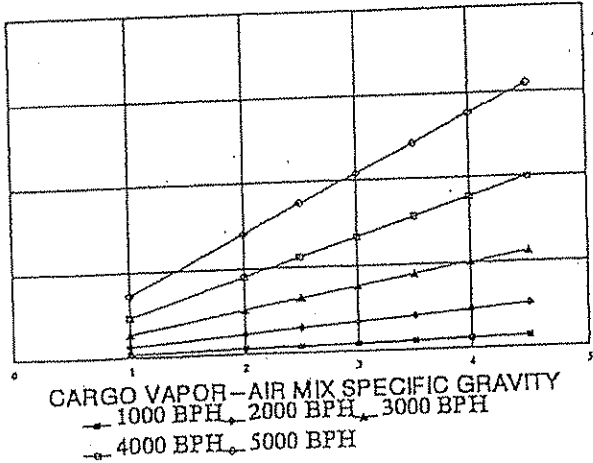
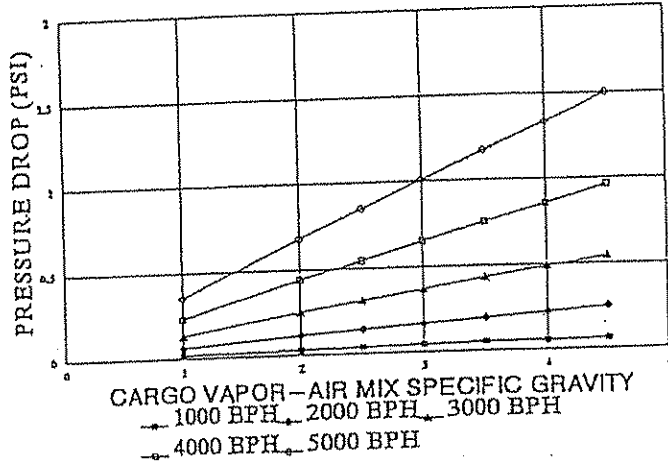


