KIRBY INLAND MARINE

CARGO TRANSFER PROCEDURES FOR THE BARGE

AL 2300

PLEASE NOTE:

FOR PROPER VALVE ALIGNMENT AND SAFE CARGO TRANSFER GUIDANCE, PLEASE REFER TO KIRBY MARINE TRANSPORTATION'S CARGO HANDLING PROCEDURE MANUAL AND FOLLOW THE KIRBY TRANSFER PLAN.

IF YOU NEED A COPY OF THE PROCEDURE MANUAL, PLEASE CALL THE KIRBY DUTY LINE (713) 435-1618 OR (713) 435-1925 BEFORE CARGO OPERATION.

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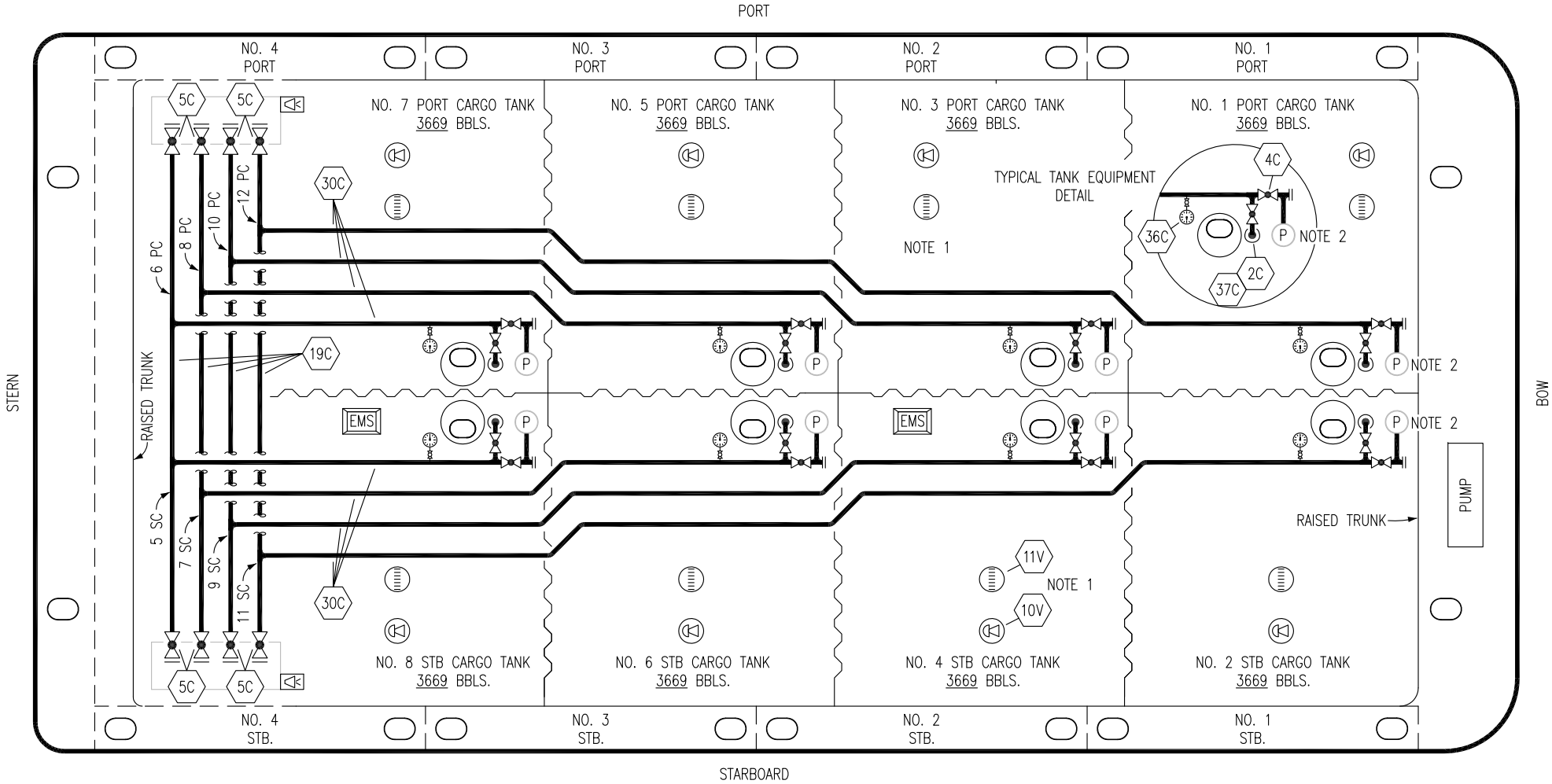
SECTION A

BARGE TRANSFER SYSTEM

A. PIPING DIAGRAM (S)

Enclosed are the Cargo, Steam, Vapor, Hydraulic Oil, and nitrogen piping systems for this barge.



CARGO HEADER ARRANGEMENT

⑥ ⑧ ⑩ ⑫
⑤ ⑦ ⑨ ⑪
STARBOARD VIEW

PORT CARGO HEADERS	STARBOARD CARGO HEADERS
6 PC – #1	5 SC – #1
8 PC – #2	7 SC – #2
10 PC – #3	9 SC – #3
12 PC – #4	11 SC – #4

NOTE
1: VALVE ARRANGEMENT TYPICAL IN EACH TANK
2: BELOW EVERY PRESSURE GAUGE @ PUMP IS A CARGO DRAIN VALVE ON BOTTOM OF PIPE
3: ENVIRO–RITE AW–46 OIL ONLY

NO	DESCRIPTION
2C	4" LOAD VALVE
4C	4" DISCHARGE VALVE
5C	HEADER VALVE
10V	HIGH LEVEL ALARM
11V	1–METER GAUGE STICK

NO	DESCRIPTION
19C	CARGO HEADER
30C	CARGO PIPELINE
36C	PRESSURE GAUGE
37C	CARGO DROP

THE SHEARER GROUP INC.

REV.	DATE	BY	CHK	APP	REVISION DESCRIPTION
0	07/03/18	WFB	DDA		ISSUED FOR APPROVAL

KIRBY INLAND MARINE

CARGO
PIPING FLOW DIAGRAM

SCALE: NONE
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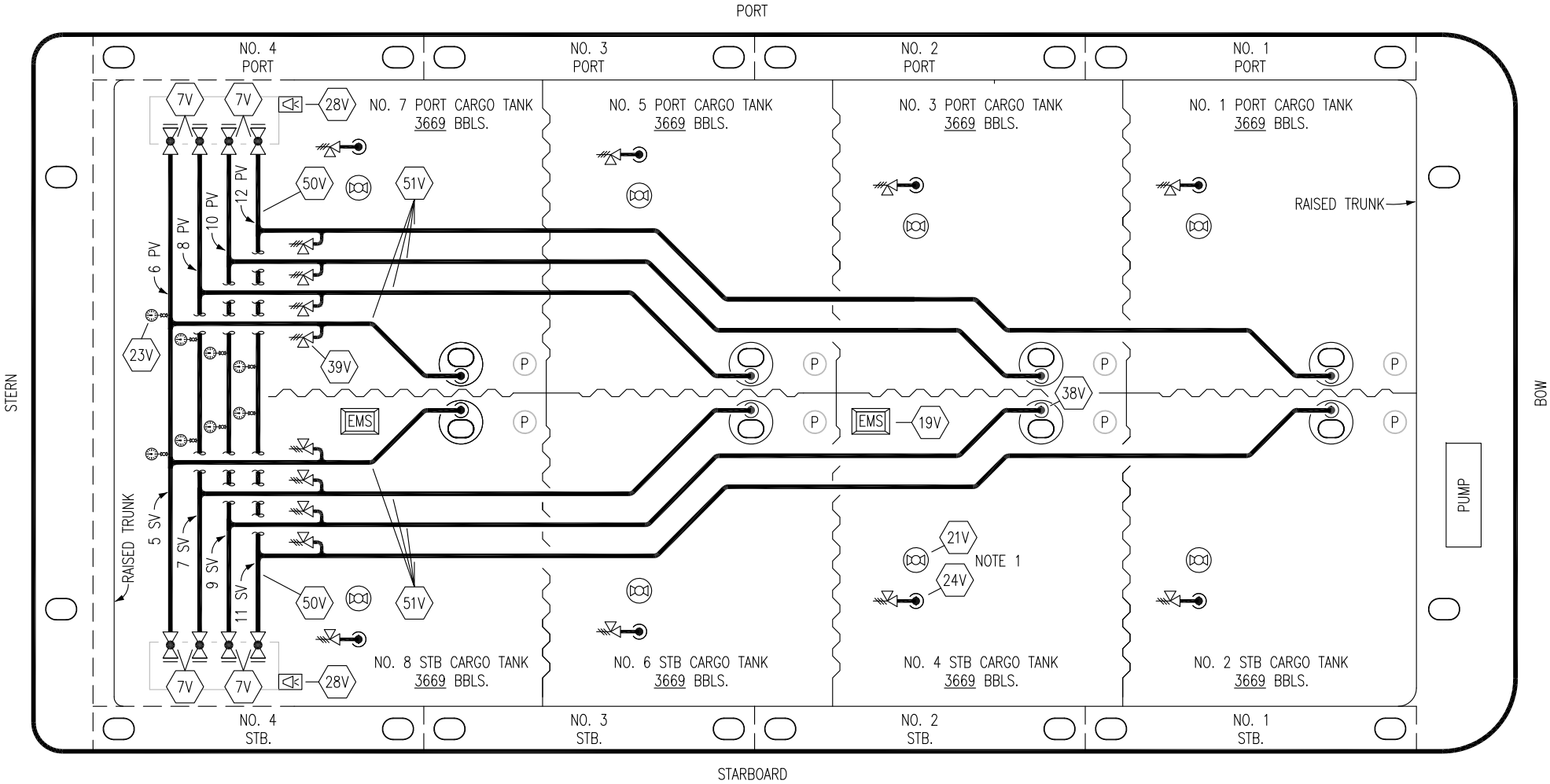

