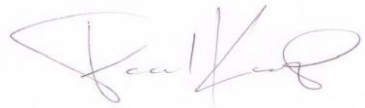
Subject: Phase 2 Vapor Control Measures and Operations

Per your request, we are pleased to submit our proposal to provide passive vapor control operations at four different locations at your PORT HAMILTON Refinery in St. Croix USVI. We have provided pricing using a conservative timetable based on the treatment timelines from our chemical cleaning group. The timetable may be modified should the parameters change the scope of work, i.e., longer durations for vapor control required due to temporary storage tanks remaining full, higher concentrations to manage, lower ppm voc spend requirements below 500 ppm, etc.

HPC Industrial VCM Group, formerly Global Vapor Control (GVC), has the skills, advanced technology and experience to meet PORT HAMILTON 's needs for any vapor control management project including turnarounds, BWON programs and LDAR.

We hope that PORT HAMILTON Refinery chooses HPC VCM based on our safety record, equipment and technician quality, post-job reports, experience, and ability to lower your overall cost. If we have inadvertently missed any contents of your request for proposal, we would be very grateful for the opportunity to provide further clarification.

I appreciate this opportunity to provide pricing for this project and look forward to working with you. Please contact me should you require more information or clarification.



Paul Kaup
Director of Technical Sales
Vapor Control Management
Cell: 281.467.0049
Paul.Kaup@HPC-Industrial.com

Assumptions & Clarifications

Configuration & Contents	▪ Product: ▪ Four Locations: ▪ Amine Regen Units (4 & 5) 10 frac tanks ▪ Amine Regen Units (6 & 7) 8 frac tanks ▪ DD Satellite Area, 1 frac tank ▪ Coker Unit Area, 1 frac tank
PORT HAMILTON Plant Pre-Project Requirements	▪ PORT HAMILTON will verify bond and grounding. ▪ PORT HAMILTON will dispose of all spent media and chemistry used in the vapor control operations at each location. ▪ PORT HAMILTON will provide air compressors for each packed column liquid scrubber at all four locations. ▪ PORT HAMILTON will provide diesel fuel for each air compressor at all four locations.
Pre-Project Requirements & Planned Procedures	▪ All HPC VCM personnel to have proper paperwork to work inside PORT HAMILTON Refinery. ▪ HPC VCM will mobilize to each site and stage a liquid scrubbing unit and two (2) 1,000 lb. carbon vessels at each location to connect them in series. ▪ HPC VCM will provide all fittings, hoses, grounding from the temporary storage tanks at each location to the liquid packed column scrubber and carbon vessels (2). ▪ PORT HAMILTON will verify all grounding and bonding on all equipment once HPC VCM has made connections. Vapor Control Operations ▪ HPC VCM will connect vapor hoses to a manifold and then to each frac tank at all four locations. ▪ HPC VCM will then connect the manifold to a liquid packed column scrubber with (2) 1,000 lb. carbon vessels connected in series behind the packed column scrubber for polishing. ▪ HPC VCM will provide passive vapor control on the temporary frac tanks while treated material is being stored in each one. ▪ Breakthrough in the media used in the vapor control systems is 300 ppm voc, and 10 ppm H2S. ▪ HPC VCM will continue passive vapor control operations at each location until the material has been removed from each temporary storage tank. ▪ Vapor Control is complete once all material has been removed and vapor control is no longer needed. ▪ HPC VCM will rig down and demob out of the PORT HAMILTON Refinery.
Vapor Controlling Parameters	▪ 8-hour minimum per day ▪ Hours >12 per day will begin a new shift and is subject to the minimum hours per shift (8 hours)

Division of Responsibilities

	HPC VCM	PORT HAMILTON	3rd Party	Quantity	Comments
Description					
Air Monitoring	X			8	RKI Eagle
Air Compressor		X		4	
Carbon	X			12k/lbs.	12k lbs.
Carbon Vessels	X			8	(8) 1K lb. vessels
CarbonilES	X			23 totes	Chemistry for VOC and H2S.
Diesel Fuel /Gasoline		X			For generator
Disposal		X			If applicable
Electrical Hook-up	X	verify			Bonding and continuity
Flame Arrestor	X			4	
Hose and fittings	X			630’	2” chem hoses, manifolds (2),
Portable Toilet		X		1	for crew
PPE	X			4	as required
Vapor Control Unit	X				(2) SST-20’s, (1) SST-40, (1) SST-54
Vehicles (Pick up w/hand tools)	X			6	TRK

