Buddy

May 3, 1984

Al Baker	Greg Fuentes
Buddy Balentine	Al Kirby
Tony Ekker	Ramon Lopez
Donald Fabre	Bob Rouse

Process Review - Ejector System on Vinyl II Loading Arm

Per our meeting, the following items will be/have been completed:

1. The 3" Chemiflex hose will be checked for ground continuity now and on an annual basis per Safety Checklist C-9.

2. Written procedures will be modified to include signs of liquid collection in the spool piece, as well as shutdown procedures which would be immediately followed. A copy of these procedures will be forwarded to all personnel listed above.

3. The spool piece will be modified by Dock personnel to include a pressure gauge and a 1/2" valved sample point. Vinyl II personnel will use this instrumentation to measure ship valve leakage and sampling for decontamination analyses.

4. Buddy Moreau researched his files for vinyl chloride barge/ship disconnect excursions (both Docks, 1983-1984 YTD, workers using breathing air during disconnect). Of the 64 personnel samples analyzed, 48 were over 5 ppm, with these 48 averaging 69 ppm. Of these 48, 26 can be attributed to the dock loading arm and vent line (11), ship header valves (13), and barge header valves (2) leaking. His records included no distinction between liquid or vapor leakage.

5. Possibility of Flammable Mixture Downstream of the Ejector
Following Tony's initiative, I ran through rough capacity calculations for a 2", Model GL (new # for 26A) Penberthy ejector. Based on the following conditions: 202 CFM Nitrogen usage (assumed equiv. to air), and 32 CFM suction capacity, 5" Hg vacuum at suction, operating Nitrogen pressure of 100 psig, vinyl and air concentrations at the suction varying from 5 to 95% by volume, I calculated the following vinyl chloride/oxygen concentrations downstream of the ejector:

	Downstream of Ejector	
Suction Composition	Throughput (CFM)	Volume %
5% vinyl, 95% air	4.1 vinyl	1.4% vinyl
	77.9 air	5.7% oxygen
	202 Nitrogen	92.8% nitrogen
14% vinyl, 86% air	11.5 vinyl	4.0% vinyl
	70.5 air	5.2% oxygen
	202 nitrogen	90.7 nitrogen

(continued)

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Suction Composition	Downstream of Ejector Throughput (CFM)	Volume %
50% vinyl, 50% air	41 vinyl 41 air 202 nitrogen	14.5% vinyl 3.0% oxygen 82.5% nitrogen
75% vinyl, 25% air	61.5 vinyl 20.5 air 202 nitrogen	21.7% vinyl 1.5% oxygen 76.8 nitrogen
95% vinyl, 5% air	77.9 vinyl 4.1 air 202 nitrogen	27.4% vinyl 0.3% oxygen 72.3% nitrogen

After relaying these numbers to Bruce Powers, Michigan Division, he consulted his report "Review of Vinyl Chloride Flammability Characteristics (NCT# 63-27) and concluded that none of these mixtures were flammable. Furthermore, he stated that below a critical oxygen concentration of 9% (maximum downstream under above stated conditions is 6%) the vinyl chloride will not support combustion.

If you have any questions, please call me at 8917.

Elayne

Elayne S. Hyatt
Safety

ESH:hwp