PH(S) FOR VAPOR GROWTH RATE (VGR) OF 145%

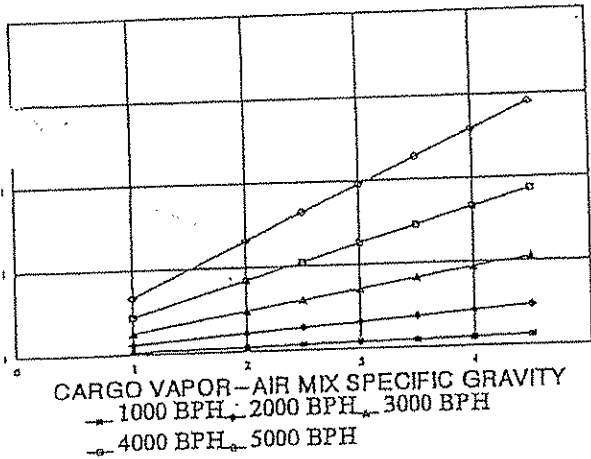
1.0 PSIG SHORE CONNECTION PRESSURE



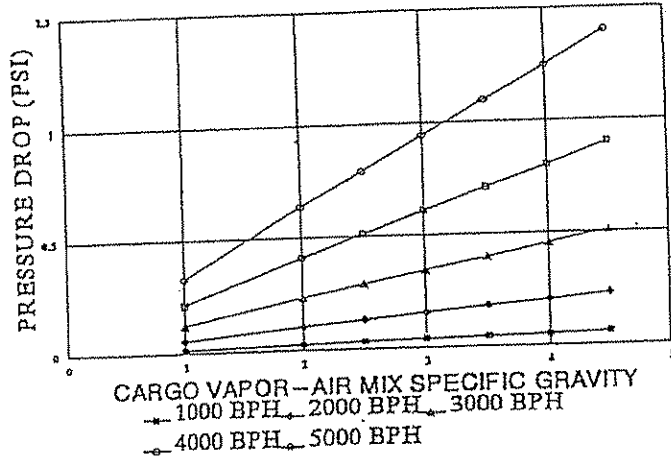
0.5 PSIG SHORE CONNECTION PRESSURE



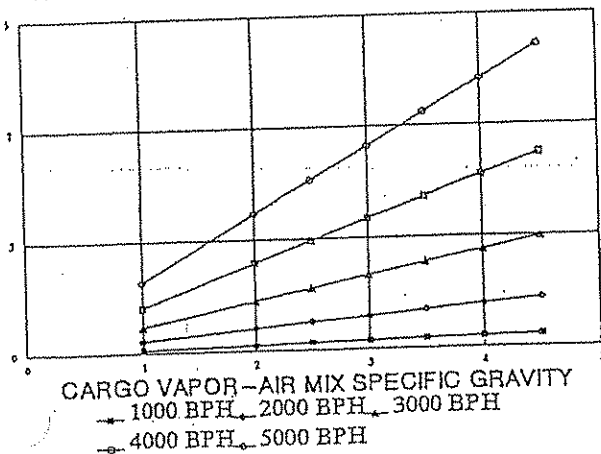
0.0 PSIG SHORE CONNECTION PRESSURE



-0.5 PSIG SHORE CONNECTION PRESSURE



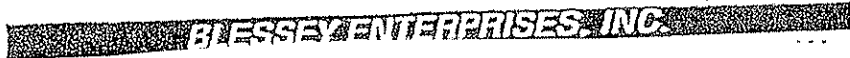
-1.0 PSIG SHORE CONNECTION PRESSURE



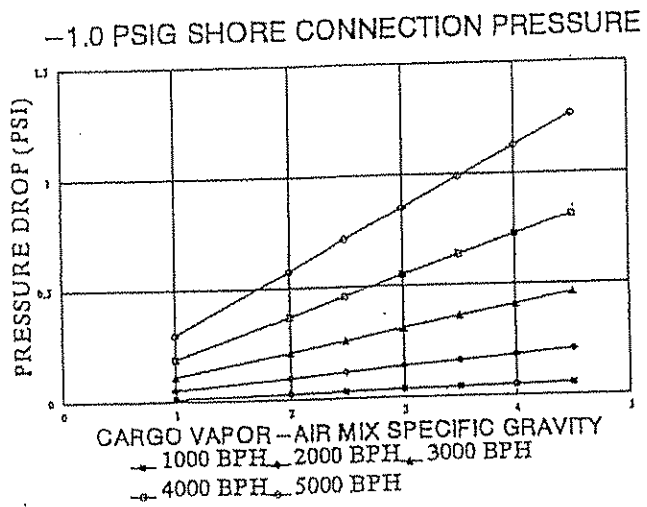
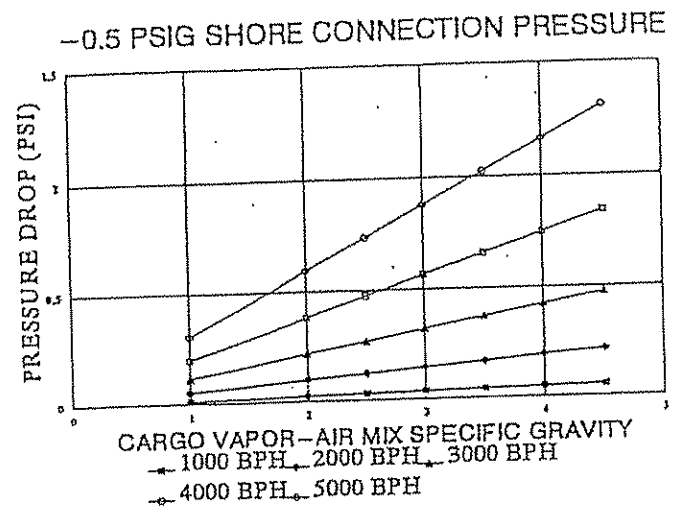
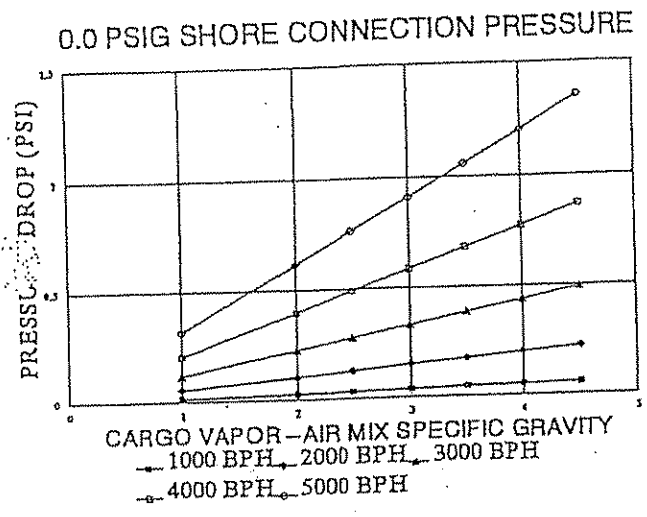
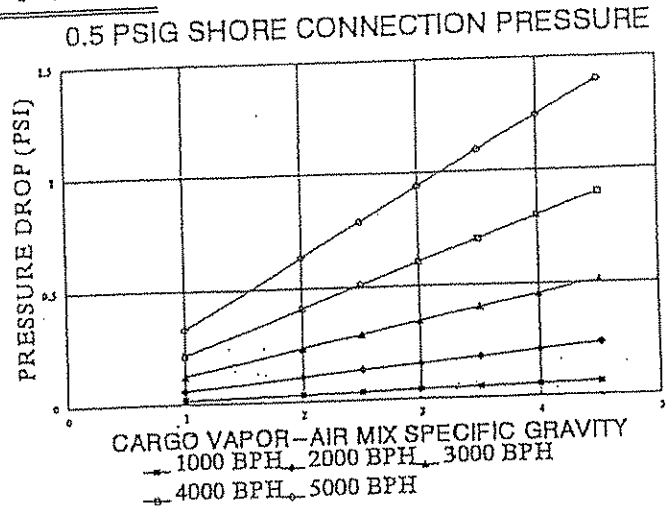
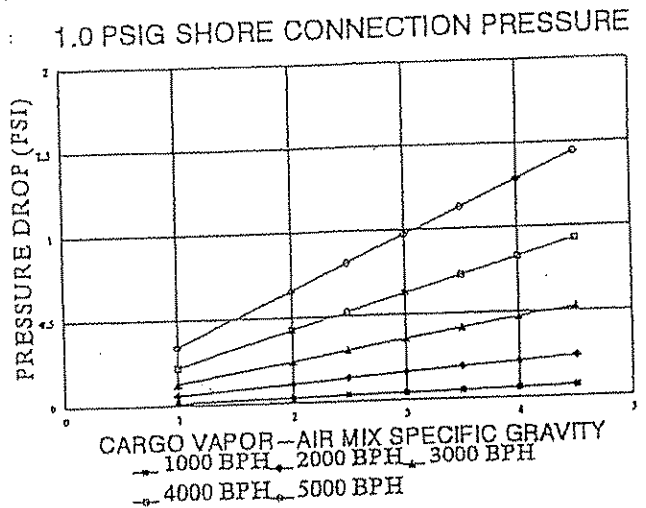
DIRECTIONS: FOR THE CARGO TO BE TRANSFER'D:

1. OBTAIN: (a) VAP.-AIR MIX GROWTH RATE (VGR), (b) VAP.-AIR MIX SPECIFIC GRAVITY, (c) MAX LIQUID TRANSFER RATE (MLTR), & (d) PRESSURE TO BE MAINTAINED @ THE SHORE CONNECTION.
2. SELECT THE GRAPH PAGE THAT APPLIES TO THE LESSER OF THE SAME OR NEXT HIGHER 'VGR'.
3. FROM THAT PAGE, SELECT THE GRAPH THAT APPLIES TO THE NEXT HIGHER 'SHORE CONNECTION PRESSURE'.
4. ENTER THAT GRAPH WITH 'SPECIFIC GRAVITY' & 'MAX LIQUID TRANSFER RATE' TO DETERMINE 'PRESSURE DROP' FROM THE MOST REMOTE CARGO TANK TO THE SHORE CONNEC'N.
5. IF THE SUM OF 'PRESS. DROP' + 'SHORE CONNEC'N PRESSURE' IS LESS THAN 80% OF THE P/V SETTING, THEN THE 'MLTR' IS OK.

FLOW RATES SHOWN HEREON (I.E., 'BPH') ARE LIQUID TRANSFER RATES.
 PRESSURE DROP IS FOR CARGO VAPOR-AIR MIX FLOW RATE OF 'VGR' TIMES THE
 LIQUID TRANSFER RATE, AND IS FROM MOST REMOTE TANK TO SHORE CONNECTION.



GRAPH(S) FOR VAPOR GROWTH RATE (VGR) OF 140%

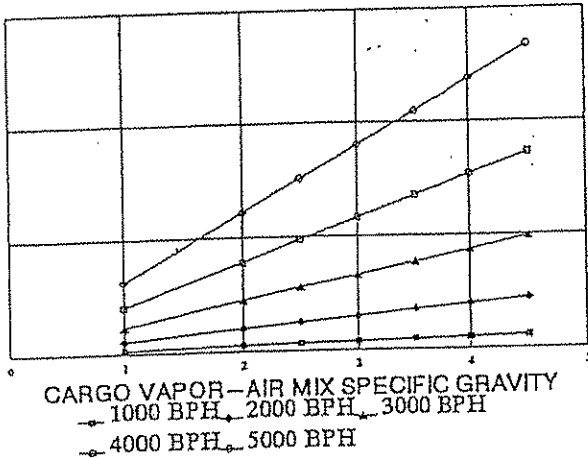


- DIRECTIONS: FOR THE CARGO TO BE TRANSFER'D:**
1. OBTAIN: (a) VAP.-AIR MIX GROWTH RATE (VGR), (b) VAP.-AIR MIX SPECIFIC GRAVITY, (c) MAX LIQUID TRANSFER RATE (MLTR), & (d) PRESSURE TO BE MAINTAINED @ THE SHORE CONNECTION.
 2. SELECT THE GRAPH PAGE THAT APPLIES TO THE LESSER OF THE SAME OR NEXT HIGHER 'VGR'.
 3. FROM THAT PAGE, SELECT THE GRAPH THAT APPLIES TO THE NEXT HIGHER 'SHORE CONNECTION PRESSURE'.
 4. ENTER THAT GRAPH WITH 'SPECIFIC GRAVITY' & 'MAX LIQUID TRANSFER RATE' TO DETERMINE 'PRESSURE DROP' FROM THE MOST REMOTE CARGO TANK TO THE SHORE CONNEC'N.
 5. IF THE SUM OF 'PRESS. DROP' + 'SHORE CONNEC'N PRESSURE' IS LESS THAN 80% OF THE P/V SETTING, THEN THE 'MLTR' IS OK.

