

Authored By: Anthony Roberts	Blanchard Refining Company LLC Galveston Bay Refinery	Doc No.: RSW-000038-GB Rev No: 2
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1.0 Purpose

This practice defines the responsibilities and precautions for the operation of vacuum and pneumatic trucks when loading, unloading and transporting materials on the site.

2.0 Scope

This practice applies to all personnel and any activity involving the operation of vacuum or pneumatic trucks to load, unload and transport materials. See definition of vacuum truck and pneumatic truck in Section 5.0 .

3.0 Responsibilities

3.1 Originating-area Operations Supervisor or MPC Servicing Group Supervisor (if applicable)

Responsible for:

- 3.1.1 Must be trained and knowledgeable in the company policies, DOT and other regulatory requirements and applicable operating procedures that define actions that must be completed for loading and unloading of chemicals into vacuum trucks.
- 3.1.2 Periodically oversees loading and unloading activities to ensure work is being performed safely and all operating procedures are being utilized.
- 3.1.3 Shall ensure work permits issued when required for vacuum truck operations.
- 3.1.4 Shall ensure work permits address the required PPE to vacuum/off load materials. This shall include defining the PPE requirements for personnel exposed to vapors emitted by vacuum truck venting operations if toxic vapors cannot be confined to a safe location or device.
- 3.1.5 Determining the content/characteristics of the material to be picked up prior to its loading in the truck.
- 3.1.6 Verify that the vacuum truck has been water washed prior to being used in the plant when changing product by checking the clean ticket or truck logs.
 - After hours contact (SOC 409-945 -1765) to unlock the gate. Must obtain SDS with contact information attached to equipment that needs cleaning. Contact (Shift Tech) on radio channel zone 5 / loop - 1, Nextel 409-599-8063 for permit to be issued.
- 3.1.7 Checking vacuum truck logs to verify that the material to be picked up is compatible with the previous load (see section 4.5). If the material is not compatible, vacuum truck must be water washed prior to being used in the unit.
- 3.1.8 Providing MSDS's of material to be picked up (list of materials is available on the Vacuum Truck Authorization Form). MSDS should be attached to this form.
- 3.1.9 Determining the appropriate location for off-loading with concurrence of the receiving location prior to loading.
- 3.1.10 Informing truck operator of properties and hazards of the material to be picked up.
- 3.1.11 Communicating and monitoring safety requirements.
- 3.1.12 Completing required Vacuum or Pneumatic Truck Authorization form. The actual form is triplicate on NCR paper. Using photocopies of the form is not allowed. Reference Attachment C.
- 3.1.13 Completing a waste manifest for loads taken off site (e.g., Land Farm) and ensuring that Environmental Department is notified.

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3.2 Receiving-area Operations Supervisor or Designee

Responsible for:

- 3.2.1 Verifying that the vacuum/pneumatic truck is in the correct unloading location.
- 3.2.2 Verifying that a Vacuum or Pneumatic Truck Authorization form has been completed.
- 3.2.3 Execute and oversee the safe loading and unloading of chemical.
- 3.2.4 Must be trained and knowledgeable in the company policies, DOT and other regulatory requirements and applicable operating procedures that define actions that must be completed for the loading or unloading of chemical.
- 3.2.5 Identifies and mitigates any issues with the loading and unloading process or equipment. Issues needing additional attention are clearly communicated to supervision in a timely manner.
- 3.2.6 Informs the vacuum truck operator of any changes in conditions which would affect the job, or any operating emergency.
- 3.2.7 Communicating and ensuring all aspects of the company policies, regulatory requirements and applicable operating procedures are followed and completed during the loading and unloading activities.

3.3 Originating-area and Receiving Area Operators

Responsible for:

- 3.3.1 Verifying completion of Section, A and Section B of the authorization form, respectively, during the face-to-face discussion with the vac truck operator, and signing the form.
- 3.3.2 Execute and oversee the safe loading and unloading of chemical.
- 3.3.3 Must be trained and knowledgeable in the company policies, DOT and other regulatory requirements and applicable operating procedures that define actions that must be completed for the loading or unloading of chemical.
- 3.3.4 Identifies and mitigates any issues with the loading and unloading process or equipment. Issues needing additional attention are clearly communicated to supervision in a timely manner.
- 3.3.5 Ensure that the following safety measures are taken:
 - 3.3.5.1 Provide and review the SDS for chemical to be loaded with the driver,
 - 3.3.5.2 Inform the driver of the actions to take in the event of an emergency,
 - 3.3.5.3 Show the driver the closest safety shower/eye wash station and confirm that it functions,
 - 3.3.5.4 Identify the PPE requirements for the loading activity,
 - 3.3.5.5 Barricade the area around loading activities,
 - 3.3.5.6 Inform the driver of any other work in close proximity, and Ensure proper PPE is donned prior to making any connections or loading any material.
 - 3.3.5.7 Ensure any hoses used for loading have been disconnected from the highway cargo tank and have been cleared of any residual product.
 - 3.3.5.8 Verify all valves, and other closures in liquid discharge systems are closed, capped and free of leaks.
 - 3.3.5.9 Walk the lineup from the vacuum truck to the tank/vessel used in the transfer to verify: the proper lineup has been restored, and

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3.3.5.10 All bleeders are closed and capped.

3.3.6 Informs the vacuum truck operator of any changes in conditions which would affect the job, or any operating emergency.