VAPOR HEADER ARRANGEMENT

⑥ ⑧ ⑩ ⑫ STARBOARD VIEW
⑤ ⑦ ⑨ ⑪

PORT VAPOR HEADERS	STARBOARD VAPOR HEADERS
6 PV – #1	5 SV – #1
8 PV – #2	7 SV – #2
10 PV – #3	9 SV – #3
12 PV – #4	11 SV – #4

NO	DESCRIPTION
7V	HEADER VALVE
19V	EMERGENCY SHUT DOWN
21V	HERMETIC GAUGE
23V	PRESSURE GAUGE
24V	PRESSURE RELIEF VALVE

NO	DESCRIPTION
28V	DOCK CONNECTION ALARM
38V	VAPOR DROP
39V	PRESSURE/VACUUM VALVE
50V	VAPOR HEADER
51V	VAPOR PIPELINE
	ABOVE DECK PIPING

NOTE
1: TYPICAL RIGGING IN EACH TANK
2: ENVIRO-RITE AW-46 OIL ONLY

THE SHEARER GROUP INC.

REV.	DATE	BY	CHK	APP	REVISION DESCRIPTION
0	07/03/18	WFB	DDA		ISSUED FOR APPROVAL

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VAPOR
PIPING FLOW DIAGRAM

SCALE: NONE
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REV. 0

SECTION I:

BARGE TO SHORE AND BARGE TO SHIP DECLARATION OF INSPECTION

A. DECLARATION OF INSPECTION FOR OIL TRANSFER OPERATIONS

i. According to United States Law and Regulations (Title 46, code of Federal Regulation 35.35 20/30) pertaining to the carriage and transfer of inflammable or combustible liquids in bulk, the Person-in-Charge or the Mate on duty shall make an inspection of the barge and prepare a "DECLARATION OF INSPECTION" in duplicate, the original is to be kept on board for reference or presentation to any authorized person, such as the United States Coast Guard, and the duplicate given to the local terminal Superintendent, and/or ships officer in charge.

ii. When vapor control of cargo vapors is required by a facility, or in a ship barge operation, to comply with air quality standards, additional inspections must be carried out and noted on an appendix to the Non-Vapor Control Declaration of Inspection. See page 30, Section XI, *Vapor Control Requirements for Certain Cargoes During Cargo Transfer Operations*, for requirements prior to vapor collection transfers.

iii. Listed below is a copy of a sample Declaration of Inspection and the Appendix for vapor control transfers:

SAMPLE

Declaration of Inspection for Oil Transfer Operations

B. INSTRUCTIONS

Subpart 156.150 of U.S. Coast Guard regulations require that the persons-in-charge of shore side facilities and vessels jointly and independently inspect the facility and vessel to determine that the requirements for oil transfer of Subpart 156.120 re met and that a Declaration of Inspection reflecting the results of such inspections be signed by each Person-in-Charge prior to and during oil transfer operations. This necessitates re-inspection as appropriate at the time of each watch change on board the vessel or shift change on the dock; additional columns are provided for this purpose. Each Person-in-Charge of the shore side facility or the vessel shall, on demand, be given the opportunity to satisfy himself that the conditions of the vessel or facility or vessel operations is to cease transfer operations already underway, if he is convinced that existing conditions violate the terms of the Declarations of Inspection. All inspections and

discussions by the Person-in-Charge should be based on the specific requirements referenced after each inspection item.

This Declaration of Inspection shall be completed for every transfer of oil to or from any vessel on the navigable waters of the United States that has a capacity of 250 barrels or more for transporting oil vessel and (2) non-petroleum based oil that is transferred to or from a vessel other than a tank vessel. For the convenience of the vessel, this form is provided in duplicate. The pertinent USCG regulations require that the shore side facility and vessel each retain at least one signed copy of each Declaration of Inspection for at least one month from the date it is signed. For protracted transfer operations, it may be necessary to complete a second from after all columns on the first have been used. Must indicate by initialing signifying satisfactory conditions or N/A signifying “Not Applicable” should be placed in the appropriate spaces provided in the columns and must date, indicate port and sign the back of the DPI. **REFER TO THE ENCLOSED COPY OF THE “DOI”.**

SECTION II:

DUTIES AND RESPONSIBILITES

A. NUMBER OF PERSONS REQUIRED FOR CARGO TRANSFER

There shall, at all times, be a Certified Tankerman on the barge during transfer operations while the barge is alongside any terminal facility. This person shall be the "Person-in-Charge".

During transfer operations, while alongside a vessel or either at anchorage or dockside, there shall be at least two persons in attendance when at all possible. One of these persons shall be the "Person-in-Charge". The other person will be "Assistant Tankerman".

Required Personnel on ExxonMobil Cargo Transfers

During transfer operations, while alongside a vessel, there shall be at least two persons in attendance on each ExxonMobil barge to vessel discharge at all times. One of these persons shall be the "Person-in-Charge" (Tankerman) and a Supervisor.

B. TITLES AND DUTIES

Operations Manager and Barge Coordinator

The Operations Manager and Assistant Operations Manager shall be responsible for ensuring that the cargo transfer personnel have received the proper training to conduct a safe and pollution free transfer operation. They shall oversee the Barge Coordinator and Assistant as necessary. They are responsible for the over-all coordination of the multi-system barges between the terminal and ships. They are responsible for ensuring the cargoes are loaded on time and to the customer's satisfaction and specification.

The Barge Coordinator is responsible for passing the cargo stow and cargo information on to the PIC Tankerman. The Barge Coordinator is responsible for stowing the barge and that the enclosed stow form is completed listing the cargo and the weight in each tank. The following items are taken into consideration when stowing the barge:

i. **Documentation and Planning** – cargo stow plans, ship pre-transfer documentation, notice of readiness, cargo load quantity information to the inspection company, previous cargo information, barge tank cleaning information, and the port log statement of fact.

ii. **Barge Stress Conditions** – cargoes are to be loaded and discharged in a proper sequence. If the barge cannot be loaded and discharged in the proper order to avoid putting the barge in a prohibitive condition, then the Barge Coordinator or Operations Manager is to be notified immediately. If the barge is going to be loaded or discharged in a way that will create an unacceptable stress on the barge, which in the opinion of the PIC Tankerman could create a danger of buckling or hogging, cease the operations immediately and contact the Barge Coordinator on duty. The Barge Coordinator will sign off on the stow plan that is has been checked for any stow that would put the barge in a prohibitive stress condition. These conditions are barge specific and can be found under the tab with the referenced barge name.

Understanding Stresses Caused by Uneven Loading

Barges over 250 feet in length, or barges with a length to depth ratio or more than 20 to 1 are much more susceptible to buckling due to uneven loading that barges with a length to depth ratio of less than 20 to 1. Remember, a barge is stronger when the deck is in compression (sagging). Most buckling failures are due to sagging when midships cargo tanks are loaded more heavily than the bow and stern.

C. Heat Adjacent

Each cargo loaded is to be checked for its sensitivity to heat. Cargoes sensitive to heat are not to be loaded adjacent to cargoes that have a heating requirement. The maximum heat adjacent cargo information can be found in the cargo computer data information. **An inhibited cargo is to never be stowed adjacent to a cargo requiring heat.**

D. Previous Cargoes

When stowing the barge, the cargo tanks must be checked for what they last contained. Extra care must be taken when loading a sensitive cargo with a hard to clean previous cargo.

E. Cargoes Heat Requirement

Cargoes that require heat must be heated to the maximum cargo temperature, as stated by the customer, just prior to discharge. The barge is to be brought to a heating station, a thermometer is to be placed in the cargo and the heat applied. The maximum temperature is never to be exceeded.