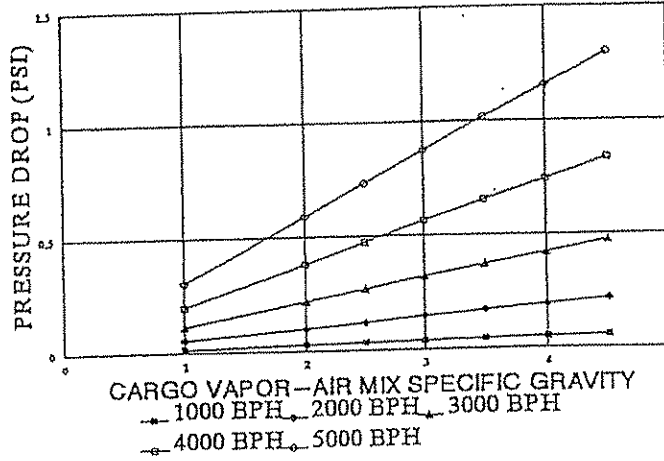
A. FLOW RATES SHOWN HEREON (I.E., 'BPH') ARE LIQUID TRANSFER RATES.
 B. PRESSURE DROP IS FOR CARGO VAPOR-AIR MIX FLOW RATE OF 'VGR' TIMES THE LIQUID TRANSFER RATE, AND IS FROM MOST REMOTE TANK TO SHORE CONNECTION.

PH(S) FOR VAPOR GROWTH RATE (VGR) OF 135%

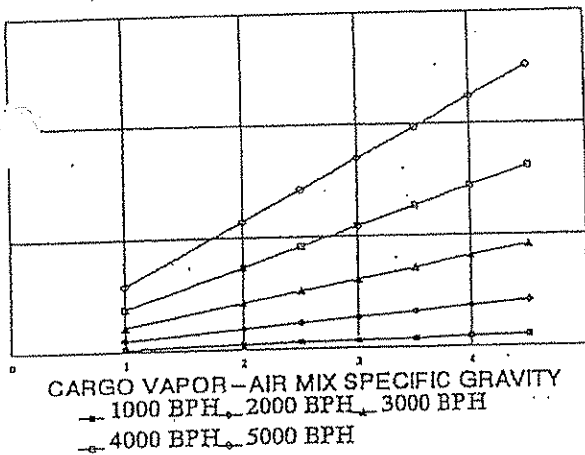
1.0 PSIG SHORE CONNECTION PRESSURE



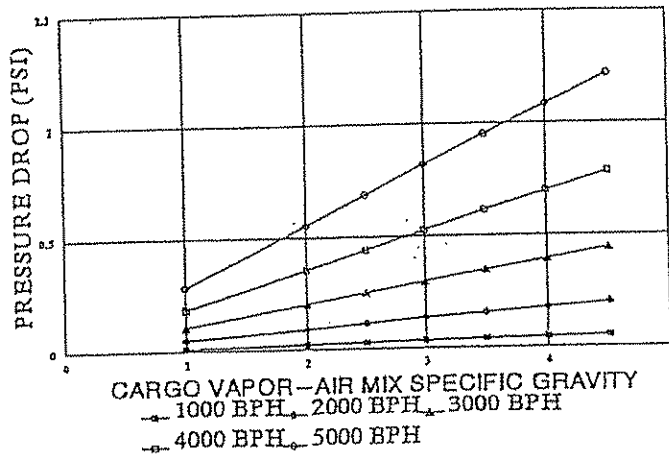
0.5 PSIG SHORE CONNECTION PRESSURE



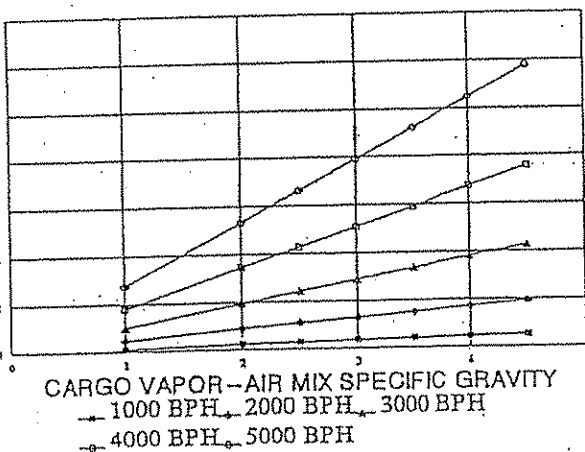
0.0 PSIG SHORE CONNECTION PRESSURE



-0.5 PSIG SHORE CONNECTION PRESSURE



-1.0 PSIG SHORE CONNECTION PRESSURE



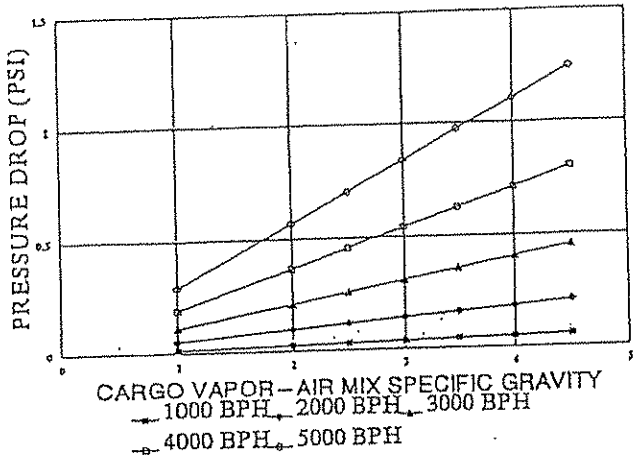
- DIRECTIONS: FOR THE CARGO TO BE TRANSFER'D:**
1. OBTAIN: (a) VAP.-AIR MIX GROWTH RATE (VGR), (b) VAP.-AIR MIX SPECIFIC GRAVITY, (c) MAX LIQUID TRANSFER RATE (MLTR), & (d) PRESSURE TO BE MAINTAINED @ THE SHORE CONNECTION.
 2. SELECT THE GRAPH PAGE THAT APPLIES TO THE LESSER OF THE SAME OR NEXT HIGHER 'VGR'.
 3. FROM THAT PAGE, SELECT THE GRAPH THAT APPLIES TO THE NEXT HIGHER 'SHORE CONNECTION PRESSURE'.
 4. ENTER THAT GRAPH WITH 'SPECIFIC GRAVITY' & 'MAX LIQUID TRANSFER RATE' TO DETERMINE 'PRESSURE DROP' FROM THE MOST REMOTE CARGO TANK TO THE SHORE CONN'N.
 5. IF THE SUM OF 'PRESS. DROP' + 'SHORE CONN'N PRESSURE' IS LESS THAN 80% OF THE P/V SETTING, THEN THE 'MLTR' IS OK.