3.3.7 Communicating and ensuring all aspects of the company policies, regulatory requirements and applicable operating procedures are followed and completed during the loading and unloading activities.

3.4 Tech Services

Responsible for:

3.4.1 Will develop and maintain refinery-wide PR18 **Chemical Interaction Matrix Chart** – Review Attachment B.

3.4.2 Ensure compatibility between chemicals to transported and the contents previously contained in vacuum truck.

3.5 Vacuum/Pneumatic Truck Operator

Responsible for:

3.5.1 Ensuring that all equipment provided onsite satisfies the requirements of PR18

3.5.2 Verify hoses to be used for unloading are:

3.5.2.1 Marked with a valid test/inspection date (if MPC hoses),

3.5.2.2 Compatible with the material to be offloaded, and

3.5.2.3 Free of visual defects.

3.5.3 The condition and compatibility of vacuum truck hoses must be verified by the vacuum truck company representative.

3.5.4 Verify the handbrake or air brakes have been set and wheels are chocked to secure the vacuum truck from moving.

3.5.5 Vacuum truck company representative shall verify all the unloading components (valves, gauges, psv, etc.) of the truck/trailer are functioning.

3.5.6 An owning department representative is required to be present when the vacuum truck is being set-up for loading/unloading and when connections to the process are being made.

3.5.7 Shall ensure the required PPE is being used for vacuum/offloading materials. This shall include defining the PPE requirements for personnel exposed to vapors emitted by vacuum truck venting operations if toxic vapors cannot be confined to a safe location or device.

3.5.8 Shall test and monitor noise levels around the vacuum truck when in use. Ensure the right level of hearing protection is being used, area is barricaded, and signs are posted when double hearing is required.

3.5.9 Ensure that all requirements of this procedure are complied with during the work activities

3.5.10 Providing truck logs of previous material loaded and documentation of wash-out. Ensure each load of material picked up in a vacuum truck is checked against the Chemical Compatibility Chart for Vacuum Trucks. Consideration for incompatibility should also be given to the location that the vacuum truck is going to be off loaded to. If necessary, contact Operations, Safety, and/or Tech Services to ensure offloading to chosen destination is acceptable.

3.5.11 The qualified person(s) attending either the loading or unloading of a vacuum truck must

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be alert and have an unobstructed view of the vacuum truck and delivery hose to the maximum extent practicable during the entire loading or unloading operation.

- 3.5.12 If the vacuum truck representative leaves the area all valves and openings on the vacuum truck must be securely closed and disconnected from the process.
- 3.5.13 Compliance with all applicable DOT, federal and state regulations as well as MPC site safety practices.
- 3.5.14 Work with owning department personnel to properly identify the material, source, volume, and destination for each transfer operation and ensure all recordkeeping requirements outlined within this rule are met. Stop work if conditions become unsafe.

4.0 General Requirements

4.1 Approved Materials for Vacuum Trucks

- 4.1.1 Hexane and lighter materials shall not be loaded into a vacuum truck.
- 4.1.2 If the Reid Vapor Pressure (RVP) of the material is 14.0 psi or greater, or does not meet the limitations of Tables 1 and 2 in Attachment A, the material shall not be loaded into a vacuum truck.
- 4.1.3 Pyrophoric, oxidizing materials, acids or caustics may only be loaded after obtaining approval of the Area Team Leader.
- 4.1.4 Note: SWP permit is not required when use of vacuum truck is covered in process plant operations documented in an approved risk assessed operating procedure, and carried out by a competent unit operations person.
- 4.1.5 Mixing of Materials
 - 4.1.5.1 Material types such as chemicals, acids, caustics, and hydrocarbons, shall not be mixed in vacuum trucks.
 - 4.1.5.2 Mixing incompatible materials can result in a violent reaction. See Chemical Interaction Matrix in Attachment B.
 - 4.1.5.3 See MSDSs for material compatibility. MSDS information, particularly "Stability and Reactivity" section shall be reviewed.
 - 4.1.5.4 Vacuum trucks must be water washed after each load prior to collecting incompatible material (e.g., do not load caustic into a vacuum truck that previously hauled either chemicals, acids, or hydrocarbons without being water washed between loads).
 - 4.1.5.5 Check previous load documentation. If in doubt as to whether materials are compatible, require wash-out before loading.
 - 4.1.5.6 Vacuum trucks can be washed at the Heat Exchanger Bundle Cleaning Slab or at an approved truck washout facility if accompanied with the proper DOT shipping document.
 - 4.1.5.7 Vacuum trucks must be neutralized to a pH between 6 and 9 after each wash. This can be done by water wash first, followed by steam wash.

4.2 Approved Materials for Pneumatic Trucks

- 4.2.1 Pneumatic trucks may not be used to pick-up liquid hydrocarbons or hydrocarbon contaminated sludge.
- 4.2.2 Solid wastes and non-hazardous materials may be loaded with a pneumatic truck provided the guidelines of this practice are followed.