F. Cargo Compatibility

Each cargo loaded adjacent must be checked if the two are compatible with each other. The compatibility number is obtained from our computerized cargo data file or the United States Coast Guard Chemical Data Guide for Bulk Shipment by Water and then checked for

compatibility on the USCG compatibility chart. When two incompatible cargoes are loaded on the same barge, a special bright orange tag is to be placed on all incompatible cargo tanks and headers to the tank. A written note is to be printed on the tag stating, “Cargo A is incompatible with Cargo B”

G. Cargo Volume and Cargo Weight Limitations per Tank

The maximum cargo weight limitations are barge specific can be found under the appropriate tab for the barge being loaded and/or onboard the barge being loaded and/or on the barge’s COI. Cargo tanks should never be loaded in excess of 1’ from the deck. Extra precaution needs to be taken if the barge is going to be out of trim or listed to one side. During loading operations or due to trim change, the cargo should never come in contact with alarms. If the cargo would set off the alarms due to trim or list change on barge, then the Supervisor on duty is to be notified immediately.

H. Draft Calculations

The draft limitations are listed on the COI and are governed by the hull type for the cargo loaded (type II hull or type III hull). This limitation can be found under the table for the specific barge in question. A deadweight scale can also be under the barge tab. The max draft for the appropriate hull type must never be exceeded.

I. Inhibited Cargoes

Cargoes that are inhibited are provided with a certificate showing how long the inhibitor is good for. The barge cannot leave the load facility until an inhibitor certificate is presented to the Person in Charge of the barge. This inhibitor certificate must be onboard the entire time the cargo is on the barge. For inhibited cargoes being transferred to a ship, the inhibited certificate is to be passed on to the Chief Officer of the ship.

No heat is to ever be applied or a heated cargo stowed adjacent to an inhibited cargo.

J. Material Safety Data Sheets

All subchapter “O” cargoes must have an MSDS accompany the cargo while it is on the barge. When transferring cargo to a ship, the MSDS must be passed on to the Chief Officer.

K. Person-in-Charge Who Shall be a Certified Tankerman

The Person-in Charge is responsible for carrying out the actual loading and discharge operations under the direction of the Barge Coordinators. The Person-in-Charge shall be a licensed Tankerman holding the necessary endorsement of the cargoes scheduled for transfer. Kirby Inland Marine shall designate those qualified as Person-in-Charge in writing. Person-in-Charge must be constantly aware of the condition of the barge during the transfer operation. Due to the many changes that occur during shipboard lightering operations and pre-planning, constant communications and risk of cargo tank backflow during start up and at all phases of transfer – prior to the commencement of the transfer – are paramount to prevent the barge from getting into a prohibited loaded condition. These prohibited load conditions are barge specific and are listed under the tab for barge in question. The Person-in-Charge shall be in overall charge of all transfer operations on the barge and shall be responsible for the security of the barge during cargo operations.

The Assistant Tankerman is a person assigned to assist the Person-in-Charge during transfer operations. This person is not required to be a Certified Tankerman.

The Assistant Tankerman shall assist the Person-in-Charge in the performance of his duties.

Both the Person-in-Charge and the Assistant Tankerman shall be on deck in attendance during the connecting and disconnecting of all transfer and vapor control hoses.

AT ALL TIMES between hose hook up and disconnection, while cargo is being transferred, the Person-in-Charge shall be in attendance on the barge. If for any reason that person feels the need to leave the barge, then that person needs to call for a relief before leaving. If a relief person is not available, then transfer operations shall be discontinued until the Person-in-Charge can return.

The Person-in-Charge of a transfer operation using a vapor collection system must be trained in the particular system installed on the barge. Kirby Inland Marine will certify, in writing, the personnel qualified to serve as Person-in-Charge in vapor collection transfers.

L. Tending of Mooring Lines

Upon boarding the barge, whether at anchorage or at a terminal, it shall be the responsibility of the Person-in-Charge to check the mooring lines to see that they are in good condition, adequate in number and properly secured. Present and expected conditions of wind, weather

tide and draft change due to cargo loading shall be taken into account when checking mooring lines.

Promptly report any frayed or broken mooring lines so that they may be replaced. When shift boats other than Kirby Inland Marine boats are used, be sure that they place sufficient lines on the barge before dismissing the shift boat. If, for any reason, the shift boat refuses to leave sufficient lines, notify the dispatcher immediately.

The Assistant Tankerman shall assist as directed by the Person-in-Charge.

M. Safety Equipment / Clothing

Clothing requirements for both the Person-in-Charge and the Assistant Tankerman is a shirt with sleeves, long pants and leather safety shoes (no tennis shoes or sneakers).

A hard hat is required when connecting or disconnecting cargo hoses.

Safety goggles and chemical gloves must be worn when handling all chemical cargoes, when connecting or disconnecting cargo hoses, when blowing down cargo lines, and when catching a sample.

Chemical gloves, slicker suits, goggles and rubber boots are to be all worn when handling all caustics and acids. A water hose is to be running prior to the commencement of the cargo transfer. Only the Person-in-Charge is to be on board the barge during the transfer of these products: formic acid, amines, acrylonitrile, adiponitrile and acetonitrile. A self-contained breathing apparatus is to be worn (in addition to equipment for acids/caustics) during hose connecting/disconnecting, tank hatch opening and sampling. It must be readily available for any emergency. Only the Person-in-Charge is to be on board the barge during the cargo transfer of these products. See Section XI, page 30 (c).

Material Safety Data Sheets (MSDSs) are readily available for all cargoes that Stolt-Nielsen handles. If unfamiliar with a product, notify the Stolt-Nielsen barge representative immediately.

N. Communications

Communications shall be established between the vessel and the barge, or between the terminal and the barge as the case may be, before the transfer hoses are hooked up. Communications must be maintained until the transfer is complete and hoses are disconnected.

It shall be the duty of the Person-in-Charge to see that proper communications are established, and knows whom the person on the vessel or dock facility is that has been assigned as Person-in-Charge.

If at any time during transfer operations communications are interrupted, **STOP ALL TRANSFER OPERATIONS** and do not resume until communications have been re-established.

O. Rigging of Cargo Transfer and Vapor Control Hoses

All cargo and vapor control transfer hoses shall be properly connected to their specific hardware. Each header is stenciled for identification. The vapor header is color-coded at the port and starboard ends with a wide yellow band around the pipe and a narrow red band around the pipe at each end of the yellow band.

When connecting a hose or a blank at a flange, start with four bolts, staggered around the flange. Tighten the four bolts one at a time and then retighten. After the first four bolts are tight, insert and tighten bolts in all remaining holes. Each flange connection must be made so that it does not leak. If the flange cannot be tightened so that if does not leak, a new gasket should be used.

Each hose must be checked for the test date (good for one year from the date stenciled) and test pressure (cargo hose 225 psi, vapor hoses 7.5 psi and 0.5 psi vacuum).

Care shall be exercised that all cargo hoses are properly supported throughout their length. The cargo and vapor hoses must not be allowed to sag between the barge and the vessel to the barge and the dock where they could become damaged or broken. Be sure there is sufficient hose to allow for forward and aft or up and down movement of the barge during transfer. Where hoses are passed under over or through a vessel railing or bulwark, proper chafing gear must be rigged.

Arrange for loading or discharge to start at a slow rate to allow time to check for leaks.

If a transfer hose or flange develops a leak, **STOP TRANSFER OPERATIONS IMMEDIATELY**. Replace the faulty hose or stop the leak at the flange. A faulty hose must be properly marked as “leaking” and reported to the Stolt-Nielsen office as soon as the transfer operation is completed.

P. Barge Overfill Alarm System

The barges charted to Stolt-Nielsen Inc. (AL 2300) is equipped with an independent alarm system that works whether connected to shore or not. The alarm system is set to activate at two levels. The first (high) 10” from deck of barge. The second (overfill) at 6” from deck of barge. If cargo comes in contact with the alarm’s warning lights, the horn will activate. The alarm system is required to be used during all transfer operations (loading and discharges).

Q. Cargo Tank Backflow Prevention

All barges fitted with Framo pump system that allow for backflow of cargo to other tanks during discharge operation through common system, must follow procedures in Section V. (C) Discharge Procedures.