FLOW RATES SHOWN HEREON (I.E., 'BPH') ARE LIQUID TRANSFER RATES.
 PRESSURE DROP IS FOR CARGO VAPOR-AIR MIX FLOW RATE OF 'VGR' TIMES THE
 LIQUID TRANSFER RATE, AND IS FROM MOST REMOTE TANK TO SHORE CONNECTION.

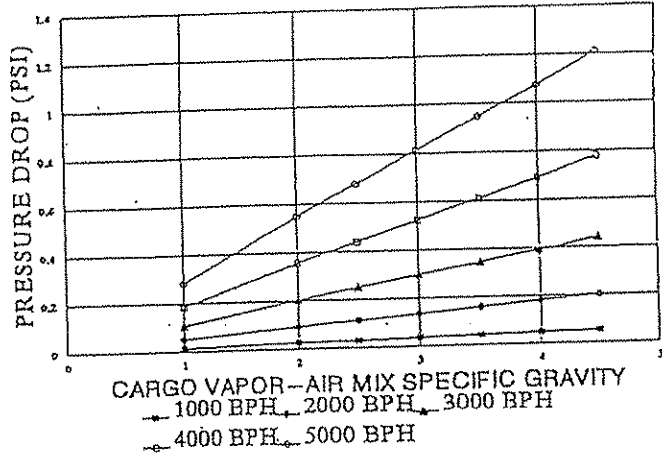
BLESSEY ENTERPRISES, INC.

GRAPH(S) FOR VAPOR GROWTH RATE (VGR) OF 130%

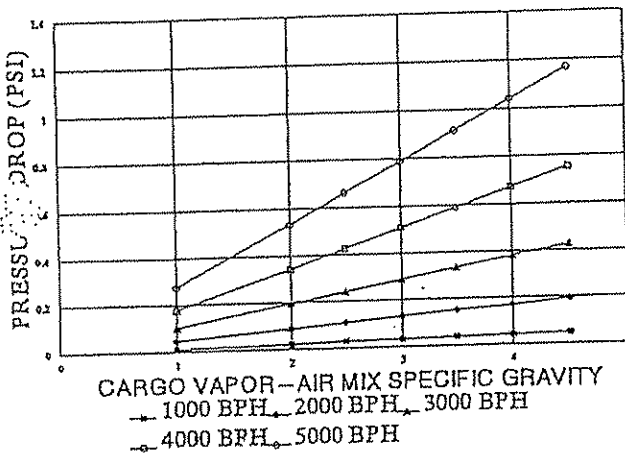
1.0 PSIG SHORE CONNECTION PRESSURE



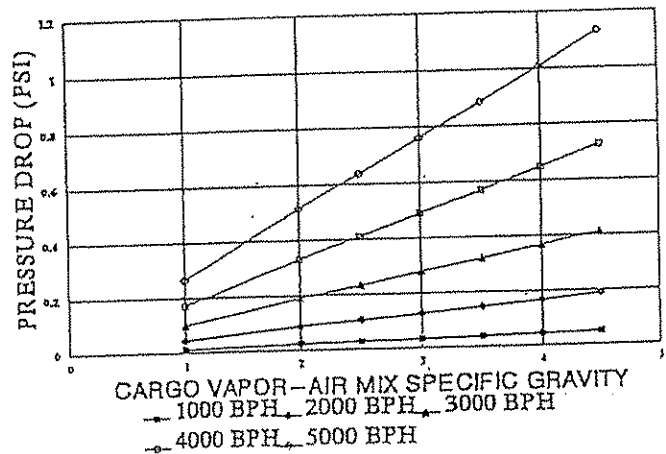
0.5 PSIG SHORE CONNECTION PRESSURE



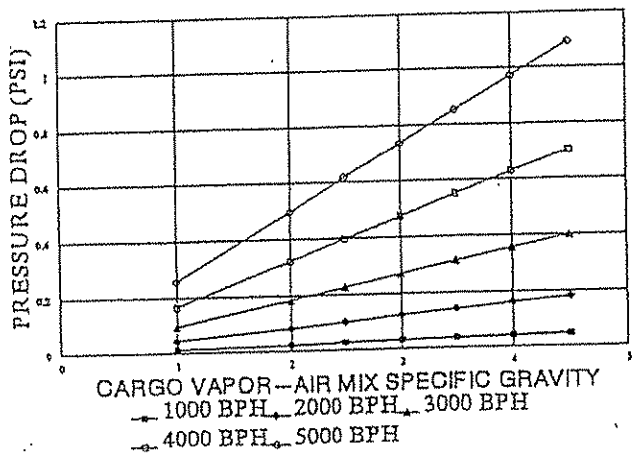
0.0 PSIG SHORE CONNECTION PRESSURE



-0.5 PSIG SHORE CONNECTION PRESSURE



-1.0 PSIG SHORE CONNECTION PRESSURE



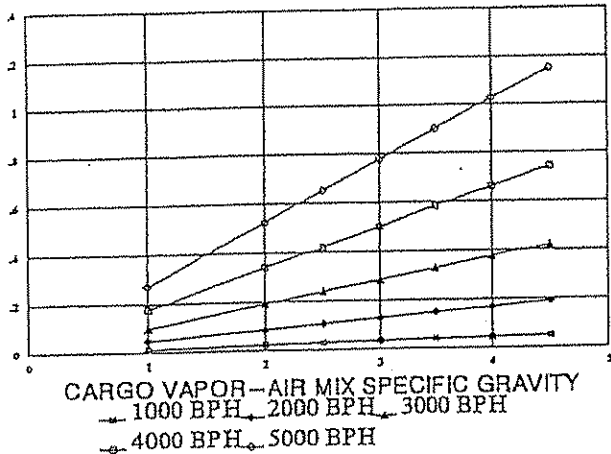
DIRECTIONS: FOR THE CARGO TO BE TRANSFER'D:

1. OBTAIN: (a) VAP.-AIR MIX GROWTH RATE (VGR), (b) VAP.-AIR MIX SPECIFIC GRAVITY, (c) MAX LIQUID TRANSFER RATE (MLTR), & (d) PRESSURE TO BE MAINTAINED @ THE SHORE CONNECTION.
2. SELECT THE GRAPH PAGE THAT APPLIES TO THE LESSER OF THE SAME OR NEXT HIGHER 'VGR'.
3. FROM THAT PAGE, SELECT THE GRAPH THAT APPLIES TO THE NEXT HIGHER 'SHORE CONNECTION PRESSURE'.
4. ENTER THAT GRAPH WITH 'SPECIFIC GRAVITY' & 'MAX LIQUID TRANSFER RATE' TO DETERMINE 'PRESSURE DROP' FROM THE MOST REMOTE CARGO TANK TO THE SHORE CONNEC'N.
5. IF THE SUM OF 'PRESS. DROP' + 'SHORE CONNEC'N PRESSURE' IS LESS THAN 80% OF THE P/V SETTING, THEN THE 'MLTR' IS OK.