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- 4.2.3 Picking up dry solids, such as sulfur dust, may pose a risk of a dust explosion because dusts may be present or generated.
 - 4.2.3.1 Static electricity will not be the only potential ignition concern, as sparks caused by friction can occur during the high velocity movement of materials inside the transfer hose or at the truck.
 - 4.2.3.2 Therefore, dry solids that may generate combustible dust shall not be removed with a pneumatic truck unless approved by the Area Team Leader.
- 4.2.4 Hydrocarbon contaminated solids (with no free liquids present) may be loaded only if their LEL < 10%. The LEL reading shall be taken from just above the surface of the solid immediately after agitation to simulate loading conditions.
- 4.2.5 The Operations Supervisors will be responsible for determining required permits.
- 4.3 Vacuum Truck Operator Qualifications and Training
 - 4.3.1 Vacuum truck operators shall be trained in the proper transfer, handling and transportation of all materials that can reasonably be anticipated to be encountered.
 - 4.3.2 Vacuum truck employers shall assure that vacuum truck operators are trained as specified in API RP-2219 to include:
 - 4.3.2.1 29 CFR 1910.120 HAZWOPER
 - 4.3.2.2 29 CFR 1910.1200 Hazard Communications
 - 4.3.2.3 29 CFR 1910.38 Emergency Plans and Fire Protection Plans
 - 4.3.2.4 49 CFR Hazardous Materials Regulations
 - 4.3.2.5 CDL License
 - 4.3.2.6 X Endorsement (if applicable)
 - 4.3.3 Vacuum truck operators shall be thoroughly trained on the operation and emergency shutdown procedures of their equipment.
 - 4.3.4 Vacuum truck operators shall be familiar in the use of portable fire extinguishers.
- 4.4 Work Permitting
 - 4.4.1 A Safe Work Permit is required for vacuum trucks operated within a regulated area, transferring a hydrocarbon or flammable/combustible material, or when the exhaust vent effluent presents potential for a flammable vapor.
 - 4.4.2 As a part of work permitting, when the potential exists for exposure to airborne contaminants above permissible exposure limits, atmospheric monitoring shall be conducted by the Owning Department in order to help define proper PPE and/or barricading requirements. Respiratory protection requirements will be determined through atmospheric monitoring. PPE that is appropriate for the material being handled must be worn when there is potential for exposure (e.g., near the spill, handling hoses).
 - 4.4.3 Hazard Recognition and Awareness

REQUIREMENTS to consider when developing a JSA:

 - 4.4.3.1 Vacuum truck operators and personnel that administer Work Permits for vacuum trucks shall be familiar with and trained in the hazards and controls associated with vacuum truck operations, to include:
 - 4.4.3.2 Material incompatibility – The mixing of incompatible materials can produce hazardous reactions resulting in the production of toxic materials and increases in temperature and pressure. A compatibility matrix for common

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refinery streams shall be used for this purpose, Reference Attachment B.

NOTE: IF A MATERIAL IS NOT INCLUDED IN A MATRIX, ASSUME IT IS INCOMPATIBLE AND DO NOT MIX WITH ANY OTHER CHEMICAL. THE TRUCK MUST BE CLEANED PRIOR TO USE. CONSIDERATION FOR INCOMPATIBILITY SHOULD ALSO BE GIVEN TO THE LOCATION THAT THE VACUUM TRUCK IS GOING TO BE OFF LOADED. IF NECESSARY, CONTACT OPERATIONS, SAFETY, AND/OR TECH SERVICES TO ENSURE OFFLOADING TO CHOSEN DESTINATION IS ACCEPTABLE.

- 4.4.3.3 Flammable atmospheres – The potential to emit flammable vapors from the source container and from the vacuum truck exhaust port.
- 4.4.3.4 Toxicity – The potential to exceed hazardous material Permissible Exposure Limits (PELs) from the source container and from the vacuum truck exhaust port.
- 4.4.3.5 Static electricity – The production of static electricity inherent to vacuum truck operations.
- 4.4.3.6 Slips/Trips – The introduction of trip hazards created from vacuum truck operation such as with hoses, vent hoses, and bonding/grounding cables.
- 4.4.3.7 Combustible dust - Combustible dust such as sulfur or coke is explosive and must not be vacuumed in a dry state. Combustible dust should be picked up by mechanical means wherever possible. Combustible dust may be vacuumed wet provided that copious amounts of water are added during the vacuum operations and only with approval of the applicable Maintenance Coordinator or Operations Supervisor.

4.5 Vacuum Truck Transfers/Logs

- 4.5.1 PR18 A form is required to be completed for each material pickup.
- 4.5.2 The vacuum truck operator should work with the owning department to identify and properly record the origination of the material to be vacuumed up (i.e. which tank, vessel, or unit, etc.), the quantity of the material, the identification of the material component(s), and the percentage of each component., as well as the destination.
- 4.5.3 Before offloading material from the vacuum truck to the proper transfer, a Work Permit must be obtained from the owning department for areas requiring work permits, which will authorize the transfer.

4.6 Grounding and Bonding

- 4.6.1 The vacuum truck owner shall establish a schedule and maintain recordkeeping for inspecting and testing the electrical conductivity of grounding and bonding cables and hoses provided with the vacuum truck.
- 4.6.2 Trucks shall be grounded when they are being loaded or unloaded (reference NFPA 77 and API 2003).
 - 4.6.2.1 The vacuum truck frame must be grounded to earth via conductor bonded to plant ground or a grounded structure close to the truck.
 - 4.6.2.2 The grounding shall be done by the truck operator, using a low resistance ground cable (a 2/0 cable) with a reach of at least 25 feet from either side of the truck.
 - 4.6.2.3 When a temporary grounding rod is used, it must be made of copper and must be driven at least 2 feet into the ground. Rebar is not acceptable. Grounding clamps with teeth/grip must also be a made of copper.