SECTION III:

SHIP TO BARGE OPERATIONS

A. NUMBER OF PERSONS REQUIRED FOR CARGO TRANSFER

A pre-conference between the Barge Coordinator or the designated Person-in-Charge and the Chief Officer, or Captain, of the ship is to take place prior to commencement of cargo operations. The meeting is to cover the following items:

i. **Review of all Cargoes:** Stowage's on the barge and vessel, any hazards and/or precautions to be taken.

ii. **Cargo Sequence:** Agreement is to be reached on what order the cargoes will load/discharge simultaneously, and any changes that may occur.

iii. **Quantities Reviewed:** Tank(s) to be transferred into are checked and confirmed to have ample space.

iv. **Nitrogen Requirements:** Confirm and agree which cargoes require a nitrogen blanker and/or nitrogen pad. Also, agree which cargo hoses must be blown with nitrogen.

v. **Vapor Control:** Determine if there is a cargo/cargoes that require(s) vapor control. Follow the cargo vapor control requirements that apply in Section XI, page 30, or Section XII, page 36.

vi. **Manifold/Hose Color-Coding:** The Barge Supervisor is to tag the hose from the barge with a colored tag. The tag is to contain the name of the cargo and the barge stowage. The ship's officer then attaches the same color tag with the name of the cargo to the ship's header for that cargo. (No tag must ever be placed on the ship's manifold by barge personnel).

vii. **Pre-Sampling:** A sample is to be drawn at the ship or barge tanks prior to cargo entering the tank. If the sample is visually approved, by the customer's surveyor, the cargo transfer can commence. If not, then cargo is to be slopped until a clear sample is received and approved.

viii. **Declaration of Inspection:** (Sample listed above) Each item is to be reviewed and signed by the Person-in-Charge of the vessel and barge(s).

ix. **Material Safety Data Sheets (MSDS):** The MSDS received from the loading dock is to be delivered to the Chief Officer or Captain by the Person-in-Charge.

x. **Inhibited Cargoes:** The inhibitor certificate must be passed onto the chief officer for all inhibited cargoes.

The Chief Officer of the ship is to "sign off" on the barge pre-transfer conference sheet. This shows agreement that all cargoes will fit in the ship tanks and all color tagging of the barge hoses and ship's manifold are in agreement between the Chief Officer and the Person-in-Charge.

SECTION IV:

CARGO LOADING PROCEDURES

A. LOADING PREPARATION

Prior to start of cargo transfer, it shall be the responsibility of the Person-in-Charge to check with the Cargo Inspector or the Stolt-Nielsen Supervisor, if one is in attendance, to confirm the following:

1. The type of cargo scheduled for loading.
2. Determine if the cargo requires vapor control. For a cargo that requires vapor control, follow the requirements that apply in Section XI, page 30, or Section XII, page 36.
3. The barge tanks scheduled for loading.
4. Quantity to be loaded.
5. Rotation of loading when more than one grade of cargo is scheduled to be loaded on the same barge.
6. Confirm the approximate loading rate that can be expected and time required for loading.

In preparation of the barge: the following items are to be checked prior to commencement of loading by the Person-in-Charge:

1. Referring to the cargo stow plan provided by the Barge Coordinator, the Person-in-Charge is to ensure that each cargo tank and cargo manifold being loaded are tagged with a color tag. The same color tag is to be used on each tank and cargo manifold that contains the same lot of cargo. The Person-in-Charge is to verify that the tags have in writing on them the name of the cargo being loaded in that tank, the stow of that cargo, the name of the loading location the cargo is to be loaded from (in the case of a ship the name of the ship) and the percentage the barge tank will be loaded to.
2. Barge must be pre-inspected by the Person-in-Charge. The pre-inspection must include (but not limited to) ensure that all cargo valves are closed y opening then closing – checking all “T” pieces, manifold flanges, cleanout flange at man way and jumper hoses to ensure that they are eight bolted and tight. Check the 1” drains at each tank and at each end of the manifold to ensure that the valves or closed and they are plugged.

3. Under no circumstance is anyone to enter any cargo tank to void tanks on the barge without first notifying the Stolt-Nielsen office. The procedures in Stolt-Nielsen and Kirby Inland Marine's confined space entry program must be followed carefully.
4. Visually check to see that there are no rags, tools or any items left in the cargo tanks that could damage the cargo pumps during discharge.
5. Check out all forward, aft and wind void spaces on the barge to ensure that they are empty. If there is any water or any substance in any void space, notify the Stolt-Nielsen and Kirby Inland Marine office prior to cargo operations.
6. Check that all void spaces are properly closed and secured.
7. Be sure that all Butterworth plates are properly gasket and bolted down with all required bolts in place.
8. Tank tops are to be closed and secured, when required, and ullage openings properly fitted with flame screens prior to loading. Check to be sure that all gaskets are properly in place on both tank tops and ullage openings.
9. Check off all remaining manifold and close and blank off, unless a "run-a-round" is being utilized.
10. Turn on barge Overfill alarm system and engage each tank High and Overfill alarm to ensure that the lights and horn are working. Each cargo tank must be tested, even if that particular cargo tank is not scheduled to load cargo (split loading). When the barge is empty and the gauge sticks are capped, the sticks and floats are engaged. Extreme care must be taken not to drop the stick in its tube. This can damage the alarms and stick, by dropping it. The alarm system and stick gauges are required to be used during all transfer operations (Loading & Discharges).
11. A fresh water hose must be laid out and left running whenever caustics or acids are being loaded or discharged.
12. Check to ensure that all valves are closed securely before starting the loading procedure.

B. LOADING PROCEDURE

1. Recheck cargo hose and manifold line up.
2. Open only those manifold valves scheduled for loading.
3. Instruct shore-side personnel to begin cargo transfer by gravitation when at all possible.
4. When loading via shipside, instruct the Person-in-Charge on the vessel to commence pumping slowly until you feel that everything is in good order.
5. Check cargo system, including pump, flanges, and valves for leaks. Also check each tank to confirm that the correct tanks are being loaded, after which the shore pumps or vessel's pump can be put on line for maximum loading rate.

6. The Person-in-Charge is to make frequent inspection of the cargo level in the cargo ranks to guard against the danger of spillage. Loading rates are usually not consistent and reliance on a time factor or a gauge can be very dangerous.
7. During loading, frequent inspection of the barges void spaces should be done to ensure that there are no cracks in the cargo tanks that could endanger loading or possible cargo contamination.
8. Check all cargo tanks that are not being loaded to ensure cargo segregation.
9. Prior to any cargo operation, the Person-in-Charge shall familiarize their selves with general arrangement diagram located amid ships on the barge.
10. Prior to any cargo operation, close all cargo manifold valves and all cargo pipeline valves.
11. Check with the cargo surveyor or Stolt-Nielsen Representative to confirm tanks to be loaded.
12. Open only those cargo valves on the cargo pipeline designated to be loaded.
13. Commence loading operation slowly to ensure all cargo fittings are properly secured and that no cargo is entering into any cargo tanks not scheduled for loading.
14. Check cargo tanks frequently to confirm cargo rate and segregation.
15. When topping off cargo tanks, the cargo manifold valves should be closed halfway to reduce the flow of cargo.
16. Upon completion of loading, close all valves on the cargo manifold and pipeline and blank off the cargo manifold as required.

C. TOPPING OFF OF CARGO TANKS

1. The Person-in-Charge and Assistant Tankerman shall be in attendance on deck during the topping off period. The Person-in-Charge shall be in charge of topping off operations. The Person-in-Charge must see to it that the pumping rate is reduced and that a person is standing at the pump for their orders to shut down upon completion of operations.
2. Top-off the last tank slowly! Top-off the tanks to the designated ullage of 1’ or less from barge deck. Shore or vessel personnel should be in position in advance of barges termination of loading. Close coordination and communication must be maintained between barge and ship or terminal at this critical point. Never rely on terminal or ships stop gauge.
3. During loading operations or due to trim change, the cargo should never come in contact with alarms. If the cargo would set off the alarms due to trim or list change on barge, then the Supervisor on duty is to be notified immediately.
4. Upon completion of loading, the Person-in-Charge should advise the vessel to shore personnel not to clear any cargo line until the Person-in-Charge has checked that all

cargo hatched and Butterworth openings are closed and well secured. The Person-in-Charge should also check that cargo valves have been adjusted prior to blowing the cargo line clear. Prior to clearing the cargo line, be sure that ullage hatches are open to allow excess pressure to escape.

5. When the cargo loading is complete, the gauge sticks must be in the lowered position and capped and barge alarm is turned off.

SECTION V:

CARGO DISCHARGE PROCEDURES

A. GENERAL APPLICATION

Close attention should be paid to the cleanliness of the lines and pumps that are to be used for discharging of the product. Upon completion of loading at either a terminal or vessel, the barge lines will be thoroughly blown to ensure cleanliness for discharge. Chatterers or receivers surveyors will inspect the barge's pumps, lines, discharge hose or portable pump very carefully before allowing discharge to commence and no cargo is to be pumped prior to their approval.

The Person-in-Charge or the Assistant Tankerman shall routinely check over the barge prior to and during discharge. The Person-in-Charge must institute the below procedures as closely as possible.

B. PREPARATION FOR DISCHARGE

The Tankerman shall become familiar with the barge's line diagram of piping for oil transfers, including the location of each valve, pump, control device, vent, vapor control system and overflow; also with the location of the shut off valve or other isolated device that separates any bilge or ballast system from the oil transfer system.