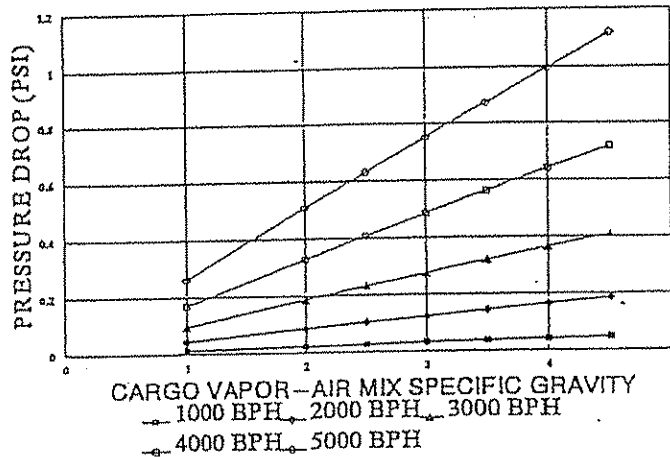
A. FLOW RATES SHOWN HEREON (I.E., 'BPH') ARE LIQUID TRANSFER RATES.
 B. PRESSURE DROP IS FOR CARGO VAPOR-AIR MIX FLOW RATE OF 'VGR' TIMES THE LIQUID TRANSFER RATE AND IS FROM MOST REMOTE TANK TO SHORE CONNECTION.

APH(S) FOR VAPOR GROWTH RATE (VGR) OF 125%

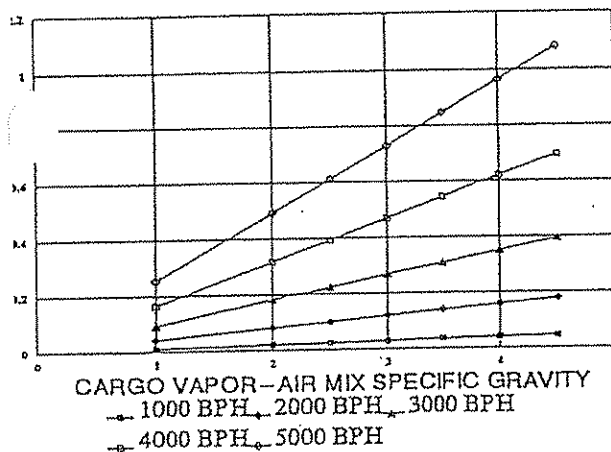
1.0 PSIG SHORE CONNECTION PRESSURE



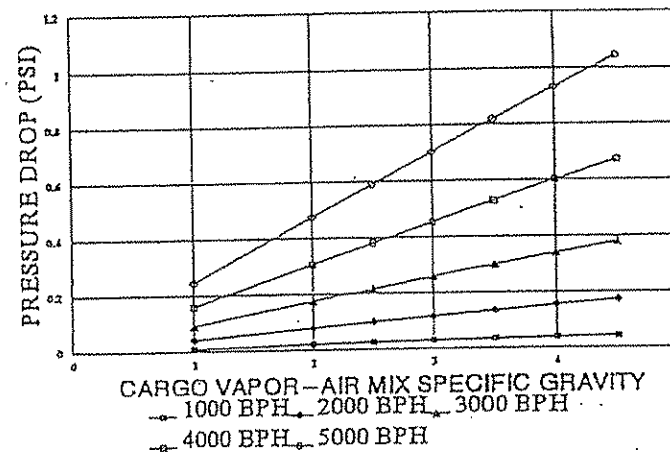
0.5 PSIG SHORE CONNECTION PRESSURE



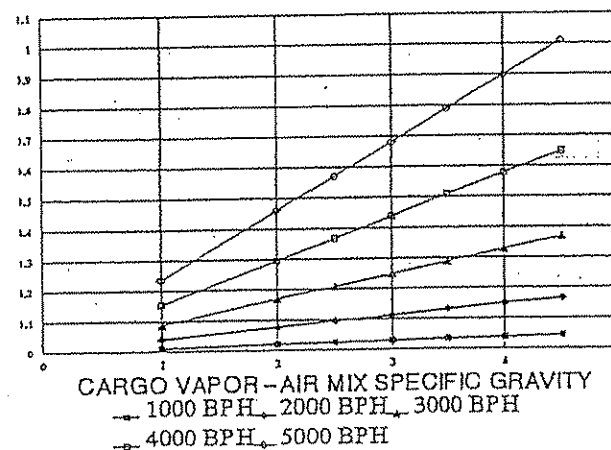
0.0 PSIG SHORE CONNECTION PRESSURE



-0.5 PSIG SHORE CONNECTION PRESSURE



-1.0 PSIG SHORE CONNECTION PRESSURE



DIRECTIONS: FOR THE CARGO TO BE TRANSFER'D:

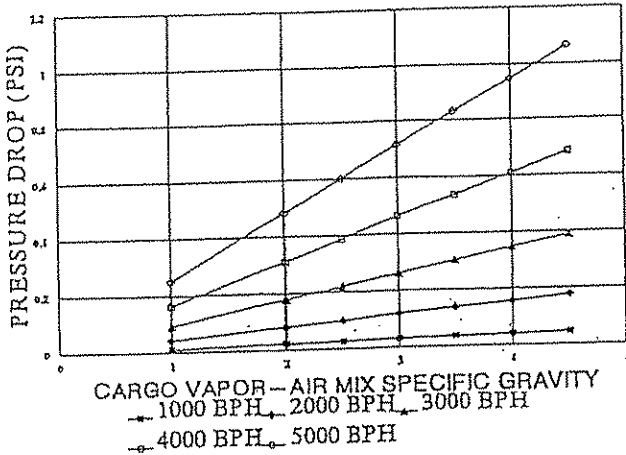
1. OBTAIN: (a) VAP.-AIR MIX GROWTH RATE (VGR), (b) VAP.-AIR MIX SPECIFIC GRAVITY, (c) MAX LIQUID TRANSFER RATE (MLTR), & (d) PRESSURE TO BE MAINTAINED @ THE SHORE CONNECTION.
2. SELECT THE GRAPH PAGE THAT APPLIES TO THE 'LESSER OF THE SAME OR NEXT HIGHER *VGR*.
3. FROM THAT PAGE, SELECT THE GRAPH THAT APPLIES TO THE NEXT HIGHER *SHORE CONNECTION PRESSURE*.
4. ENTER THAT GRAPH WITH *SPECIFIC GRAVITY* & *MAX LIQUID TRANSFER RATE* TO DETERMINE *PRESSURE DROP* FROM THE MOST REMOTE CARGO TANK TO THE SHORE CONN'N.
5. IF THE SUM OF *PRESS. DROP* + *SHORE CONN'N PRESSURE* IS LESS THAN 80% OF THE P/V SETTING, THEN THE *MLTR* IS OK.