Degassing Timetable / staffing working 12-hour shifts

Working Schedule	Quantity	Units	People
Rig Up	5	Day shifts	9 people
Vapor Control/Degassing	30	Day / Night shifts	9 people
Rig Down	5	Day shifts	9 people

Est. Day	Event
10	Equipment Picked up @ Deer Park TX and Delivered to St. Croix PHRT
1	HPC Employees Travel from Houston TX to St. Croix PHRT
1	Site Orientation, walk systems, begin set up
1	Set up equipment at ARU4 & ARU5
1	Set up equipment at DD Satelite
1	Set up equipment ARU6 & ARU7
1	Set up equipment Coker Unit
30	Vapor Control Operations ARU4/5, UDCC, ARU6/7, Coker Unit
1	Rig Down equipment at ARU4 & ARU5
1	Rig Down equipment at DD Satelite
1	Rig Down equipment ARU6 & ARU7

1	Rig Down equipment Coker Unit
1	Demobilize equipment from site
1	HPC Employees Travel from St. Croix PHRT to Houston TX
10	Equipment Picked up @ St. Croix PHRT and Delivered to Deer Park TX
32	Estimated Days for completion

Crew:

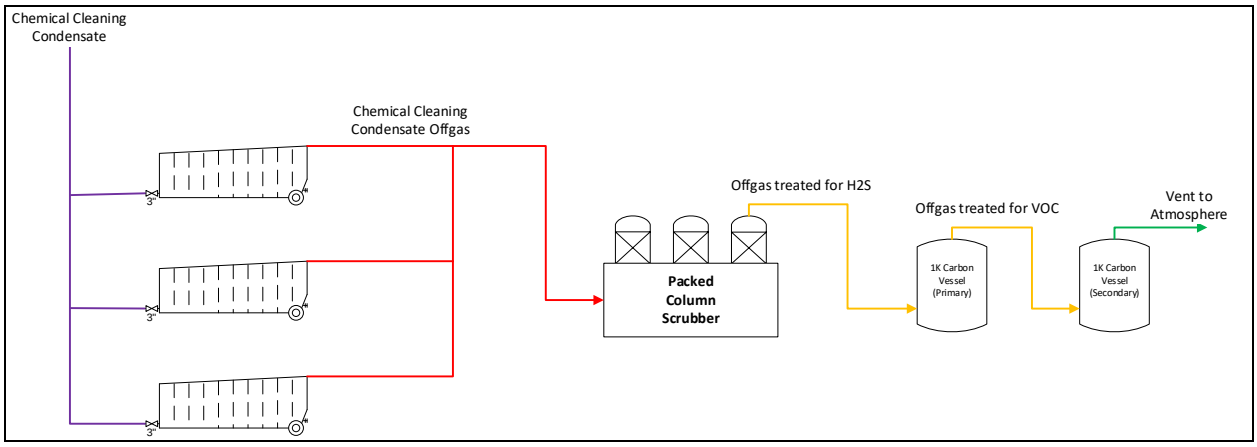
Days
One (1) Project Manager
One (1) Supervisor
One (3) Operator

Nights
One (1) Supervisor
One (3) Operator

Conclusion

HPC Industrial has extensive experience managing large, technically complex industrial cleaning programs for some of the most demanding environmental leaders in the industry. HPC Industrial strongly believes that we can offer significant benefits to PORT HAMILTON. We continue to invest in new equipment, talented personnel, and innovative tools and technology to support our services. This, in addition to our forward-thinking philosophy on cost management, has demonstrated unparalleled success in maintaining true environmental compliance for the lowest total cost of our customers.

We appreciate the opportunity to provide this proposal for HPC Industrial Vapor Control Services and look forward to a constructive dialogue on opportunities with PORT HAMILTON.



NOTE: Above is a generalized process flow diagram for the Port Hamilton Amine De-inventory project. The above diagram represents the general equipment and flow path for the Phase 2 Chemical Cleaning portion. The number of frac tanks and the exact packed column scrubber are not represented in the above diagram.