1. Determine if the cargo requires vapor control. For cargoes that require vapor control, follow the requirements that apply for Section XI, page 30, or Sections XII, page 36.
2. All personnel engaged in the cargo transfer should be briefed on their duties.
3. All personnel under the supervision of the Person-in-Charge of the oil transfer operation shall be instructed in the emergency shutdown system.
4. Bleed pumps (where applicable) and set all cargo valves. Leave manifold valve closed. NOTE: a good practice is to close all valves on the barge and then open only those valves necessary for discharge.
5. If a runaround hose is being used on the shore side, make sure both manifold valves are open.
6. Start and warm up engine. This should be done only with the permission of the shore personnel.
7. Turn on barge Overfill Alarm system and engage each tank High and High/High Alarm to ensure that the lights and horn are working.

8. All gauge sticks must be uncapped and raised to engage the float. (NOTE: if the cargo level is below the upper 3' of the cargo tank, the stick will already be engaged in the magnet.) When the cargo discharging is complete, the gauge sticks must be in the lowered position and capped.
9. A fresh water hose must be laid out and left running whenever caustics or acids are bine loaded or discharged. NOTE: the barge must be ready to commence discharging upon notice from receivers. This preparation is usually possible while the tanks are being gauged, sampled and temperature. It is important that the barge not be held responsible for any delays in commencement of discharge. When the terminal is ready to receive the cargo, and has posted the barge accordingly, the barge must be in ready to commence discharging immediately.

C. CARGO DISCHARGE PROCEDURE

Prior to start of discharge to ship or shore, all loaded tanks must be inspected to ensure that they are below required load level of 1' from barge deck. If any tank is loaded closer than 3' from barge deck, then the following procedures must be followed:

1. Establish and maintain communications with shore side or ship personnel before cargo transfer.
2. When mutually agreed, discharging can comment. One tank at a time will be engaged at a slow discharge rate no matter the number of tanks that are loaded with the same lot of cargo. This is to prevent backflow of cargo to other tanks. All other tanks must have tank valves closed and monitored to ensure that they are not backfilling by use of stick gauges, alarm system and visually checking for barge tank cargo level.
3. Open manifold valve for only those cargo tanks for discharge and the one tank discharging from.
4. Engage PTO for pump at no greater than 1200 rpm.
5. Commence discharge slowly until a fully flow into ship or shore tank has been confirmed and visually checking of barge tank cargo level and stick gauge. When confirmed by ship or dock that valves to loading tanks are open, increase flow slowly.
6. If the barge is loaded with multi cargoes, then only one lot of cargo can be started at a time.
7. Any tanks that are loaded more than 3' from barge deck must be transferred first. One tank at a time to a safe level of 3' below barge deck. When the first tank has been lowered to a safe level of 3', continue to transfer other tanks until all below 3' from barge deck.
8. Immediately check all hoses. Valves and flanges being used for discharge for leaks.

9. Once flow with no leaks has been confirmed, engine speed can be increased slowly to increase rate of discharge.

D. SWEEPING OF CARGO TANKS

When a barge tank is to be swept, the Person-in-Charge must be present. It will be the Person-in-Charge's responsibility to coordinate the sweeping operation and to ensure that all safety precautions are strictly adhered to. At no time will any employee enter a tank for sweeping without first ensuring that all necessary confined space entry precautions are taken. A certified Competent Person with an approved oxygen/gas and TLV meter prior to entry must test all tanks. Portable blowers are required to be placed on cargo tank whenever possible. The vessel may provide the blowers when shipside cargo transfer is being done. When cargo transfer is being done at a shore facility, it will be the responsibility of the Person-in-Charge to advise the facility when personnel are in the cargo tanks sweeping.

SECTION VI:

TRANSFERRING BETWEEN TWO BARGES AND A FACILITY USING ONE PERSON-IN-CHARGE

A. LOADING PREPARATION

The complexities of the Multi-System barges are too great to allow one Person-in-Charge for two barges. Therefore, each barge will always have a Person-in-Charge assigned to it.

SECTION VII:

COMPLETION OF TRANSFER OPERATIONS

A. GENERAL APPLICATION

Upon completion of transfer operations, it is the duty of the Person-in-Charge to ensure that the following tasks are performed:

1. The cargo hose and cargo line shall be blown clear.
2. A final check shall be made prior to breaking down hoses to ensure that all valves used during the transfer operation are closed.
3. Hoses shall be uncoupled over a containment area or portable containment facility to prevent any oil remaining in the hose from spilling in the hose from spilling onto the deck.
4. Install blanks on all hoses and on all manifold connections used during transfer operations.
5. Close and secure all deck hatches and cargo tank accesses.

SECTION VIII:

DECK CONTAINMENT

A. GENERAL APPLICATION

Under each loading/discharge manifold and each expansion truck, there is a containment area installed. Their function is to retain any small discharge of oil originating from the manifold.

In the bottom of each containment, there is a plug for draining water. Prior to any transfer operation, check to ensure that containment areas are properly drained and the plugs installed. The Assistant Tankerman shall assist as directed by the Person-in-Charge in the performance of this duty.

BEFORE DRAINING PIPELINES OR HOSES REFERENCED TO THE CARGO STOW PLAN, CHECK FOR INCOMPATIBLE CARGES. PREVENTATIVE MEASURES MUST BE TAKNE TO ENSURE THAT INCOMPATIBLE CARGOES ARE NEVER MIXED IN THE CONTAINMENT AREAS OR ANYWHERE ELSE.

SECTION IX:

GENERAL SAFETY PROCEDURES

A. CHECK OFF FOR SAFE CARGO HANDLING

1. Check the cargo-piping diagram prior to any cargo operations
2. When alongside a terminal installation, be sure that you know who the Person-in-Charge is and where that person can be located or called in case of any emergency.
3. A red flag or red light must be exhibited in accordance with established port rules.
4. All doors and portholes leading to open decks are closed and/or screens are in place.
5. Ullage frame screens are in place and should be removed only for tank inspection.
6. Drip pans placed under cargo manifold.
7. Portable fire extinguisher readily available.
8. Drip pans under any additional hose connections in use.
9. Warning signs properly posted.
10. Check to see that proper accommodation ladders are being used when alongside a vessel.
11. Maintain a close check on cargo hoses, gaskets, glands, pipeline and pump rooms for leaks.
12. Frequently check mooring lines.
13. After cargo transfer operations are complete and before tugs are permitted to come alongside, secure the entire cargo system.
14. Shut down during dangerous electrical storms. Shut down when in doubt.
15. When any visible sheen is noted on the water, shut down operations until source is positively identified. See Stolt-Nielsen Spill Procedures for further detail and contact Kirby Inland Marine.
16. Port information sheets posted.
17. NO SMOKING PERMITTED ON BOARD ANY BARGE. NO EXCEPTIONS!

B. TENDING OF MOORING LINES

Upon boarding the barge, whether at anchorage or at a terminal, it shall be the responsibility of the Person-in-Charge to check the mooring lines to see that they are in good condition, adequate in number and properly secured. Present and expected conditions of wind, weather, tide and draft changes due to cargo loading shall be taken into account when checking mooring lines.

Promptly report any frayed or broken mooring lines so that they may be replaced. When shift boats other than Kirby Inland Marine are used, be sure that they place sufficient lines on the barge before dismissing the shift boat. If for any reason the shift boat refuses to leave sufficient lines, notify the Barge Coordinator immediately.

The Assistant Tankerman shall assist as directed by the Person-in-Charge.

C. SAFETY EQUIPMENT / CLOTHING

Clothing requirements for both the Person-in-Charge and the Assistant Tankerman are a shirt with sleeves, long pants, and leather safety shoes (or chemical resistant boots). NO TENNIS SHOES OR SNEAKERS.

A hardhat and life jacket are required at all times by all personnel on the barge. Safety goggles and chemical gloves must be worn when handling all chemical cargoes, when connecting or disconnecting cargo hoses, when blowing down cargo lines and when catching a sample.

Special requirements for loading/discharging of acids, caustics, cargoes as listed, and cargoes that are required to as per the MSDS: Chemical gloves, slicker suits, goggles and rubber boots are to be all worn when handling all caustics and acids. A water hose is to be running prior to the commencement of the cargo transfer. Only the Person-in-Charge is to be on board the barge during the transfer of these products: formic acid, amines, acrylonitrile, adiponitrile and acetonitrile. A self-contained breathing apparatus (SCBA) is to be worn (in addition to equipment for acids/caustics) during hose connecting/disconnecting, tank hatch opening and sample. It must be readily available for any emergency. Only the Person-in-Charge is to be on board the barge during the cargo transfer of these products.

D. COMMUNICATIONS

Communications shall be established, between the vessel and the barge or between the terminal and the barge as the case may be, before the transfer hoses are hooked up. Communications must be maintained until the transfer is complete and hoses are disconnected.

