



FUE

Interoffice Communication

To G. G. Draper
From Tom Roche
Date October 4, 1974
Subject Ship Loading Procedures for Minimum VCM Exposure

During vinyl chloride ship loading emissions of and worker exposure to vinyl chloride occur during the following operations:

- A Connections of vent and loading hoses onto ship
- B Removal of blinds from vent and loading lines at dock
- C Hydroquinone addition
- D Disconnection of loading and vent hoses from ship
- E Blinding of vent and loading lines at dock
- F VCM ship hold sampling

Attached are recommended procedures for the above operations. Please review and return comments to Douglas Michels by Wednesday, October 9. These procedures will be issued to the refinery at that time.

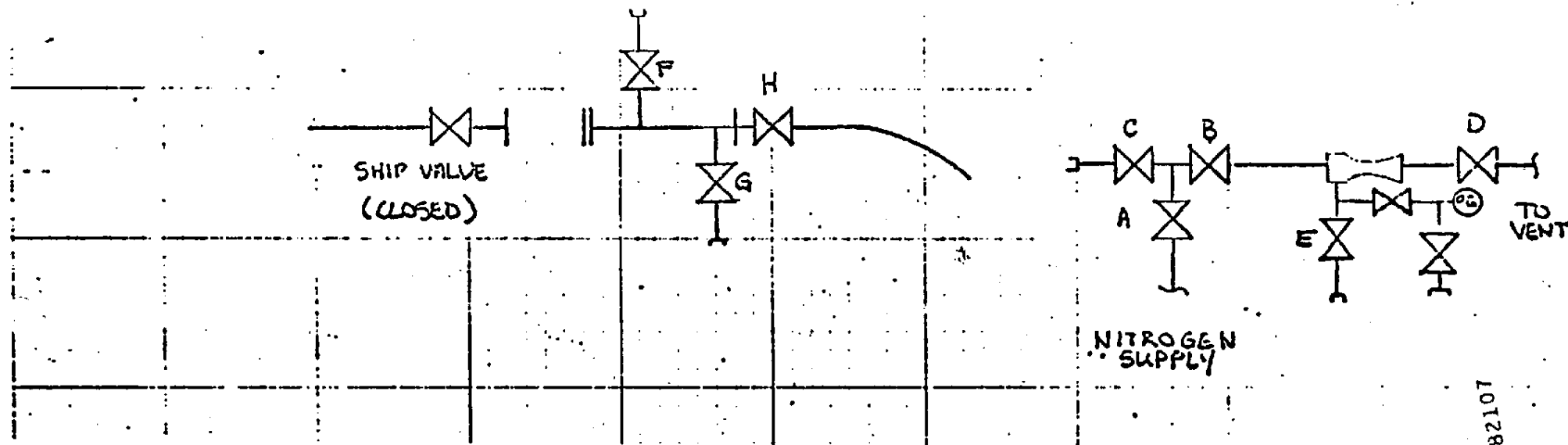
Thomas P. Roche

Tom Roche

Approved: *Douglas Michels*

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CC
RDG-JAD-JHM-JSR-GGD-CEG-JRH-PLF-JCL

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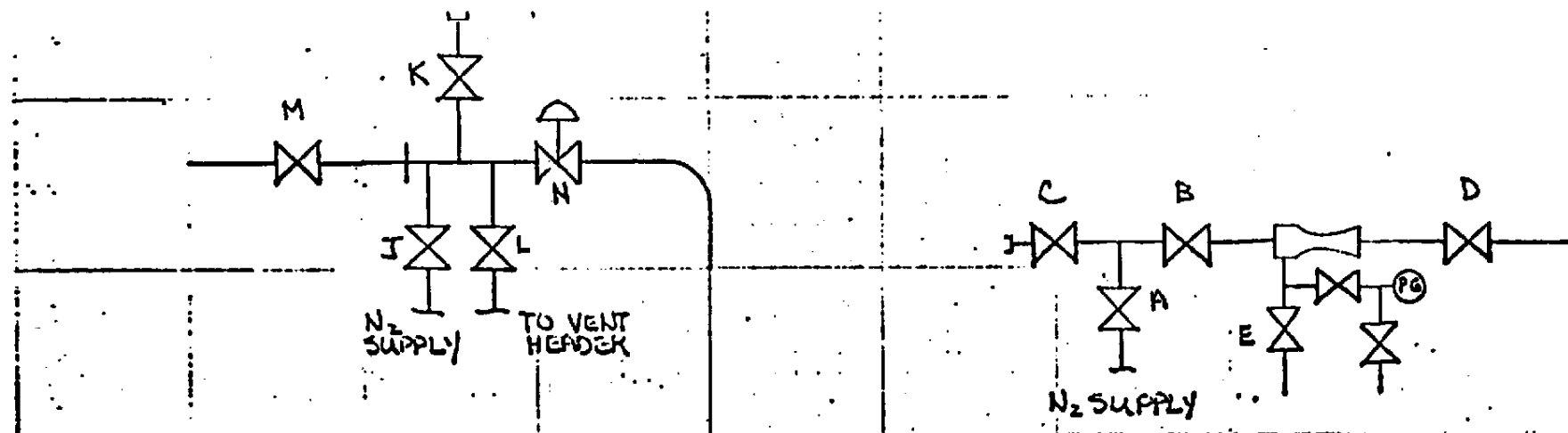
A Connection of Vent & Loading Hoses Onto Ship