FLOW RATES SHOWN HEREON (I.E., *BPH*) ARE LIQUID TRANSFER RATES.
PRESSURE DROP IS FOR CARGO VAPOR-AIR MIX FLOW RATE OF *VGR* TIMES THE LIQUID TRANSFER RATE, AND IS FROM MOST REMOTE TANK TO SHORE CONNECTION.

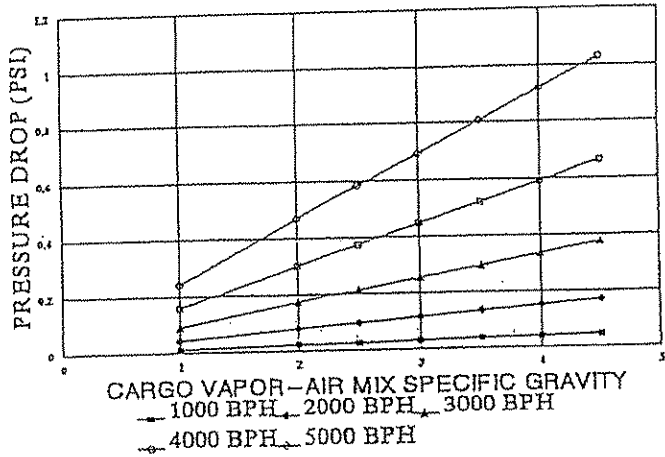
BLESSEY ENTERPRISES, INC.

GRAPH(S) FOR VAPOR GROWTH RATE (VGR) OF 120%

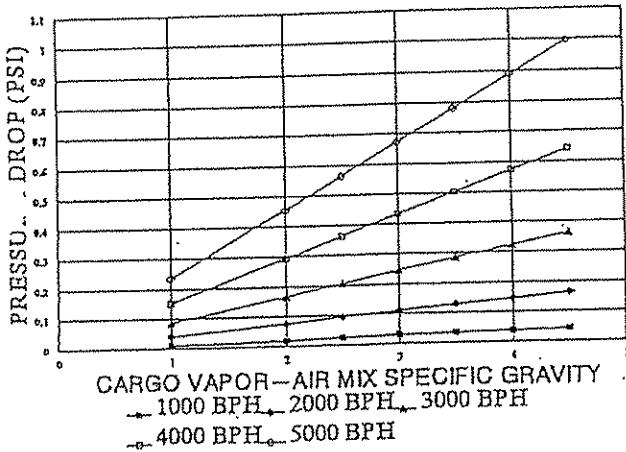
1.0 PSIG SHORE CONNECTION PRESSURE



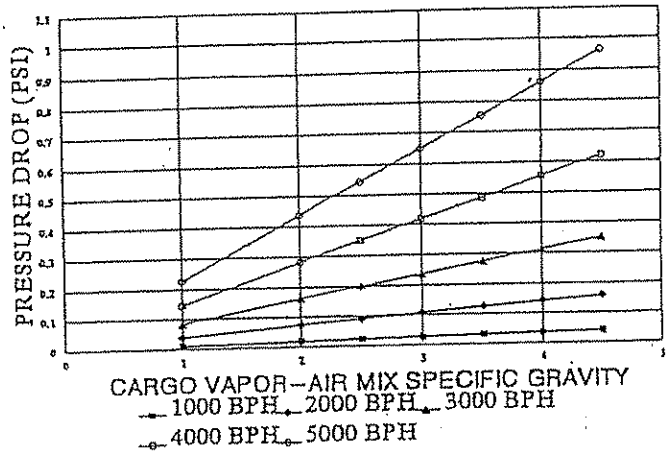
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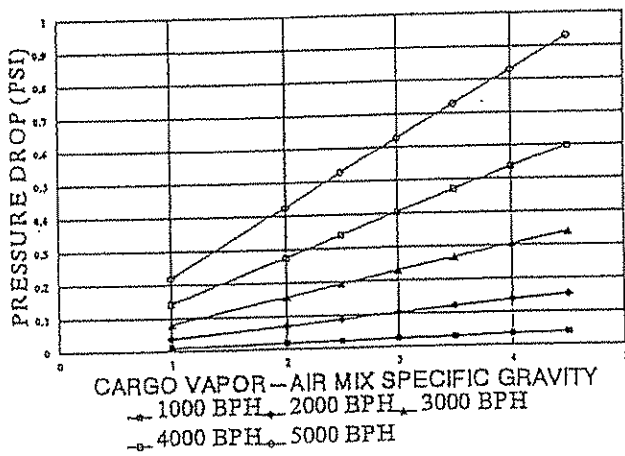
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-0.5 PSIG SHORE CONNECTION PRESSURE



-1.0 PSIG SHORE CONNECTION PRESSURE



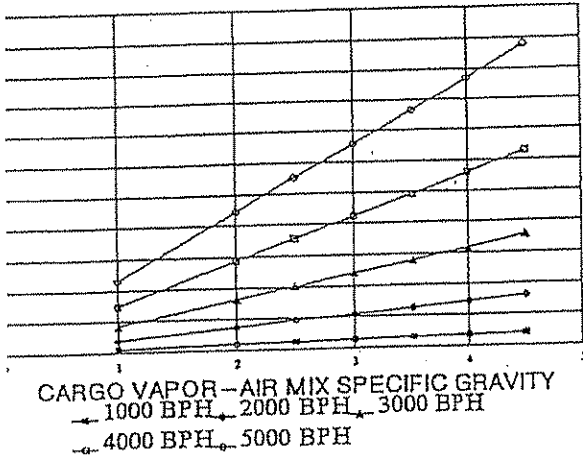
DIRECTIONS: FOR THE CARGO TO BE TRANSFER'D:

1. OBTAIN: (a) VAP.-AIR MIX GROWTH RATE (VGR), (b) VAP.-AIR MIX SPECIFIC GRAVITY, (c) MAX LIQUID TRANSFER RATE (MLTR), & (d) PRESSURE TO BE MAINTAINED @ THE SHORE CONNECTION.
2. SELECT THE GRAPH PAGE THAT APPLIES TO THE LESSER OF THE SAME OR NEXT HIGHER 'VGR'.
3. FROM THAT PAGE, SELECT THE GRAPH THAT APPLIES TO THE NEXT HIGHER 'SHORE CONNECTION PRESSURE'.
4. ENTER THAT GRAPH WITH 'SPECIFIC GRAVITY' & 'MAX LIQUID TRANSFER RATE' TO DETERMINE 'PRESSURE DROP' FROM THE MOST REMOTE CARGO TANK TO THE SHORE CONNEC'N.
5. IF THE SUM OF 'PRESS. DROP' + 'SHORE CONNEC'N PRESSURE' IS LESS THAN 80% OF THE P/V SETTING, THEN THE 'MLTR' IS OK.