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- 4.6.2.4 The vacuum truck shall be bonded to the source or receiving container via a bonding cable and verified that less than 50 ohms exists between the truck and the container.
 - 4.6.2.4.1 If both the vacuum truck and source/receiving container are grounded, and the electrical continuity is achieved through metal-to-metal connections using internally bonded or conductive hose, a separate bonding cable is not required.
- 4.6.2.5 An ohm meter shall be used to verify that less than 50 ohms exists between the working end of the vacuum hose and the truck ground prior to the start of any vacuum operation.
- 4.6.2.6 The continuity checks shall be performed by a competent individual and the results documented (date, time, ohm reading).
- 4.6.3 A recheck of the resistance shall be necessary when suspected damage has occurred to the bonding ground wire or attachment point.
- 4.6.4 Bonding ground wires shall not be smaller than #8 AWG or equivalent wire using a solid connector. Larger wire should be used if harsh abuse is expected.
- 4.6.5 Suction hose and fittings shall be conductive throughout; if not, any isolated conductive areas shall be bonded. (Bonding is connecting each individually grounded part in a system together to ensure that the system has the same ground potential.) To bond isolated conductive areas together, a low resistance ground wire/cable should be connected from the truck, around the hoses, across the hose fittings to the vessel or tank being emptied or filled. No aluminum fittings on hoses are allowed due to aluminum's high arcing potential.
- 4.6.6 Quick disconnects of heavy construction with self-locking mechanisms (or a separate form of secondary locking) shall be used for all hose to hose connections. This is to ensure there are no injuries related to hoses.
- 4.6.7 All components (funnels, collection pans, etc.) used in the collection of material during vacuum truck operations must be made of metal and be properly grounded. Collection funnels used to guide flowing liquids into a pan should extend to the bottom of the pan to help prevent an electrostatic discharge.
 - 4.6.7.1 The use of non-conductive transfer items, such as plastic funnels, strainers, etc. is prohibited.
- 4.6.8 Drain Pan Grounding (or container to be vacuumed)
 - 4.6.8.1 The vacuum truck and drain pan grounds shall be within 50 ohms of each other.
- 4.6.9 Due to the potential of stray electrical currents, the ground wires of electrical equipment are not to be used as a means of grounding for vacuum trucks.
- 4.6.10 If the bonding and grounding requirements of this procedure are not understood, consult an electrician or Electrical Supervisor.
- 4.7 Truck Location
 - 4.7.1 Vacuum trucks should be operated upwind and outside of areas in which flammable gases or vapors may be present.
 - 4.7.2 A SWP – Hot Work for vehicle entry/operation may be required depending upon the location of the truck.
 - 4.7.3 The vacuum truck shall be positioned at the following locations if the involved material is

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flammable:

- 4.7.3.1 No limits where the atmosphere is and remains at 0% LEL for the duration of the job, and
- 4.7.3.2 At least 25' upwind or crosswind from the source container or spill, and
- 4.7.3.3 At least 50' upwind or crosswind from a source or receiving container inside a diked area, preferably on top or outside of the dike.
- 4.7.4 When deemed necessary due to potential exposure to flammable or toxic materials, the vacuum truck pump exhaust should be discharged downwind of the vehicle by using a vertical exhaust stack extending 12 feet above the truck or by attaching a length of hose to permit venting to an area free from a source of ignition and to ensure it does not present a hazard to personnel. Air monitoring 100% of the time when vacuum operation is in progress to verify no breakthrough. Confirm and monitor that personnel in adjacent areas are not affected by this exhaust. Area must be barricaded.

4.8 Truck Specifications and Operation

- 4.8.1 All vacuum truck tanks shall meet ASME certification and shall have a specification plate or other means of certification with the truck.
- 4.8.2 Trucks must be maintained and meet all federal, state, local, and industry (API) regulations and guidelines.
- 4.8.3 Only vacuum trucks equipped with a vane pump with a maximum air flow rating of 500 CFM are permitted to vacuum materials containing flammable liquids (flash point < 100°F). Flammable liquids are defined in Section 5, Definitions.
- 4.8.4 When a hose is partially submerged allowing air to enter the hose (when product levels reach the bottom of the source container or when product is being skimmed off the surface), the following maximum vacuum truck engine speeds (rpm) shall be adhered to when vacuuming flammable liquids (flash point < 100°F):
 - Less than 3" hose – not permitted
 - 3" hose – 700 rpm (500 cfm)
 - 4" hose – 1300 rpm (700 cfm)
- 4.8.5 Established vehicle entry procedures and all other safety policies concerning the use of motor-driven equipment on site must be observed.
- 4.8.6 Operations must ensure that the truck has been water washed prior to being used in the plant.
- 4.8.7 Trucks shall not be driven if they are leaking or dripping material. Truck connections must be secured before the vehicle moves.
- 4.8.8 The vacuum truck shall be staged on stable ground with the emergency brakes set and the wheels chocked before beginning loading and off-loading operations.
 - 4.8.8.1 Consideration shall be given to additional weight of the load when selecting the staging location.
- 4.8.9 When transferring flammable liquids or hazardous materials, the vacuum truck operator will remain positioned between the truck and the source or receiving tank, vessel, or container and within 25 ft. of the truck. The truck operator will monitor the transfer operation and be ready to quickly close the product valve and stop the pump in the event of a blocked line or release of material through a broken hose or connection.
- 4.8.10 All personnel shall leave the truck cab during loading and unloading. Truck drivers will not

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be allowed to sit in the cab of the truck while loading or unloading. The driver shall remain within communicating distance of the truck operator. Precautions must be taken to remain away from the engine exhaust system.