1. Lift Hose Onto Ship.
2. Connect Chemical Hose From Valve G to Valve E.
3. Activate Ejector by Opening Valves A, B, D, & E. All Valves Should be Wide Open For Maximum Ejector Efficiency.
4. Open Valve G and then Valve F. This Will Purge Spool Section With Air.
5. Allow the Spool Section to be Purged Through for About 3 Minutes.
6. Close Valve F to Put Maximum Suction During Blind Removal.
7. Remove Flange Blind. Continue to Draw the Vacuum.
8. Connect Spool Piece to Ship Flange. Spool Piece Should be Connected Onto the Ship so that Valve G is at the Lowest Possible Point. This is important for Liquid Drainage During Hose Disconnection.
9. Close Valves F and G.
10. Close Valves A & B.
11. Disconnect Hose at Point G.

Fig. I
Vent & Loading Hose
Ship Connections

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B. Blind Removal From Vent & Loading Hoses on Dock

1. Connect Chemical Hose from Valve K to Valve E.
2. Open Valve L, Open Valve J to Drain any Liquid in Spool Piece to Vent Header
3. Close Valves L & J
4. Activate Ejector by Opening Valves A, B, D, and E.
5. Pressure Purge Spool Piece 10 Times by Opening Valve J, Closing Valve J, & Opening Valve K, Closing Valve K.
6. Open Valve K, Keeping a Continuous Vacuum on the Spool Piece. Open the Flange until the Vacuum is all that Prevents the Blind Removal
7. With Valve K Open, Open Valve L Breaking the Vacuum so that the Blind can be Removed. Immediately Remove the Blind and Close Valve L.
8. Close Flange
9. Close Valves K, E, A, B, & C
10. Disconnect Chemical Hose Between Valves K and E

Fig. 2
Blind Removal From
Vent & Loading Hoses
On Dock

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C. Hydroquinone Addition

1. Open injection tank vent valve 6 to be sure tank is depressurized. Close valve 6.
2. Open valve 7, pressuring injection tank with N₂. Close valve 7. Open valve 6, depressuring tank, close valve 6. Repeat purging procedure 10 times.
3. Pressure injection pot with N₂ by opening valves 8 and 9 and closing valve 10. Pull a suction on the injection pot by opening valve 10, Pressure and evacuate the injection pot 10 times by opening and closing valve 10. When valve 10 is opened for the last time, crack valve 11 to remove any pressure trapped in the ball valve. Close valves 9, 8 and 10 in that order.
4. Add hydroquinone to injection pot by opening valve 11 and pouring the powder through the addition pot. Close valve 11.
5. Put N₂ pressure on injection pot by opening valves 8 and 9 in that order.
6. Drop Hydroquinone into injection tank by opening valve 12. Close valve 12.
7. Open valve 10, evacuating injection pot. Close valves 9, 8 and 10 in that order.
8. Add Hydroquinone to injection pot by opening valve 11, and pouring the powder through the addition pot. Close valve 11.
9. Flush VCM through the injection tank by opening valves 13 and 14. Allow VCM to flow through the injection tank for 10 minutes, then close valves 13 and 14.
10. Open valve 6, depressuring injection tank. Close valve 6.
11. Open valves 8, 9 and 12 blowing Hydroquinone into injection tank. Close valves 12, 9 and 8 in that order.
12. Flush VCM through injection tank by opening valves 13 and 14 for 10 minutes. Close valves 13 and 14.
13. Repeat steps 1 through 12 for each pair of ship holds.