It shall be the duty of the Person-in-Charge to see that proper communications are established, and that it is known whom the person on the vessel or dock facility is that has been assigned as the Person-in-Charge. If at any time during transfer operations communications are interrupted

STOP ALL TRANSFER OPERATIONS and do not resume until communications have been re-established.

SECTION X:

BENZENE REQUIREMENTS AND CARGO MIXTURES CONTAINING 5% BENZENE

(i.e.: pyrolysis gasoline, gasoline, cracked naphtha and hard cut reformat)

United States Coast Guard Regulations 46 CFT part 151.50-60 concerning benzene requires that the licensed officer, certified Tankerman or Person-in-Charge of a barge should ensure no person on the barge is exposed to an airborne concentration of benzene in excess of one part per million (1 PPM) as an eight hour time weighted aver (TWA) or five parts per million (5 PPM) TWA over any 15 minute period. Since these limits may be exceeded during barge loading, it is Kirby Inland Marine and Stolt-Nielsen's requirements that the following precautions be taken while sampling cargo, connecting or disconnecting a hose, opening a cargo tank, Butterworth hatch, ullage opening, sounding tube or any other opening:

1. Respirators meeting 29 CFR 1910.134 must be worn.
2. In addition to the respirator requirements all personnel will wear chemical protective gear-chemical approved gloves, rubber boots and goggles (unless a full face respirator is used).
3. Post a sign stating:

   Benzene Cancer Hazard in this Area protective equipment may be required authorized personnel only.

   Further detail on Benzene Cargo handling is available in Kirby Inland Marine's Benzene program.

SECTION XI:

VAPOR CONTROL REQUIREMENTS FOR CERTAIN CARGOES DURING CARGO TRANSFER OPERATIONS

Vapor control requirements are necessary during cargo transfer operations to eliminate hazardous vapor discharges into the atmosphere. Control requirements are mandatory to meet air quality standards set by various government agencies. The United States Coast Guard is responsible for ensuring that equipment installation and operation for vapor control is safe. To accomplish this, new regulations have been established in 46 Code of Federal Regulations, Part 39 (46 CFR 39). A copy is available on board the towboat.

These transfer procedures are established to comply with the new regulations and are in addition to procedures for non-vapor control transfers. The only people who may be in charge of a transfer operation utilizing a vapor collections system is a Tankerman who has completed a training program covering the system installed on the vessel. Vapors may not be collected by a facility which does not have its letter of adequacy encored as meeting the vapor control requirements of 33 CFR Part 154 or in the case of a ship to barge operation transferring to or receiving from a vessel which does not have its certificate of inspection or certificate of compliance encored as meeting the requirements of 46 CFR Part 39 vapor balancing. Vapor collection in a ship to barge operation is permitted for crude oil, gasoline and benzene only. The barge AL 2300 has been approved by the United States Coast Guard for vapor balancing meeting the requirements of 46 CFR Part 39.40. See Section XII, page 36, for letter of approval and transfer procedures.

Special procedures are required for barges that use the “jumper” hoses to connect individual cargo tanks to the barge vapor header (AL 2300). The barge must be in a clean condition or in the process of being cleaned before the vapor hoses can be connected or disconnected.

A. PRE-TRANSFER PROCEDURE FOR VAPOR CONTROL

This should be conducted along with the Person-in-Charge of the transfer for the facility and is in addition to the pre-transfer conference required for non-vapor control transfers.

1. Examine the facility letter of adequacy and verify that it is endorsed as meeting the requirements of 33 CFR 154 or in the case of barge to ship transfer or receiving from a vessel examine their certificate of inspection or certificate of compliance and verify

endorsement stating they meet the requirements of 46 CFR 39 for vapor control transfers.

2. Examine the barge certificate of inspection and verify that it is endorsed as meeting the requirements of 46 CFR 39 for vapor control transfers.
3. Look at and review the vapor control piping diagram; control, gauging and alarm and/or automatic shutdown systems drawings and instructions.
4. Inspect the equipment that is used in the vapor control piping, control gauging and alarm and/or automatic shutdown systems.
5. Determine and agree upon the maximum allowable cargo transfer rate for the specific cargo being transferred. NOTE: Different cargoes have different maximum rates for the same barge. Also, the maximum transfer rate for the same product and barge may be different at different facilities. Since the graph used to calculate the maximum allowable load rate is different for each product and each barge Stolt-Nielsen provides the graph just prior to each load. The Tankerman may not load the barge without first receiving and interpreting the graph. Computation of the maximum transfer rate must be done in accordance with section XI beginning with page 30 of these procedures for each transfer regardless of how similar it may seem to a previous transfer. Enter the agreed upon rate in the Declaration of Inspection.
6. Determine and agree upon the initial transfer rate for cargoes that generate and accumulate static electricity during loading. These cargoes are generally clean oils, distillates, and require special procedures when loading begins in each cargo tank. The oils of special concern are: natural gasoline, kerosene, white spirits, motor and aviation gasoline, jet fuels, clean diesel oils, heating oils, heavy gas oils, naphtha's, and lubricating oils. See Section XI beginning on page 30 of procedures for determining the initial transfer rate. Enter the agreed upon rate in the Declaration of Inspection.
7. Determine and agree upon the maximum and minimum operating pressure at the facility or service vessel vapor connection. Enter these pressures in the Declaration of Inspection.
8. If the vapor in the cargo tanks is inerter the vapor oxygen content must be tested and determined to be less than 8%.
9. Close all low point drains in the vapor control piping.
10. Close the valve at the vapor stack.
11. Close the vapor connection valve at the port and starboard end of the header.
12. Examine the vapor collection hose and ensure that there are no loose covers, kinks, bulges, soft spots, or any other defect which would permit uncontrolled discharge of vapors, and no gouges, cuts, or slashes that penetrate the first layer of hose reinforcement. If any of these conditions exist, the hose must not be used. If any of

these conditions occur during the transfer operation, the transfer must be stopped and the hose replaced.

13. Examine the vapor collection hose and verify that it is labeled for maximum allowable working pressure (MAWP) of at least 5 psi and a vacuum no less than 2 psi. The hose must have 150 psi flanges that are additionally drilled with one or more holes on the bolt hose circle midway between bolt holes to accept the ½" stud fitted on the barge connection flange. The last 3' 4" of each end of the hose must be painted red/yellow/red.

    All Kirby Inland Marine barges fitted for Vapor Collection are fitted with effective gauging devices and liquid overfill protection:

    A. Dual sight glasses with wipers and gauging trees. Magnetic float gauges, called "stick gauges" for closed gauging.
    B. An intrinsically safe overfill control system. This system has individual cargo tank overfill sensors that activate an alarm and a shutdown at the facility or on the ship in a ship to barge operation.

The barge equipped must be connected to the facility equipment with an electrically safe cable, if the facility is so equipped. This cable is provided by the facility or ship and must be plugged into the barge connector labeled "Connector for Barge Overflow Control System". This connector is located on a deck stand near the vapor collection header. The system must be "turned on" by engaging the barge alarm system. Before loading, the barge alarm system must be tested on each tank for High Alarm 10" from deck and High/High Alarm 6" from deck as required by federal regulation, 46 CFR 39.30-1 (k). When the cargo loading or discharging is complete, the barge alarm system must be turned off and secured. This system operates correctly only when properly connected and will not allow cargo transfer to even begin unless connected properly. You must use the system so connect it properly and it will serve you well.

14. Locate the dual sight glasses and use the wipers to make sure they work and wipe each sight glass clean.
15. Use your flashlight and make sure you locate and can see the gauging trees under the sight glasses inside the cargo tank.
16. Connect the High Level and shutdown system to the facility or ship alarm control by plugging the facility or ship cable into the barge overflow connector mounted near the vapor header on either port or starboard sides.

For Loading

17. Engage the barge duel level alarm system.

18. Test each tank alarm even if not loaded or discharged to ensure that the High Level Alarm at 6” light and horn activates and the Shutdown Alarm light and horn activates.
19. After the alarm and shutdown are tested, uncap all stick gauges and raise it until it engages the float magnet. This will be near at the bottom of the sticks travel. The stick must engage the magnet in each tank in order to begin the transfer.
20. When the cargo in each tank reaches approximately 7” innage, the float will begin to float. As the cargo raises so will the float, as will the gauge stick. It is important to make sure that the stick continues to rise as the tank fills the visual use.

For Discharge

21. Engage the barge dual level alarm system.
22. Test each tank alarm even if not be loaded or discharged to ensure that the High Level Alarm at 6” light and horn activates and the Shutdown Alarm light and horn activates.
23. After the alarm and shutdown are tested, uncap all stick gauges and raise until it engages the float magnet. This will be near the top of the sticks travel. The stick must engage the magnet in each tank in order to begin the transfer.