Phase 2 (Chemical Cleaning)
HPC-Industrial Vapor Control group will provide a packed column scrubber and two (2) 1,000-pound carbon canisters to control the vapors off the chemical cleaning condensate. The chemical cleaning condensate will be routed to frac tanks (used for storage). As the condensate enters the frac tank, air will be displaced and sent through the packed column scrubber and carbon beds. Once the condensate is contained in the frac tanks, the packed column scrubber will use a triazine and amine based H2S scavenger to remove the H2S from all vapors generated by the chemical cleaning condensate. The VOCs will pass through the scrubber untreated, where they will interact with the carbon and be absorbed. The resulting vent gas will contain only air and nitrogen. The packed column scrubber inlet vapors, primary carbon bed inlet vapors, secondary carbon bed inlet vapors and secondary carbon bed outlet vapors will be tested every hour for breakthrough. HPC-Industrial has determined that at a vapor outlet concentration of 20ppm H2S exiting the packed column scrubber, the scrubbing media will be designated "spent" triggering a changeout of this material with fresh scrubbing media. At a vapor outlet concentration of 300 ppm VOC on the outlet of the primary carbon bed, the carbon will be designated as "spent", triggering a changeout of this material with fresh carbon. The primary carbon bed will be bypassed, diverting gas to the secondary carbon. This secondary carbon bed will then become the primary, and the freshly refilled carbon bed will be place in the secondary position.

This system will be in place at 4 locations, Unit 4/5, Unit 6/7, Unit 6/7 DD, and the Coker Unit. This system will remain in place until such time as all frac tanks have been clean.

Clean Harbors Report

Clean Harbors Environmental Services, Inc.
42 Longwater Drive, P.O. Box 9149
Norwell, MA 02061-9149
781.792.5000
www.cleanharbors.com

January 20, 2023

U.S. Environmental Protection Agency
Superfund and Emergency Management Division
Region 2

RE: Clean Harbors' Incineration Capabilities - North America

To Whom it May Concern:

Clean Harbors Environmental Services, Inc. (Clean Harbors) appreciates Port Hamilton Refining and Transportation, LLLP (PHRT) considering it for its waste management needs. Clean Harbors is providing this letter to U.S. EPA pursuant to the Consent Order between U.S. EPA and PHRT.

Clean Harbors is North America's leading provider of Environmental and Industrial services. We are the Incineration industry leader with approximately 70% of the RCRA Incineration capacity in North America. Clean Harbors owns and operates eight hazardous waste incinerators in North America:

- Aragonite, Utah
- Kimball, Nebraska
- El Dorado, Arkansas (2 Kilns)
- Deer Park, Texas (3 Kilns)
- Lambton, Ontario

If the Amines, Ammonia, and LPG must be shipped off-island for disposal, Clean Harbors has the permits and capabilities required to provide incineration of these materials. Pricing can be developed upon request based on quantities to be shipped and method(s) of conveyance, pending an approved Clean Harbors profile, sample if requested and approval into final disposal facility.

Literature on our Incineration capabilities is attached, along with Facility Fact Sheets for our United States - based Incinerators. If you have any questions or need further assistance, you may reach me or Chris Vidovich at the numbers below.

Sincerely,

Jeff Brown
Project Services Business Development Manager
Phone: 336-339-7179

Chris Vidovich
VP Project Services
Phone: 724-980-2839

Environmental Services

Incineration Services

Fact Sheet

Of all the various disposal technologies a customer can choose for their waste disposal, incineration offers the most complete destruction. Clean Harbors' Incineration Services thermally destroy organic matter through the use of high temperatures.

Clean Harbors owns and operates seven hazardous waste incinerators in North America. Three incinerators are located at our Deer Park, Texas, facility. Five incinerators are housed in Aragonite, Utah; Kimball, Nebraska; El Dorado, Arkansas; and Lambton, Ontario.

Direct Incineration of Incompatible/Reactive Materials

Clean Harbors specializes in the management of incompatible/reactive liquids, solids, sludge, and gases via direct incineration.

State-of-the-Art Fluidized Bed Technology

Our Kimball, Nebraska, incinerator uses a *fluidized bed incineration technology.* The vertical thermal oxidation unit operates in the 1400-1600°F range, and the bed is made up of small, granular inorganic materials that mix throughout the unit. The fluidized bed technology helps to promote a more complete organic combustion than other incineration technologies.