Hydroquinone Addition Sketch

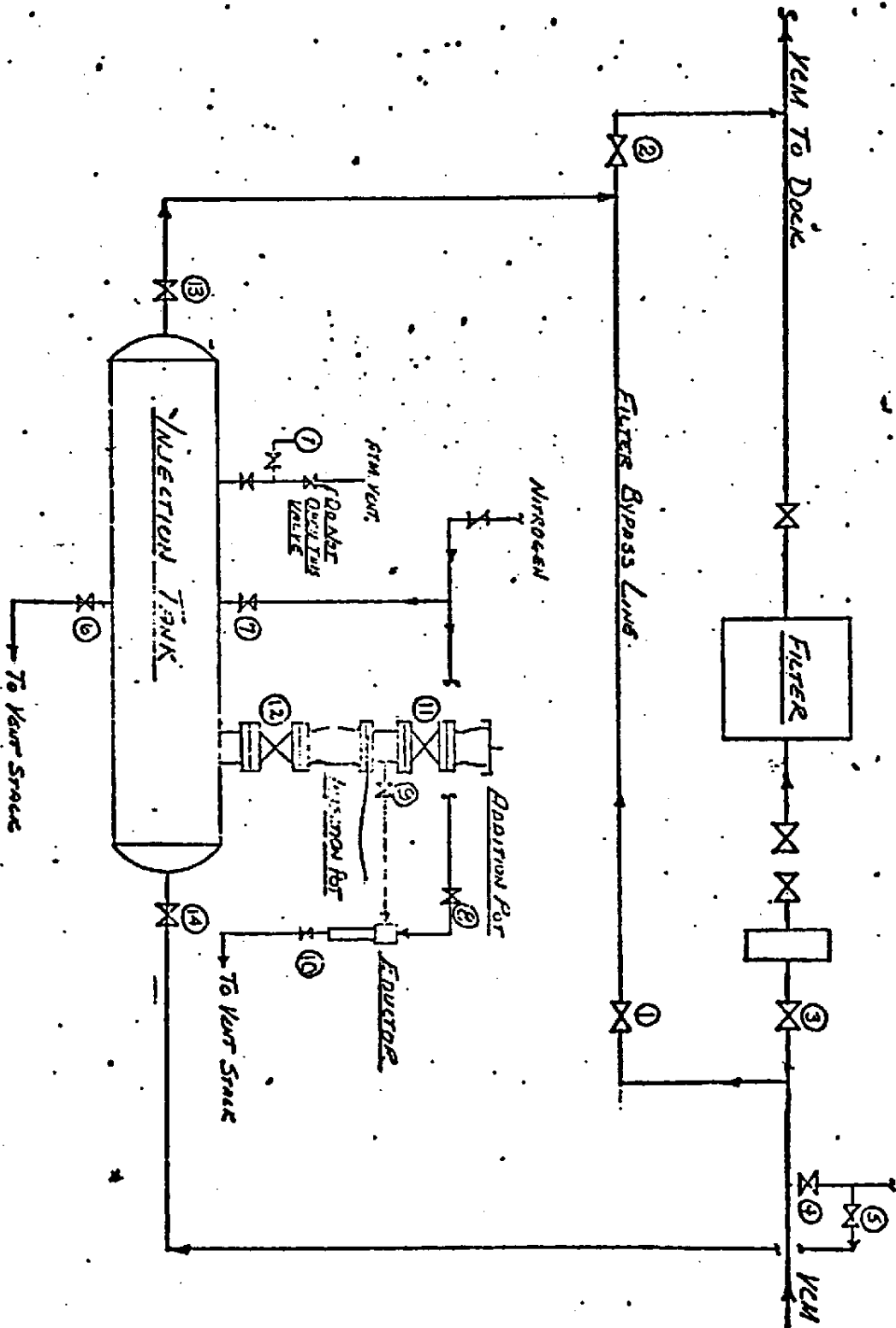
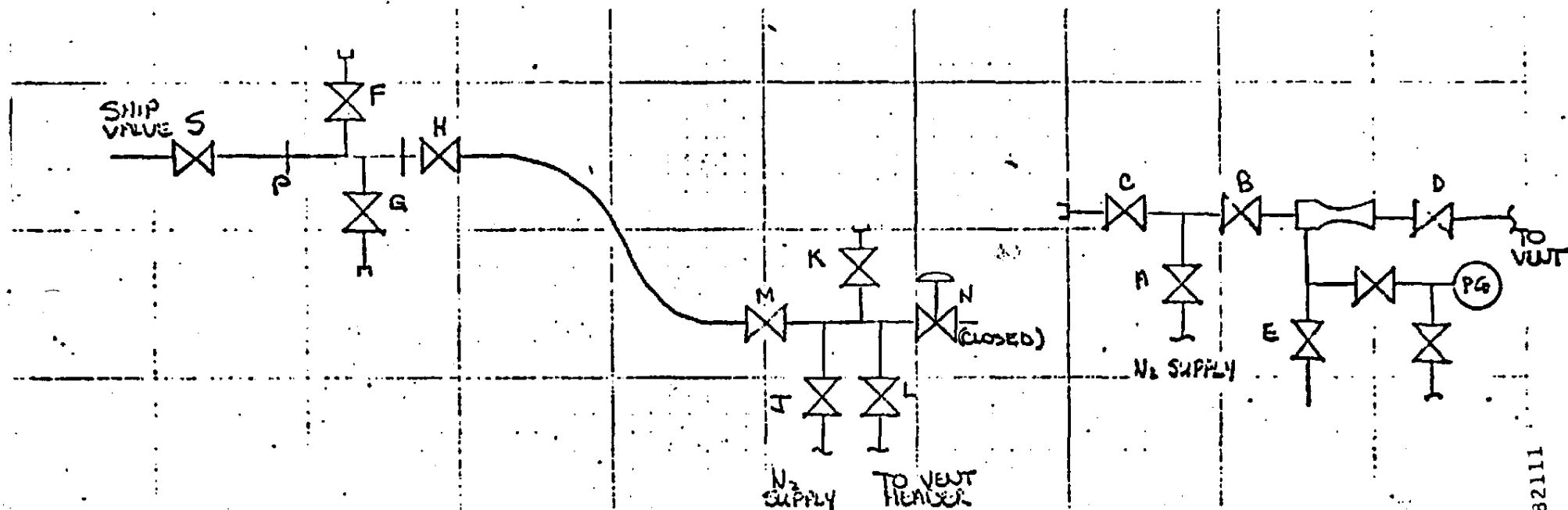