When it is agreed between the Tankerman and the Person-in-Charge of the transfer for the facility that the transfer can be conducted safely and properly, all cargo and vapor systems can be made up, connected, in accordance with the remainder of these procedures.

When the cargo and vapor hoses have been connected and made ready for transfer for the following procedures shall be followed prior to beginning the transfer:

24. Open the vapor header butterfly valve on the end of the header that is connected to the facility vapor collection system.

The vapor recovery system is now ready to function properly during the cargo transfer operation.

B. INITIAL TRANSFER RATE

Precautions against static electricity may be necessary when the cargo being transferred is known as an accumulator of static electricity. Clean oils (distillates) are generally accumulators of static electricity. They require precautions at the beginning of the transfers. These oils are: natural gasoline, kerosene, white spirits, motor and aviation gasoline, jet fuels, clean diesel oils, heating oils, heavy gas oils, naphtha, and lubricating oils.

When any of these products are being transferred, these procedures shall be followed:

1. At the beginning of cargo flow into each cargo tank, the flow rate should not exceed these rates:

   Tank drop (branch) approximate pipeline diameter flow rate (bbls/hr)

3”	105
4”	180
6”	420
8”	730
10”	1150

2. After you determine that there is no more splashing and surface turbulence in a cargo tank, the flow rate can be increased to the maximum allowable transfer rate.
3. During and for 30 minutes after completing the loading, alleging and sampling equipment must not be put into the tank. Ropes or lines used to lower equipment into the cargo tank must be only natural fiber-cotton, sisal, hemp or flex. Synthetic or similar nylon must never be used.
4. Operations performed through restricted gauging tubes are permissible at any time during transfer unless not allowed by vapor emission restrictions.
5. If the cargo tank atmosphere is maintained inert no anti-static precautions are necessary.

C. DETERMING MAXIMUM ALLOWABLE TRANSFER RATES

Cargo transfers that require vapor collection as the cargo enters the cargo tank must be conducted with a full knowledge of the hazards involved. The transfers are performed for the most part in total reliance upon information for exercising control coming from gauges and remote sensing device-a closed system. As a result, the Tankerman must be trained in the barges particular system before the Tankerman can be authorized to be the Person-in-Charge of the transfer. The Tankerman must be able to have complete confidence in the equipment on board and use it correctly for a successful transfer of cargo. In this regard success is moving the entire amount of product for one desirable contain to another without product contamination or loss, without polluting either the atmosphere or the water, without hazard to personnel or equipment, and in an economical manner as possible.

In a vapor collection transfer, each of these factors are affected by the cargo-loading rate. Therefore, it is very important to determine it accurately. Product can be introduced into a tank without damaging it, only as fast as the vapor, air, in it is allowed to escape. By the same reasoning, product can only be removed from a tank as fast as vapor is allowed to enter the tank. This process is either filling or emptying a tank is called venting. Barge transfer operations

in the past have allowed venting directly into the atmosphere during transfers. In order not to pollute the atmosphere, venting of cargo tanks must now be controlled during the transfer of certain cargoes. This control is affected by a vapor collection header, branch piped to each cargo tank and connected to the other tank involved in the transfer through a connection on the barge near the cargo header port or starboard. As a result of the size and restriction of this header vapor movement is limited and thus product movement is limited. The limit can be determined though.

In order not to pollute the atmosphere, the vapor must move through the header and into the other tank quickly enough not to raise the pressure in the receiving tank or create a vacuum in the discharging tank in excess of the PV valve setting. Control of the pressure build up is controlling the amount of product that enters or leaves the tank and thus the amount of vapor that must enter through vapor control piping.

The method of controlling the product entering or leaving the tank is by determining the maximum allowable transfer rate for each transfer. To determine the maximum allowable transfer rate, use the following steps:

1. Refer to the attached graph for the appropriate product
2. Enter the graph on the left edge with the value of the “Vapor Line Pressure Drop” (the combination of the facility or vessel, if ship to barge operation, and the barge vapor line pressure drops).
3. Follow across to intersect the “vacuum” or “pressure” curve line depending upon whether discharging or loading.
4. Follow down to the bottom of the graph and read the “Maximum Allowable Transfer Rate” – “Liquid Flow Rate” in barrels per hour (BPH). This is the Maximum allowable transfer rate that product may be loaded or discharged without over pressurizing or creating excessive vacuum – usually resulting in cargo tank damage.

SECTION XII:

BARGE TO VESSEL VAPOR BALANCING PROCEDURES AND USCG LETTER OF APPROVAL

The following vapor balancing transfer procedures and company policies shall be strictly adhered to by all Kirby Inland Marine, Stolt-Nielsen employees, and employees of outside towing and tankerman companies employed by Stolt-Nielsen Inc., for cargo operations on board all company owned and operated barges, boats, and equipment.

Vapor balancing requirements are necessary during cargo transfer operations to eliminate hazardous vapor discharges into the atmosphere. Control requirements are mandatory to meet air quality standards set by various government agencies. The United States Coast Guard is responsible for ensuring that equipment installation and operation for vapor control is safe. To accomplish this, new regulations have been established in 46 Code of Federal Regulations, Part 39 (46 CFR 39).

The minimum following personnel protection equipment (PPE) is required during barge transfer operations:

A. Shirt with long sleeve and long pants
B. Safety Footwear (leather or rubber)
C. Hardhat
D. Safety Glasses
E. Life Jacket
F. Rubber Gloves

A. PRE-TRANSFER PROCEDURE

This should be conducted along with the Person-in-Charge of the transfer for the Vessel and is in addition to the pre-transfer conference required for non-vapor control transfers.

1. Barge to ship transfer or receiving from a vessel examine their certificate of inspection or certificate of compliance and verify endorsement stating they meet the requirements of 46 CFR 39 for vapor control transfers.
2. Examine the barge certificate of inspection and verify that it is endorsed as meeting the requirements of 46 CFR 39 for vapor control transfers.

3. Look at and review the vapor control piping diagram; control, gauging and alarm and/or automatic shutdown systems drawings and instructions.
4. Inspect the equipment that is used in the vapor control piping, control gauging and alarm and/or automatic shutdown systems.
5. Determine and agree upon the maximum allowable cargo transfer rate for the specific cargo being transferred. NOTE: different cargoes have different maximum rates for the same barge. Since the graph used to calculate the maximum allowable load rate is different for each product and each barge Stolt-Nielsen provides the graph just prior to each load. The Tankerman may not load the barge without first receiving and interpreting the graph Enter the agreed upon rate in the Declaration of Inspection.
6. Determine and agree upon the initial transfer rate for cargoes that generate and accumulate static electricity during loading. These cargoes are generally clean oils, distillates, and require special procedures when loading begins in each cargo tank. The oils of special concern are: natural gasoline, kerosene, white spirits, motor and aviation gasoline, jet fuels, clean diesel oils, heating oils, heavy gas oils, naphtha's and lubricating oils. See Section XI, page 30, for procedures determining the initial transfer rate. Enter the agreed upon rate in the Declaration of Inspection.
7. Determine and agree upon the maximum and minimum operating pressure and vacuum at the vessel vapor connection. Enter these pressures in the Declaration of Inspection. The pressure in the vapor space of any cargo tank connected to the vapor collection line on either the vessel receiving cargo or the vessel discharging cargo must not exceed 80 percent of the lowest setting of any pressure relief valve during cargo transfers.
8. All Ships and Barges operated by Stolt-Nielsen are not fitted with oxygen sensors described by 46 CFR 39.40-3, and may not engage in vapor balancing operations with a vessel that has inerted tanks as per 46 CFR 39.40-1 (d).
9. Close all low point drains in the vapor control piping.
10. Close the valve at the vapor stack.
11. Close the vapor connection valve at the port and starboard end of the header.
12. Examine the vapor collection hose and ensure that there are no loose covers, kinks, bulges, soft spots, or any other defect which would permit uncontrolled discharge of vapors, and no gouges, cuts, or slashes that penetrate the first layer of hose reinforcement. If any of these conditions exist, the hose must not be used. If any of these conditions occur during the transfer operation, the transfer must be stopped and the hose replaced.
13. Examine the vapor collection hose and verify that it is labeled for maximum allowable working pressure (MAWP) of at least 5 psi and a vacuum no less than 2 psi. The hose must have 150 psi flanges that are additionally drilled with one or more holes on the bolt hose circle midway between bolt holes to accept the ½" stud fitted on the barge

connection flange. The last 3’ 4” of each end of the hose must be painted red/yellow/red.