- 4.8.11 Vacuum truck operators shall monitor truck levels continuously during loading or off-loading of the truck to insure proper operation of level indication to prevent potential over-filling or to identify issues with the loading/off-loading operations.
- 4.8.12 Vacuum truck operators shall follow safe operating procedures to minimize the amount of air introduced into the vacuum truck cargo container while vacuuming materials.
- 4.8.13 Vacuum trucks shall be equipped with run-away protection for diesel engines. Trucks must be equipped with an emergency (air) engine shutdown device that closes the air intake.
- 4.8.14 All trucks leaving the plant must use placards in accordance with DOT requirements. One of the following will apply on the site: flammable, combustible or corrosive.
Non-hazardous contents do not require a placard.
- 4.8.15 Trucks must be equipped with at least a 20 lb. dry chemical fire extinguisher or provide one on standby during operation.
- 4.8.16 Duckbill nozzles will be utilized when skimming to minimize the amount of air entering the vacuum truck tank.
- 4.8.17 Vacuum truck hoses that are connected to closed equipment/process must have a drain/vent connection. Before disconnecting a hose from a closed system, the truck operator shall open the drain/vent connection to confirm that the hose is empty and de-pressured.
- 4.8.18 When vacuum trucks are connected directly to equipment/process, Operations shall assure proper venting to atmosphere to prevent damage to the vessel due to vacuum. When transferring liquid from a vacuum truck to equipment, tanks or vessels and the preferred method of gravity offloading cannot be performed - transferring liquid by using a centrifugal pump is acceptable. A centrifugal pump is designed to pump liquids and will cavitate when air, vapor or high RVP material enters the suction of the pump.
- 4.8.19 Vacuum truck contents may be unloaded by pump suction or gravity. Truck engines must be shut off while gravity unloading.

4.9 Transfer Operations

- 4.9.1 Vacuum truck operators and Owing Department operators shall be aware of the hazards involved in the transfer of materials, particularly the risk of creating a vapor-air atmosphere in the flammable range inside equipment when transferring hydrocarbons.
- 4.9.2 Consideration shall be given to the method of off-loading vacuum trucks to mitigate the formation of a pressurized flammable vapor-air mixture inside the cargo tank. The approved off-loading methods are gravity, pressure, and pump-off.
 - 4.9.2.1 Gravity Method – When feasible, gravity off-loading is the safest and preferred method.
 - 4.9.2.2 Pressure Method – Pressure off-loading with air is accomplished by reversing the vacuum pump on the truck. The use of external sources of compressed air to pressurize the cargo tank is prohibited. Pressure off-loading of combustibles, flammables, or materials that are reactive to air or moisture shall be performed with nitrogen. The pressure shall not exceed the pressure relief valve setting, or maximum allowable working pressure indicated by the vacuum truck cargo tank data plate.

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4.9.2.3 Pump-Off Method – An external pump may be used to off-load products which are difficult or infeasible to transfer by pressure or gravity.

4.9.3 When offloading is performed into a vessel or tank containing a liquid level, a check valve shall be installed to prevent the risk of backflow from the tank into the vacuum truck.

4.9.4 When offloading, initial discharge shall be at a slow speed until the end of the discharge hose or intake nozzle is submerged to minimize splashing and prevent static buildup and excessive vapors.

4.9.5 When connected directly to piping or a vessel, vacuum hoses shall be connected in a manner which permits a bleeder to be used to provide a means to verify that the hose is drained and does not contain pressure prior to disconnecting the hose from the piping/vessel. The bleeder may be on the piping/vessel or on the vacuum truck, depending upon the setup

4.10 Vacuum Truck Decontamination

4.10.1 All vacuum trucks which are used for the removal of hazardous material (per 49 CFR 172.101) shall remove all product from their truck by steam cleaning or must satisfy DOT 407, DOT 412, and DOT HM183.

4.10.2 Vacuum trucks shall be decontaminated prior to switching service except:

4.10.2.1 Clean water or like material

4.10.2.2 Sources of clean water include boiler feed water, Brazos water, and city water.

4.10.3 The decontamination procedure shall ensure no material, sludge, or residue remains in the cargo tank and the material in the liquid seal drained.

4.10.4 Decontamination shall include changing out the liquid in the liquid ring pump reservoir.

4.10.5 Hoses shall be inspected to ensure there is no excessive product buildup inside of the hoses.

4.10.6 Vacuum truck contractors shall utilize a system that clearly indicates the status of truck decontamination (i.e., tagging system).

4.10.7 Only on special authorization by the owning department of the exchanger pad, and environmental, is the exchanger pad to be used as an offload point for vacuum trucks.

4.11 Liquid Ring Pneumatic Vacuum Truck Hoses

4.11.1 Non-Conductive Hoses

4.11.1.1 Non-conductive hoses must have an internal bond wire integral with the construction of the hose or an external bond wire or braid that is integral with the construction of the hose to form an electrically continuous path through the entire length of the hose. It must be attached to the end couplings, fittings and/or flanges and be in contact with the hose material.