FIGURE 3
HYDROQUINONE
ADDITION



D. Disconnection of Loading and Vent Hoses From Ship

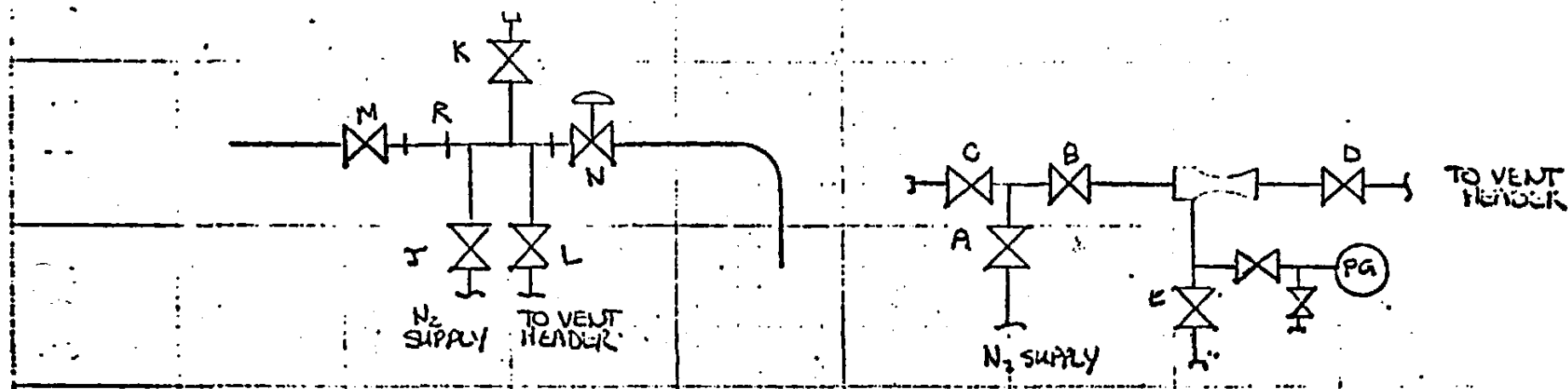
Steps 1 & 2
For Loading
Hose Only

Steps 3-9
For Both
Loading &
Vent Hoses

1. Using H_2 from Dock Blow Liquid VCM in Line to Ship, Valves H, M, J and S Should All be Open.
2. Connect Nitrogen Hose From Valve C to Valve F. Close Valves S and J. Open Valves C, A, F and L with Valves H and M also Open. Blow Liquid Line Back Toward Dock and to Vent Header. Close all Valves.
3. Connect Nitrogen Hose From Valve C to Valve F. Connect Chemical Hose From Valve G to Valve E.
4. Activate Ejector by Opening Valves A, B, D and E. Also Open Valve C.
5. Purge Spool Piece Between Valves S and H 10 Times by Opening F, Closing F, Opening G, Closing G.
6. Close C, Open G. Open Valve F, Depressurizing Chemical Hose. Close F
7. Disconnect Nitrogen Hose From Spool Piece at F.
8. With Ejector on (Valve G Open) Disconnect Loading Hose at Flange P and Install Blind and Gasket at P. After Blind is Installed Valves G, E, A, B and C can be Closed.
9. Lift Hose, Open Valves M and L at Dock so that any Liquid Left in the Hoses Will go to the Vent. Close M and L. Set hose Down on Dock.

Fig. 4
Disconnection of Loading and Vent Hoses From Ship
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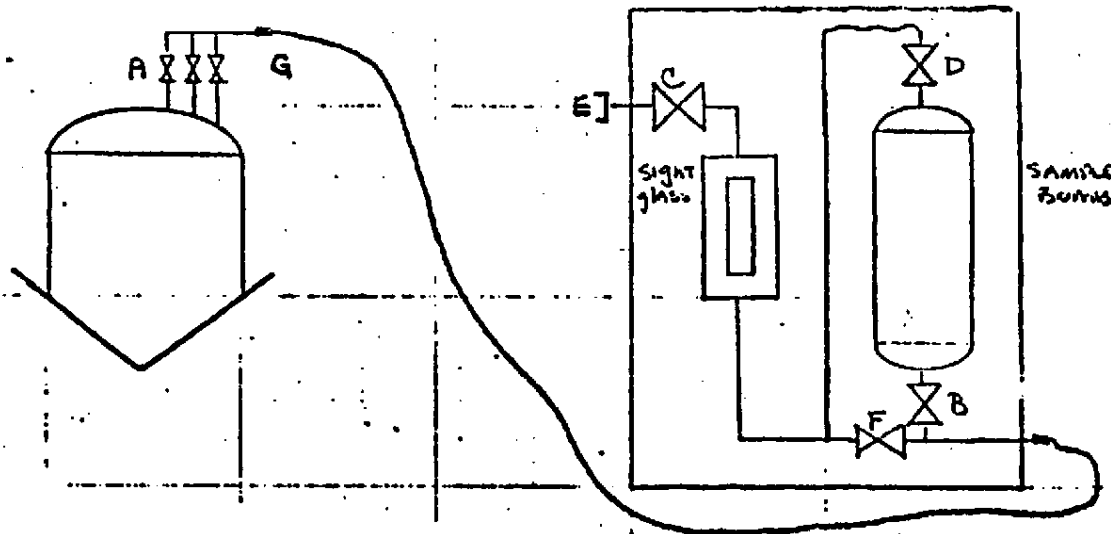
E. Vent and Loading Hose Blinding On Dock

1. Connect Chemical Hose from Valve E to Valve K
2. Activate Ejector by Opening Valves A, B D and E