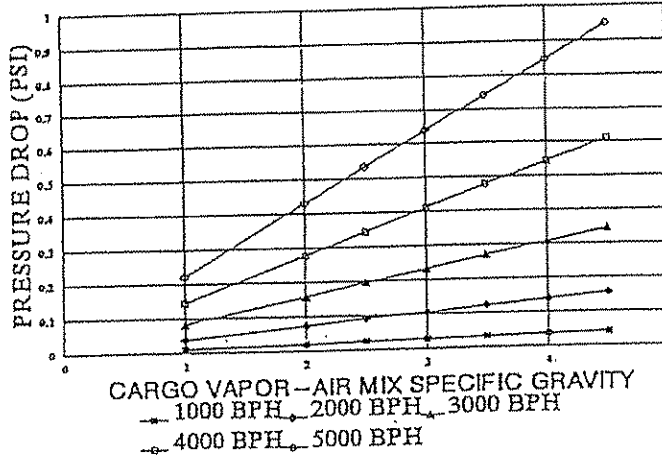
A. FLOW RATES SHOWN HEREON (I.E., 'BPH') ARE LIQUID TRANSFER RATES.
 B. PRESSURE DROP IS FOR CARGO VAPOR-AIR MIX FLOW RATE OF 'VGR' TIMES THE LIQUID TRANSFER RATE AND IS FROM MOST REMOTE TANK TO SHORE CONNECTION.

PH(S) FOR VAPOR GROWTH RATE (VGR) OF 115%

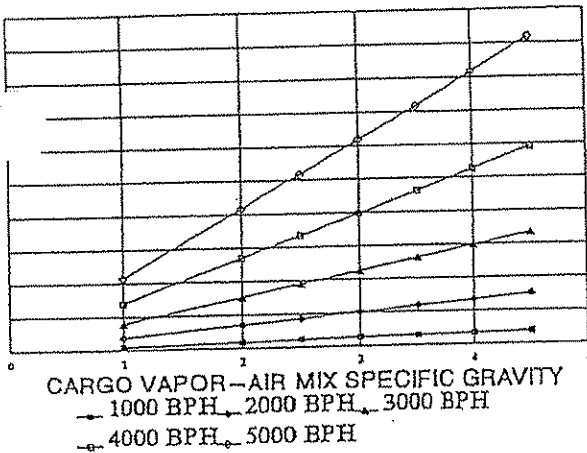
0.0 PSIG SHORE CONNECTION PRESSURE



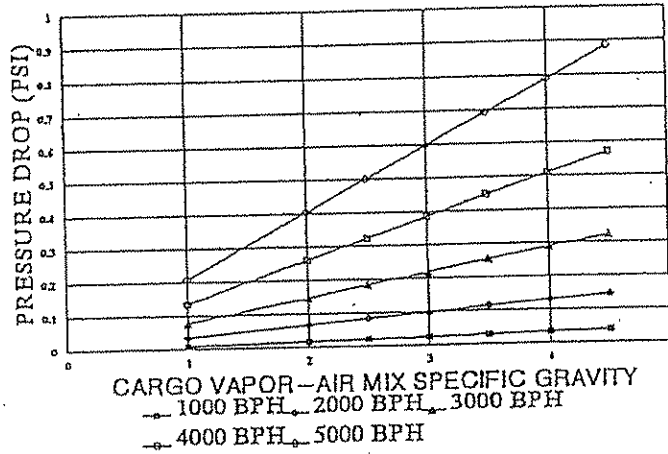
0.5 PSIG SHORE CONNECTION PRESSURE



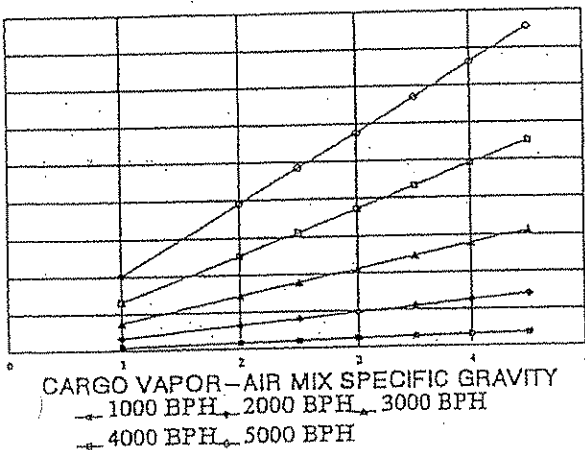
0.0 PSIG SHORE CONNECTION PRESSURE



-0.5 PSIG SHORE CONNECTION PRESSURE



-1.0 PSIG SHORE CONNECTION PRESSURE



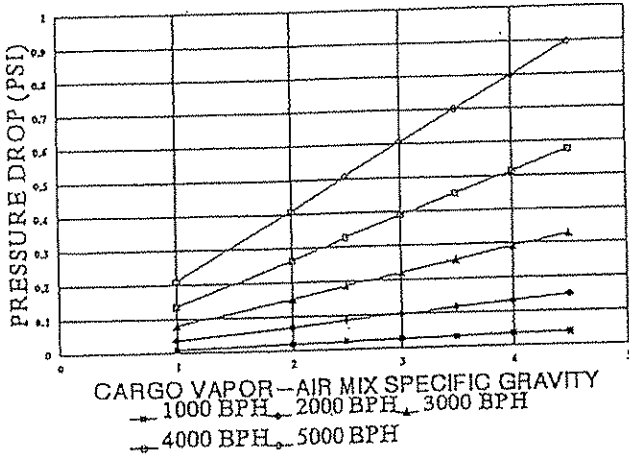
- DIRECTIONS: FOR THE CARGO TO BE TRANSFER'D:**
1. OBTAIN: (a) VAP. - AIR MIX GROWTH RATE (VGR), (b) VAP. - AIR MIX SPECIFIC GRAVITY, (c) MAX LIQUID TRANSFER RATE (MLTR), & (d) PRESSURE TO BE MAINTAINED @ THE SHORE CONNECTION.
 2. SELECT THE GRAPH PAGE THAT APPLIES TO THE LESSER OF THE SAME OR NEXT HIGHER 'VGR'.
 3. FROM THAT PAGE, SELECT THE GRAPH THAT APPLIES TO THE NEXT HIGHER 'SHORE CONNECTION PRESSURE'.
 4. ENTER THAT GRAPH WITH 'SPECIFIC GRAVITY' & 'MAX LIQUID TRANSFER RATE' TO DETERMINE 'PRESSURE DROP' FROM THE MOST REMOTE CARGO TANK TO THE SHORE CONNEC'N.
 5. IF THE SUM OF 'PRESS. DROP' + 'SHORE CONNEC'N PRESSURE' IS LESS THAN 80% OF THE P/V SETTING, THEN THE 'MLTR' IS OK.