4.11.1.2 As needed, the connection of any coupling, fitting and/or flange (coupling to coupling) must be bonded together with at least #8 AWG or equivalent conductor wire. Larger wire should be used if harsh abuse is expected. This bond wire can be insulated but bare braided cable is preferred.

4.11.1.3 A drilled/tapped hole on each fitting should allow for a ground cable with lugs on each end to be secured to the coupling.

4.11.2 Conductive Hoses

4.11.2.1 Conductive hose sections shall not be required to have additional grounds.

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4.11.2.2 Hoses and fittings when connected together shall form an electrically continuous path from the working end of the hose to the plant ground. If the normal connection of any end coupling, fitting and/or flange (beware of insulated types) does not provide this continuous path that connection must be bonded across.

4.11.2.3 Conductive hoses securely attached to properly grounded structural steel shall be considered bonded to plant ground.

4.11.2.4 Thin walled, metallic spiral-wound conductive hoses are prohibited for vacuum truck use.

4.11.3 Safe Handling of Hoses

4.11.3.1 Never attempt to dislodge material from the vacuum hose opening by hand before shutting off vacuum.

4.11.3.2 Never test for a vacuum by placing your hand near the hose opening.

4.11.3.3 Ropes may be attached near the hose opening to assist with the movement and operation of vacuum hoses.

4.11.3.4 Vacuum hoses shall be properly secured and supported to prevent whipping and falling from elevated runs (i.e. reactors).

4.11.3.5 Vertical runs shall be hard piped when possible.

4.12 Wet Vac Vacuum Trucks

4.12.1 Wet Vac trucks shall be in compliance with NFPA 505.

4.12.2 Wet Vac trucks shall not be used for transferring or transporting flammable or combustible liquids.

4.12.3 Wet Vac trucks shall be grounded, and hoses bonded as per liquid ring vacuum trucks. Appurtenances (i.e. conveyors, hoppers, etc.) shall be electrically bonded and grounded to the wet-vac truck.

4.12.4 Wet Vac trucks and appurtenances shall be inerted when utilized for materials containing pyrophoric materials (i.e. de-sulfurizing catalysts).

4.12.5 Vacuuming of asbestos and lead shall only be performed with specifically equipped vac trucks.

4.13 Materials Transported Off-Site Via Vacuum Truck

4.13.1 Prior to traveling off-site:

4.13.1.1 The vacuum truck shall be properly placarded in accordance with DOT requirements.

4.13.1.2 Environmental Department shall be consulted to attain proper waste manifests and bills of lading.

4.13.1.3 The vacuum truck operator shall conduct an inspection of the truck to ensure there are no material leaks.

4.14 Special Precautions

4.14.1 Vacuum truck operators shall be aware that when materials that have the potential to contain hydrocarbon condensate or hydrogen sulfide are placed under a vacuum, flammable vapors and toxic gases may be freely released, creating potential for ignition and exposure hazards.

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- 4.14.2 Vacuum trucks and appurtenances shall be inerted when utilized for combustible dusts (i.e. coal filter and sulfur).
- 4.14.2.1 Inerting may not be necessary if material is kept wet as to prevent it from becoming airborne.
- 4.14.3 An MOC or written operating procedure is required prior to connecting a vacuum hose directly to any part of a process.

5.0 Definitions

- 5.1 **Bonding** – is the act of joining two electrical conductors together. These may be two wires, a wire and a pipe, or these may be two pieces of equipment.
- Bonding ensures that these two things which are bonded will be at the same electrical potential. No current flow can take place between two bonded bodies because they have the same potential.
- 5.2 **CDL** – Commercial Driver's License
- 5.3 **Flammable liquid** – Any liquid with a Flash Point less than 100 deg F. Examples are: crude oil, gasoline, naphtha, natural gasoline, raffinate, benzene, xylene, toluene, alkylate, Cat Gasoline, unstripped kerosene, unstripped distillate, unstripped LCO, and similarly light liquids.
- 5.4 **Grounding** – is establishing an electrical connection between equipment and an earth ground.
- Note: This dissipates static currents that have the potential to cause sparks.
- 5.5 **HAZMAT Employee** – is a person who is employed by a HAZMAT employer and directly affects HAZMAT transportation safety, including a person who
- (a) Loads, unloads or handles HAZMAT,
 - (b) Tests, reconditions, repairs, or otherwise represents packaging (including tank trucks, for example) as qualified for use in transportation of HAZMAT,
 - (c) Prepares HAZMAT for transportation, including preparing shipping papers,
 - (d) Is responsible for safety of transporting HAZMAT, and
 - (e) Operates a vehicle transporting HAZMAT.
- 5.6 **Inert Solids** – For the purpose of this RSR, inert solids shall be defined as solids that pose minimal risk of reactivity with dissimilar materials, and shall exclusively be defined as non-contaminated soil, sand, sandblast media, and FCC catalyst.
- 5.7 **Joint Job Site Visit (JJSV)** – is a meeting between an Owning Department representative and the carrier company representative on the permit at the specific location where the job will be conducted. The meeting discussion will address the work scope and all safety aspects of the permit. The servicing representative that attends the Joint Job Site Visit must convey the information covered in the discussion to all members of their work party.
- 5.8 **Off-Site** – Off-Site means any property other than MPC property.
- 5.9 **Owning Department** – is the department that normally owns and operates equipment, machinery and/or systems.
- 5.10 **Qualified Person** – is an individual that has been properly trained on the Hazardous Materials Regulations (HMR) and the hazards associated with the material being transported. This individual is also aware of the procedures to be followed in the event of an emergency.