Rotary Kiln Technology

Our Deer Park, Texas; El Dorado, Arkansas; and Aragonite, Utah, incinerators use a *rotary kiln technology.* High temperature kilns provide greater flexibility in destruction of hazardous waste. A high temperature kiln and afterburner can process material in bulk and drum (liquids, solids, and sludge), process lab packs, and manage compressed gas cylinders, bulk sludge processing, etc.

Liquid Injection Technology

Our Lambton, Ontario, incinerator uses a *liquid injection technology*. This technology is a high temperature system consisting of a fixed unit incinerator, a semi-dry spray dryer absorber, and a four-compartment baghouse. This system provides a cost-effective and environmentally sound option for the management of liquid and pumpable materials.

Rail Access to Minimize Transportation Costs

Clean Harbors incineration facilities can receive waste via rail. Rail shipments reduce customer transportation costs as well as over-the-road liability. Our Kimball facility can provide value added service, *rail car cleaning*, when requested. Our Deer Park facility can receive and process incompatible / reactive liquids in rail via direct injection into the incinerator chambers.

Why Clean Harbors' Incineration

With nearly 70% of North America's incineration capacity, our five incineration facilities in the U.S. and Canada ensure we can meet any incineration requirement from any customer. Clean Harbors' kilns are capable of incinerating solids, liquids, and sludge and our thermal treatment systems' advanced technology can destroy up to 99.9999 percent of all hazardous constituents.

Ash Management

All ash generated from a Clean Harbors incinerator is managed internally to a company owned and operated landfill. Ash generated from our Kimball and Deer Park incinerators is managed to on-site landfills further ensuring customers that their liability ends at the incinerator.

Unique to the industry is Clean Harbors' Kimball facility, which is the only commercial hazardous waste incinerator in the United States that can delist their ash. After stabilization, ash is certified to be non-hazardous and is "delisted" prior to placement in the on-site monofill. As a result, it is no longer regulated as a hazardous waste under RCRA.

Compressed Gas Cylinder Management Program

Clean Harbors' Deer Park and El Dorado facilities specialize in the management of compressed gas cylinders. Deer Park and El Dorado can manage cylinders weighing up to one ton. We have successfully managed over 1,100 different gases at our Deer Park facility. El Dorado can also manage large C-Class cylinders, ISO, and multi tube trailers of compressed gas. Our Aragonite incinerator is permitted to process compressed gases and accepts some gas cylinders.

CleanHarbors®

WASTE DISPOSAL SERVICES

Aragonite, Utah Facility

The Aragonite incineration facility is located in the Great Salt Lake Desert approximately 75 miles west of Salt Lake City, Utah in Tooele County. Its location is within a 100 square-mile zone established by the Tooele County Commission to be used exclusively for hazardous waste management activities. The nearest residential neighbor is approximately 45 miles southeast of the facility in Grantsville, Utah.

Within a 30-mile radius and in a southerly direction of the site, the land is used by the U.S. Army and Air Force for desert warfare training. The Federal Bureau of Land Management owns 95% of the land in the surrounding thirty miles.

Permit

- US EPA ID No. UTD981552177
- Notification of Hazardous Waste Activity UTD981552177
- Notification of PCB Activity UTD981552177
- Conditional Use and Zoning Permits (Tooele County)
- Title V Air Permit 4500048004
- CERCLA Approval
- RCRA Construction and Operation of a Hazardous Waste Facility UTD981552177
- TSCA (Transfer, Storage of PCBs) UTD981552177
- DEA Controlled Substance Registration Certificate # RC0331049
- Laboratory Certification (NELAP)
- HSWA UTD981552177
- Soil Permit (Permit to import soils)
- ATF Explosives License

FACILITY DESCRIPTION

1991	35 AC.	UT
START-UP DATE	FACILITY SIZE (ACRES)	STATE/PROVINCE

Services Provided:

- Rotary Kiln Incineration Technology
- Storage prior to final Treatment and/or Disposal
- Direct Burn Liquids and Sludge from Tankers
- Disposal of TSCA/RCRA Bulk and Containerized Waste including Labpack Containers
- DEA Controlled Substance Reverse Distributor, Schedules 1-5
- Rail served by both Union Pacific and Burlington Northern Railways

Typical Customers: Refineries, R&D facilities, colleges and universities, government research facilities, pharmaceutical companies, chemical facilities, state and municipal agencies, manufacturers, medical facilities.