3. Open Valves J and L to Remove any Liquid that may be Trapped-Close Valves J & L
4. Pressure Purge Line Between Valves M and N 10 Times by Opening J, Closing J-Opening L, Closing L
5. Open K, Keeping a Vacuum on Line Between Valves M and N
6. Open Flange Install Blind at R. If Possible, do not Break Vacuum When Installing Blinds.
7. Close Flange, Close Valves K, A, B, E and D.

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Fig. 5
Vent & Loading Hose
Building on Dock

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F. VCM Ship Sampling Procedure

1. Connect $\frac{1}{2}$ " Hose to Ship Hold at Connection G
2. Connect Sample Bomb at B & D
3. Connect Vent Hose at E to Ejector Suction. Turn Ejector at Dock on.
4. Open Valve F
5. Open Valve A, Ship Sample Valve, and valve C. Purge to Vent
6. Periodically throttle Valve C to Check Clarity of Liquid
7. When the Liquid is Clear Close Valve F. Open Valves B and D on the Sample Bomb.
8. Throttle Valve C to Get a Full Sample
9. Close Valves B and D. Close Valve A to Evacuate Sampling System Open Valve C and Open Valve F.
10. Hold Vacuum on Sampling System Long Enough to Vaporize and Remove any VCM Liquid Pools That May be at Low Points in the Chemical Hose From the Sample Board to the Ejector.
11. After System is Evacuated, Disconnect at G. Disconnect Sample Bomb
12. Close Valve C, Disconnect at E

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Fig. 6
VCM Ship Sampling
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