For this standard practice, adequately trained carrier representatives, owning department

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operators and chemical vendors may be considered as qualified persons.

- 5.11 **Oxidizing Materials** – Will give up oxygen easily or readily oxidize other materials.
- 5.12 **Wet Vac Vacuum Truck** – A truck which conveys material, using a high velocity air stream, into a receiving tank. Common names for pneumatic trucks are “air machine”, “super-sucker”, “guzzler”, and “vac all”. Pneumatic trucks may not be used to pick up liquid hydrocarbons or hydrocarbon contaminated sludges.
- 5.13 **Liquid Ring Pneumatic Vacuum Trucks** - A trucks that feature a heavy-duty vacuum system designed to use vacuum technology to load liquids, sludge or slurry through suction lines.
- 5.14 **Pyrophoric** – Spontaneously combustible on contact with air.
- 5.15 **Reid Vapor Pressure (RVP)** – A measure of the volatility of a fuel (i.e., its ability to vaporize). In scientific terms, Reid Vapor Pressure is the vapor pressure measured at 100°F.
- 5.16 **SDS** – is an acronym for Safety Data Sheet
- 5.17 **Vacuum Truck** – A transportable vacuum system consisting of a vacuum pump, vacuum cargo tank, and associated appurtenances and accessory equipment mounted on a motor vehicle.
- 5.18 **X Endorsement** – A combination endorsement for tanker vehicles to transport hazardous materials driving on public roadways.

6.0 References

- 6.1 Texas City Process Safety Guideline No. 9 - “Chemical Tank Truck Loading Procedures”
- 6.2 API Publication 2219 - Second Edition “Safe Operation of Vacuum Trucks in Petroleum Service” - March 1999
- 6.3 API Publication 2003 - Fifth Edition “Protection Against Ignitions Arising out of Static, Lightning, And Stray Currents” - September 1998
- 6.4 NFPA 77, Static Electricity
- 6.5 Code of Federal Regulations 49CFR 100-199, 383-397

7.0 Attachments

- 7.1 Attachment A: Finished Products Temperature Criteria Table and Crude Oil Temperature Criteria Table
- 7.2 Attachment B: Chemical Interaction Matrix Chart and Refinery Examples and Refinery Examples of Acids, Bases and Oxidizers
- 7.3 Attachment C: PR-18A Vacuum Truck Authorization Form
- 7.4 Attachment D: Chemical Compatibility Chart for Vacuum/Pneumatic Truck Hoses and Fittings
- 7.5 Attachment E: Vacuum & Pneumatic Truck Diagrams

8.0 Revision History

Revision Number	Description of Change	Written by	Approved by	Revision Date	Effective Date
0	Original Issue. Consolidated site procedure	A. G. Roberts	V. J. Meeks	4/15/2019	4/30/2019

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	replaces GBR-HESS-PR-18 and RSW-0057-TC and updated per API RP 2219 under MOC 60675.				
1	Revised section 4.3.2.5 to clarify that X endorsement is only required when applicable.	A. G. Roberts	E. R. Kaysen	4/24/2020	4/24/2020
2	Adds pump requirements when transferring liquid from truck to equipment to address PSA 20-02 and reflect current practice.	A. G. Roberts	E. R. Kaysen	9/17/2020	9/29/2020

Attachment A: Finished Products Temperature Criteria Table and Crude Oil Temperature Criteria Table

Table 1 Finished Products Temperature Criteria Graph

With the known material temperature, the maximum RVP can be calculated as follows:

$$\text{Maximum RVP} = 25.446 - 0.160 * \text{Material Temperature}$$

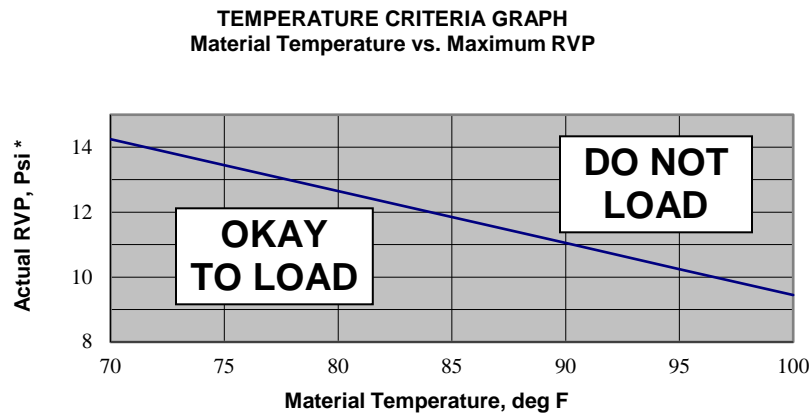
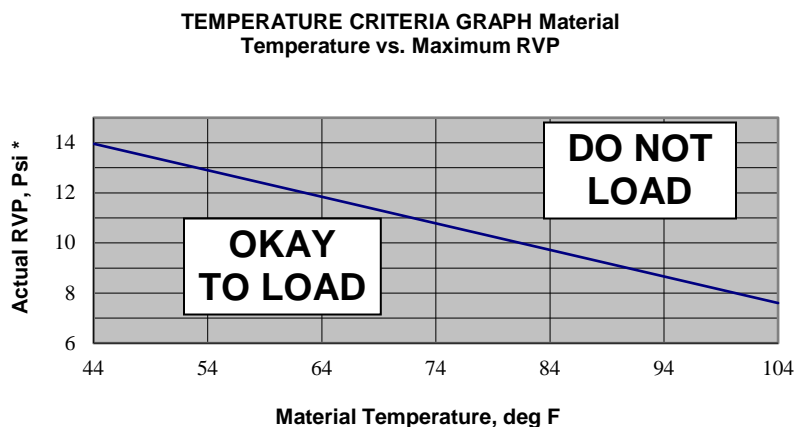