Typical Waste Streams: Contaminated process wastewaters, inorganic cleaning solutions, oils, spent flammable solvents, organic and inorganic laboratory chemicals, paint residues, debris from toxic or reactive chemical cleanups, off-spec commercial products, compressed gas cylinders, household hazardous, DEA controlled substances, infectious and medical waste.

Treatment, Storage and Disposal Capabilities

- Drum Storage Capacity (RCRA/TSCA): gallons 801,570 (14,574 drums)
- Liquid Tank Storage Capacity (RCRA/TSCA): 458,048 gallons
- Sludge Tank Storage Capacity (Non-Flammable RCRA/TSCA): 37,712 gallons
- Bulk Solid Tank Storage Capacity (Non-Flammable RCRA/TSCA): 1,200 cubic yards at Aragonite. With the neighboring Clive facility, Aragonite can receive and store rail quantities and event business.
- Wide range of permitted waste codes

CleanHarbors®

Clean Harbors Aragonite, LLC • 1600 North Aptus Road • Aragonite, Utah 84029 • 435.884.8100 • www.cleanharbors.com

WASTE DISPOSAL SERVICES

Deer Park, Texas Facility

The Deer Park facility is fully permitted to manage a wide variety of regulated materials including RCRA hazardous waste, PCBs, APHIS soils, and non-regulated waste materials. Properly packaged infectious waste and witness-burned DEA-controlled substances can also be incinerated at the Deer Park facility.

Utilized for incineration, the Deer Park facility is self supported with ancillary units. It is a stand-alone disposal facility with an on-site landfill, a wastewater treatment plant, and storage/processing units. A full staff of technical, operational, and administrative personnel handles the most complex customer needs.

Permit

- US EPA ID No. TXD055141378
- TCEQ Facility Permit for Industrial Solid Waste Management Site No. HW- 50089-001 (Part B)
- TCEQ Compliance Plan CP- 50089-001
- TCEQ New Source Review Air Permit Nos. 5064 and N001
- TCEQ Federal Operating Permit No. O-1566 (Title V Air Permit)
- US EPA TSCA Authorized for Commercial PCB Storage and Incineration
- TCEQ TPDES Permit No. WQ0001429000
- USDA APHIS Permit No. P 330-16-00127
- Harris Galveston Coastal Subsidence District Permit No. 100601
- TCEQ Water Well Permit No. 1487

FACILITY DESCRIPTION

1971 START-UP DATE

145 AC. FACILITY SIZE (ACRES)

TX STATE/PROVINCE

Services Provided:

- Incineration of all types of waste (solids, liquids, sludge, and gas), drums, tankers, and rail
- Storage prior to Incineration
- On-Site Landfill of incineration residues
- On-Site Wastewater Treatment of self-generated aqueous by-products

Typical Customers: Chemical facilities, pharmaceutical companies, manufacturers, R&D facilities, colleges and universities, government research facilities, state and municipal agencies, and medical facilities.

Typical Waste Streams: Contaminated process wastewaters, oils, spent flammable solvents, organic and inorganic laboratory chemicals, paint residues, debris from toxic or reactive chemical cleanups, off-spec commercial products, cylinders, and labpacks.

Treatment, Storage and Disposal Capabilities

- Incineration: Train I, 180 MM BTU/HR; Train II, 153.5 MM BTU/HR
- Tank Storage Capacity: 830,000 gallons
- Drum Storage Capacity: 1,490,000 gallons (25,000 drums)
- Tanker Storage Capacity: 132,000 gallons (24 tankers)
- Bin Storage Capacity: 7,650 cubic yards (250 bins)
- PCBs - Incineration authorized on Train I: 575,000 gallon tank capacity; 300,000 gallon drum capacity
- All non-Dioxin waste codes are permitted for incineration

CleanHarbors®

Clean Harbors Deer Park, LLC • 2027 Independence Parkway South • La Porte, TX 77571 • 281.930.2300 • www.cleanharbors.com

TRANSPORTATION & DISPOSAL SERVICES

El Dorado, Arkansas Facility

Clean Harbors' El Dorado incineration facility specializes in the treatment of hazardous waste (RCRA regulated) and non-hazardous waste by high temperature incineration. RCRA liquids are fed into the rotary kilns and the secondary combustion chamber depending on the specific characteristics of the waste.