14. Connection of the detonation arrester (DA) and vapor hoses from the barge to ship for load or discharge operation doing vapor balancing:
    a. First determine how the barge will dock alongside the ship (port or starboard) in order to place the DA on the correct side of barge.
    b. The DA must be connected with the 3 meters (9.74 feet) of the vapor connection as required in 46 CFR 39.40-3 (b).Then connect vapor hose from the barge manifold to the DA, and eight bolt both ends.
    c. Then on the outer side of the DA going to the ship, eight bolt the insulating flange then eight bolt the vapor hose going to the ship to the insulating flange. This will place the insulating flange between the ship and the DA on the barge deck.
    d. Check with meter that there is no continuity across the insulating flange from the DA to the ship vapor hose. If it tests good, then proceed with transfer. If continuity is found to be crossing insulating flange, then the flange and the hose needs to be disconnected and transfer stopped until corrected.

All Kirby Inland Marine barges fitted for Vapor collection are fitted with effective gauging devices and liquid overfill protection:

- Dual sight glasses with wipers and magnetic float gauges, called “stick gauges” for closed gauging.
- An intrinsically safe overfill control system. This system has individual cargo tank overfill sensors that activate an alarm and a shutdown at the facility.
- Barge chartered by Stolt-Nielsen (AL 2300) are all equipped with an independent alarm system that works whether connected to shore or not. During a ship to barge operation, the barge alarm system is not equipped to connect to the ship. The barge alarm system is still required to be activated and used during any transfer. The alarms are set to activate at two levels: the first (High) 10” from deck of barge and second, (Overfill) at 6” from deck of barge. If cargo comes in contact with alarms, warning light and horn will activate. The alarm system is required to be used during all transfer operations (Loading & Discharges).

The alarm system is required to be tested before any transfer operation. As required by federal regulation, 46 CFR 39.30-1 (k), all alarms on every tank must be checked even if not loading or discharging. Each tank alarm must activate the high level alarm light and horn at 10” from deck and the overfill alarm light and horn at 6” from deck. If any alarms do not operate, then no loading or discharge operation is to take place and the on call operations supervisor must be contacted. Barge stick gauges must be uncapped and raised to engage the float. NOTE: if the

cargo level is below the upper 3’ of the cargo tank, the stick will already be engaged in the magnet.) When the cargo loading or discharging is complete, the gauge stick in its tube can be damaged by dropping and alarm system turned off. You MUST use the system so connect it properly and it will serve you well.

B. FOR LOADING

1. Engage the barge dual level alarm system.
2. Test each tank alarm even if not being loaded to ensure that the High level alarm at 6” light and horn activates and the Shutdown alarm light and horn activates.
3. After the alarm and shutdown are tested, uncap all stick gauges and raised until it engages the float magnet. This will be near at the bottom of the sticks travel. The stick must engage the magnet in each tank in order to begin the transfer.
4. When it is agreed between the barge Tanerman and the Person-in-Charge of the transfer for the ship that the transfer can be conducted safely and properly, all cargo and vapor systems can be made up, connected, in accordance with the remainder of these procedures.
5. The isolation valve, required by 46 CFR 39.40 (c) located on the services vessel must not be opened until the pressure in the vapor collection system on the vessel receiving cargo exceeds the pressure in the vapor collection system on the vessel discharging cargo.
6. The cargo transfer rate must be controlled from the vessel discharging cargo, and must not exceed the maximum allowable transfer rate for the vessel receiving cargo.
7. When the cargo in each tank reaches approximately 7’ innage, the float will begin to float. As the cargo raises, so will the float as will the gauge stick. It is important to make sure that the stick continues to rise as the tank fills for visual use.

C. FOR DISCHARGE

1. Engage the barge dual level alarm system.
2. Test each tank alarm even if not being discharged to ensure that the High level alarm at 6” light and horn activates and the Shutdown alarm light and horn activates.
3. After the alarm and shutdown are tested, uncap all stick gauges and raise until it engages the float magnet. This will be near at the bottom of the sticks travel. The stick must engage the magnet in each tank in order to begin the transfer.
4. When the cargo and vapor hoses have been connected and made ready for transfer, the following procedures shall be followed prior to beginning the transfer.
5. The isolation valve, required by 46 CFR 39-40 (c) located on the services vessel must not be opened until the pressure in the vapor collection system on the vessel receiving cargo exceeds the pressure in the vapor collection system on the vessel discharging cargo.

6. The cargo transfer rate must be controlled from the vessel discharging cargo, and must not exceed the maximum allowable transfer rate for the vessel receiving cargo.

D. INITIAL TRANSFER RATE

Precautions against static electricity may be necessary when the cargo being transferred is known as an accumulator of static electricity. Clean oils (distillates) are generally accumulators of static electricity. They require precautions at the beginning of the transfers. These oils are: natural gasoline, kerosene, white spirits, motor and aviation gasoline, jet fuels, clean diesel oils, heating oils, heavy gas oils, naphtha, and lubricating oils.

When any of these products are being transferred, these procedures shall be followed:

1. At the beginning of cargo flow into each cargo tank, the flow rate should not exceed these rates:

   Tank drop (branch) approximate pipeline diameter flow rate (bbls/hr)

3”	105
4”	180
6”	420
8”	730
10”	1150

2. After you determine that there is no more splashing and surface turbulence in a cargo tank, the flow rate can be increased to the maximum allowable transfer rate.
3. During and for 30 minutes after completing the loading, alleging and sampling equipment must not be put into the tank. Ropes or lines used to lower equipment into the cargo tank must be only natural fiber-cotton, sisal, hemp or flex. Synthetic or similar nylon must never be used.
4. Operations performed through restricted gauging tubes are permissible at any time during transfer unless not allowed by vapor emission restrictions.
5. If the cargo tank atmosphere is maintained inert no anti-static precautions are necessary.

E. DETERMING MAXIMUM ALLOWABLE TRANSFER RATES

Cargo transfers that require vapor collection as the cargo enters the cargo tank must be conducted with a full knowledge of the hazards involved. The transfers are performed for the most part in total reliance upon information for exercising control coming from gauges and remote sensing device-a closed system. As a result, the Tankerman must be trained in the

barges particular system before the Tankerman can be authorized to be the Person-in-Charge of the transfer. The Tankerman must be able to have complete confidence in the equipment on board and use it correctly for a successful transfer of cargo. In this regard success is moving the entire amount of product for one desirable contain to another without product contamination or loss, without polluting either the atmosphere or the water, without hazard to personnel or equipment, and in an economical manner as possible.

In a vapor collection transfer, each of these factors are affected by the cargo-loading rate. Therefore, it is very important to determine it accurately. Product can be introduced into a tank without damaging it, only as fast as the vapor, air, in it is allowed to escape. By the same reasoning, product can only be removed from a tank as fast as vapor is allowed to enter the tank. This process is either filling or emptying a tank is called venting. Barge transfer operations in the past have allowed venting directly into the atmosphere during transfers. In order not to pollute the atmosphere, venting of cargo tanks must now be controlled during the transfer of certain cargoes. This control is affected by a vapor collection header, branch piped to each cargo tank and connected to the other tank involved in the transfer through a connection on the barge near the cargo header port or starboard. As a result of the size and restriction of this header vapor movement is limited and thus product movement is limited. The limit can be determined though.

In order not to pollute the atmosphere, the vapor must move through the header and into the other tank quickly enough not to raise the pressure in the receiving tank or create a vacuum in the discharging tank in excess of the PV valve setting. Control of the pressure build up is controlling the amount of product that enters or leaves the tank and thus the amount of vapor that must enter through vapor control piping.

The method of controlling the product entering or leaving the tank is by determining the maximum allowable transfer rate for each transfer. To determine the maximum allowable transfer rate, use the following steps:

1. Refer to the attached graph for the appropriate product
2. Enter the graph on the left edge with the value of the “Vapor Line Pressure Drop” (the combination of the facility or vessel, if ship to barge operation, and the barge vapor line pressure drops).
3. Follow across to intersect the “vacuum” or “pressure” curve line depending upon whether discharging or loading.
4. Follow down to the bottom of the graph and read the “Maximum Allowable Transfer Rate” – “Liquid Flow Rate” in barrels per hour (BPH). This is the Maximum allowable transfer rate that product may be loaded or discharged without over pressurizing or creating excessive vacuum – usually resulting in cargo tank damage.

SECTION XIII:

IN CASE OF OIL OR HAZARDOUS CHEMICAL SPILL ACTION TO BE TAKEN

A. PERSON-IN-CHARGE

The Person-in-Charge must be familiar with the Kirby Inland Marine Emergency Response Plan. Should an accidental discharge of oil on the water occur, stop all cargo operations and notify the terminal facility or vessel immediately of the spill.

If at all possible, do your utmost to contain the spill from going over the side of the barge with whatever means you might have at your disposal.

The Person-in-Charge of the vessel or onshore/offshore facility, and not the agent, owner/operator, must notify the United States Coast Guard of any discharge from the vessel which includes barge, or facility, regardless of any subsequent liability. Failure to report any discharge into the water, may subject you to a fine of $10,000 and/or imprisonment for a period of one year.