Table 2 Crude Oil Temperature Criteria Graph

With the known material temperature, the maximum RVP can be calculated as follows:

$$\text{Maximum RVP} = 18.625 - 0.106 * \text{Material Temperature}$$



* Actual Reid Vapor Pressure (RVP) as measured by the Lab

Attachment B: Chemical Interaction Matrix Chart and Refinery Examples

	ACIDS	BASES	HYDROCARBONS	OXIDIZERS	SPENT CATALYST
ACIDS	No reaction	Generates heat/initiates fires. Can boil & splatter and cause pressure buildup	Generates heat (polymerizes HCs) Can cause burns	No reaction	Generates heat, Can boil and splatter Can release H ₂ S
BASES	Generates heat/ initiates fires. Can boil & splatter and cause pressure buildup.	No reaction	No reaction	No reaction	No reaction
HYDROCARBONS	Generates heat, can boil and splatter. Can release H ₂ S.	No reaction	No reaction	Can result in fires and possible burns	No reaction
OXIDIZERS	No reaction	No reaction	Can result in fires and possible burns	No reaction	Can burn and release harmful vapors (SO ₂)
SPENT CATALYST	Generates heat Can boil and splatter Can release H ₂ S	No reaction	No reaction	Can burn and release harmful vapors (SO ₂)	No reaction

Refinery Examples of Acids, Bases and Oxidizers

Acids	Bases	Oxidizers
Hydrofluoric Acid (HF)	Caustic (NaOH)	Air
Hydrochloric Acid (HCL)	Soda Ash (Na ₂ CO ₃)	Oxygen (O ₂)
Sulfuric Acid (H ₂ SO ₄)	Amines (e.g., diethanolamine (DEA))	Potassium Permanganate (KMnO ₄)
Phosphoric Acid Catalyst (H ₃ PO ₄)	Sodium Polysulfide (Na ₂ S _x)	Sodium Hypochlorite (bleach) (NaOCl)

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Attachment C: Vacuum/Pneumatic Truck Authorization Form

Link: [PR-18A Vacuum/Pneumatic Truck Authorization](#)

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Attachment D: Chemical Compatibility Chart for Vacuum/Pneumatic Truck Hoses and Fittings

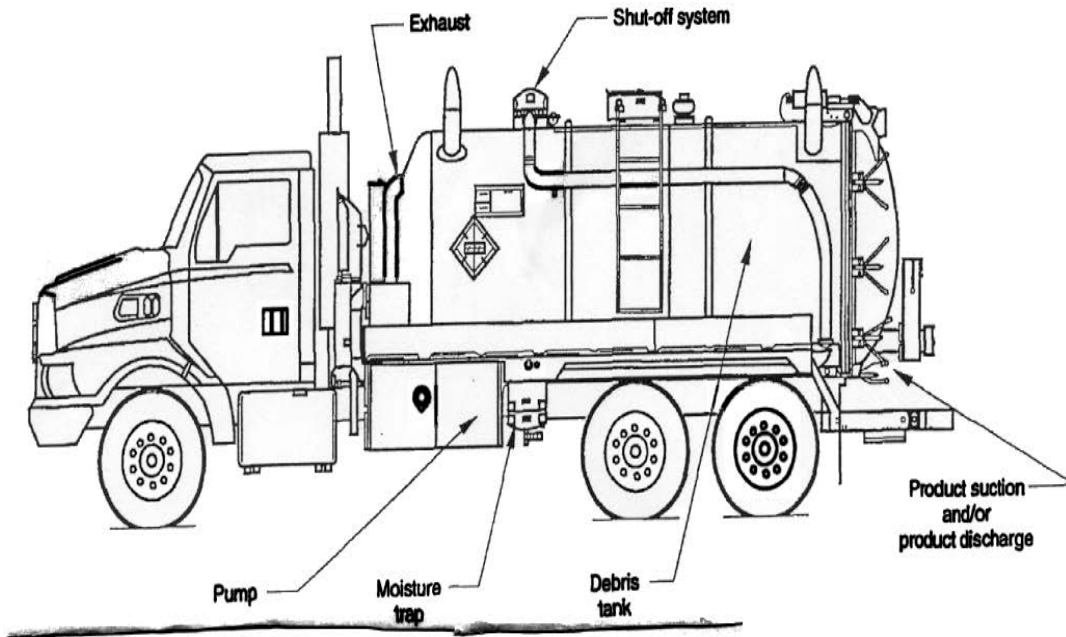


Chemical
Compatibility Chart.

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Attachment E: Vacuum & Pneumatic Truck Diagrams

Wet Vac Vacuum Truck



Liquid Ring Pneumatic Vacuum Truck