Three rotary kilns are utilized for treatment of solids, liquid and sludge. RCRA solids, liquid and sludge may be received from the customer, packaged for ram feed into the rotary kilns, repacked for ram feed, or fed directly into the kilns through an automated shredder auger machine. This system enables the El Dorado facility to accept waste that is packaged in any size Department of Transportation (DOT) approved container.

Our El Dorado, Arkansas unit meets the new source Maximum Achievable Control Technology (MACT) standard and Title V Standards. This is achieved through the use of two dry particulate scrubbers and a Selective Catalytic Reduction (SCR) unit for nitrogen oxide control. Title V of the Clean Air Act requires major sources of air pollutants, and certain other sources, to obtain and operate in compliance with an operating permit.

Permit

- US EPA ID No. ARD069748192
- RCRA Part B Permit No. 10H-RN2
- NPDES Permit No. AR0037800
- ADEQ Operating Air Permit No. 1009-AOP-R17
- APHIS–USDA Permit No. P330-18-00026

FACILITY DESCRIPTION

1974 START-UP DATE

370 AC. FACILITY SIZE (ACRES) *50 ACRES FOR WASTE MANAGEMENT

AR STATE/PROVINCE

Services Provided:

- Incineration of all types of hazardous and non-hazardous waste (solids, liquids, and sludge), drums, tankers, and rail
- Storage prior to Incineration

Typical Customers: Chemical facilities, pharmaceutical companies, manufacturers, R&D facilities, colleges and universities, government research facilities, state and municipal agencies, and medical facilities.

Typical Waste Streams: Contaminated process wastewaters, oils, spent flammable solvents, organic and inorganic laboratory chemicals, paint residues, debris from toxic or reactive chemical cleanups, off-spec commercial products, cylinders, and labpacks.

Treatment, Storage and Disposal Capabilities

- Containerized Storage Capacity: 1,679,205 gallons
- Roll-off storage: 820,257 gallons
- Liquid Storage Capacity: 1,575,990 gallons
- Total Incineration Capacity: 3 incinerators; 63,557 lbs/hour (pump & non-pump)
- 28,601 lbs/hour for the Secondary Combustion Chamber (SCC)

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Waste Disposal Services

Kimball, Nebraska Facility

Fact Sheet

The Kimball facility utilizes a fluidized-bed incinerator. This state-of-the-art thermal oxidation incinerator is capable of maximum destruction efficiencies of hazardous waste and is able to handle a wide variety of feeds. Ash from the incinerator is treated on site, delisted, and then placed in an on-site monofill built to RCRA Subtitle C standards. No other commercial incinerator in the United States has been approved for delisting of incinerator ash.

Supported by the local community, the Kimball site provides generators with one of the lowest liability options for waste management.

Facility Description and General Information

- Startup date: 1995
- Facility size: 640 acres

Services Provided

- Incineration
- Container storage, consolidation, and transfer

Typical Customers

Electronic equipment manufacturers; chemical, plastics and machinery manufacturers; laboratories; utilities providers; petroleum distributors; and government facilities.

Typical Waste Streams

Contaminated process wastewaters; soils; solids; residues from chemical process industry; oils; spent flammable solvents; paint residues; and chemical spill cleanups.

Clean Harbors Permitted Services

- Hazardous Waste Incinerator and Storage Facility Modified Permit (RCRA Permit) Permit No. NED981723513
- Regulatory Amendment to Title 128, Appendix IV (Delisting)
- National Pollutant Discharge Elimination System (NPDES) Authorization to Discharge (NPDES Stormwater Discharge Permit) Permit No. NER910000
- Solid Waste Management Permit (Monofill Permit) No. NE0203238
- Class I Air Operating Permit #OP-18-RC-022

Treatment, Storage and Disposal Capabilities

- Feed capacity: 26,873 pounds per hour (solids, liquids, sludge)
- Storage capacity:
  - For non-bulk containerized waste: 1,530,554 gallons
  - For bulked liquid waste: 978,184 gallons
  - For bulk container storage: 18,673 cubic yards

CleanHarbors®

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