FLOW RATES SHOWN HEREON (I.E., 'BPH') ARE LIQUID TRANSFER RATES.
 PRESSURE DROP IS FOR CARGO VAPOR - AIR MIX FLOW RATE OF 'VGR' TIMES THE LIQUID TRANSFER RATE, AND IS FROM MOST REMOTE TANK TO SHORE CONNECTION.

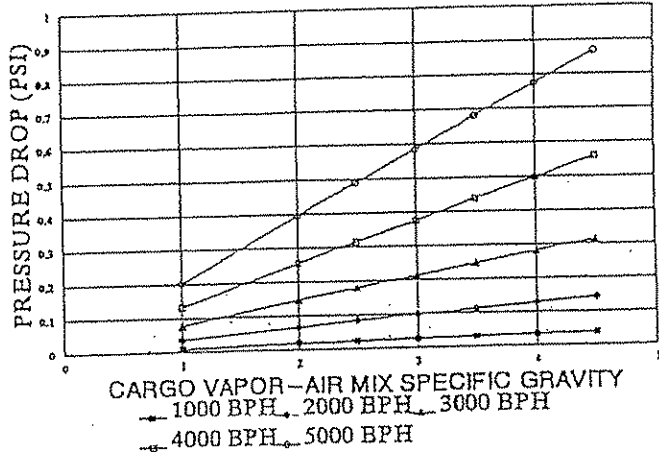


GRAPH(S) FOR VAPOR GROWTH RATE (VGR) OF 110%

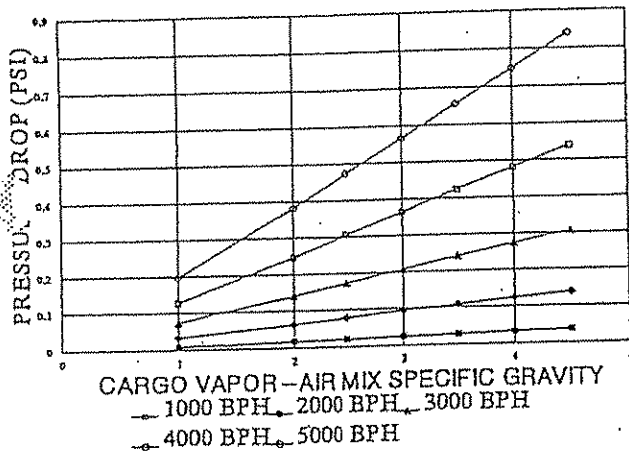
1.0 PSIG SHORE CONNECTION PRESSURE



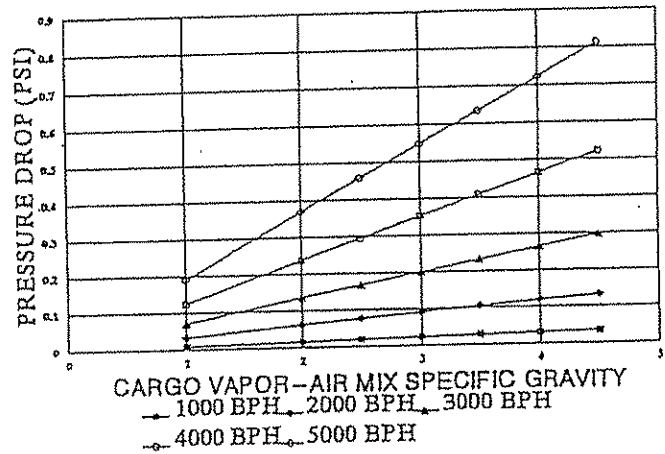
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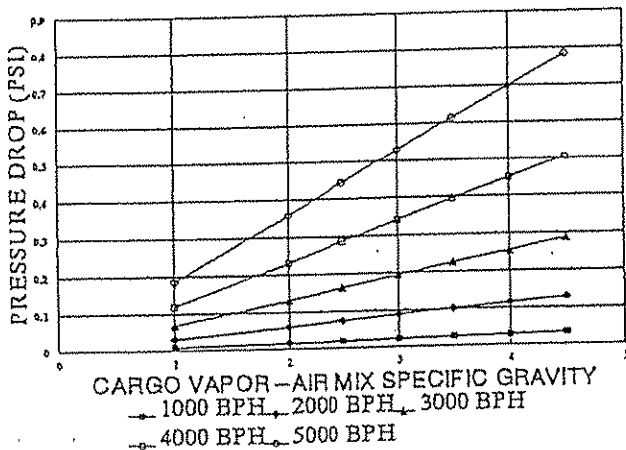
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-0.5 PSIG SHORE CONNECTION PRESSURE



-1.0 PSIG SHORE CONNECTION PRESSURE



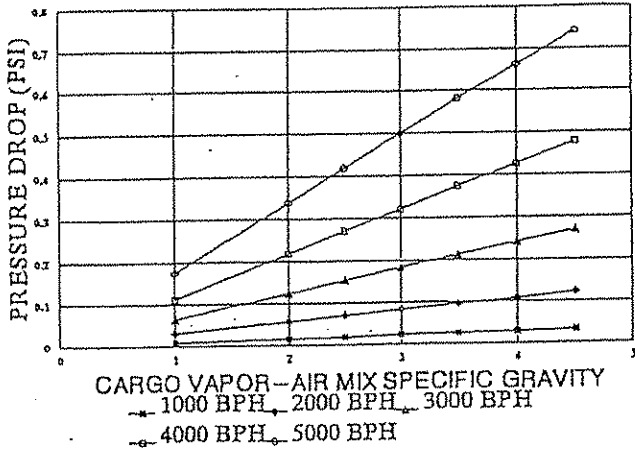
- DIRECTIONS: FOR THE CARGO TO BE TRANSFER'D:**
- OBTAIN: (a) VAP. - AIR MIX GROWTH RATE (VGR), (b) VAP. - AIR MIX SPECIFIC GRAVITY, (c) MAX LIQUID TRANSFER RATE (MLTR), & (d) PRESSURE TO BE MAINTAINED @ THE SHORE CONNECTION.
 - SELECT THE GRAPH PAGE THAT APPLIES TO THE LESSER OF THE SAME OR NEXT HIGHER 'VGR'.
 - FROM THAT PAGE, SELECT THE GRAPH THAT APPLIES TO THE NEXT HIGHER 'SHORE CONNECTION PRESSURE'.
 - ENTER THAT GRAPH WITH 'SPECIFIC GRAVITY' & 'MAX LIQUID TRANSFER RATE' TO DETERMINE 'PRESSURE DROP' FROM THE MOST REMOTE CARGO TANK TO THE SHORE CONN'N.
 - IF THE SUM OF 'PRESS. DROP' + 'SHORE CONN'N PRESSURE' IS LESS THAN 80% OF THE P/V SETTING, THEN THE 'MLTR' IS OK.

A. FLOW RATES SHOWN HEREON (I.E., 'BPH') ARE LIQUID TRANSFER RATES.
 B. PRESSURE DROP IS FOR CARGO VAPOR - AIR MIX FLOW RATE OF 'VGR' TIMES THE LIQUID TRANSFER RATE. AND IS FROM MOST REMOTE TANK TO SHORE CONNECTION.

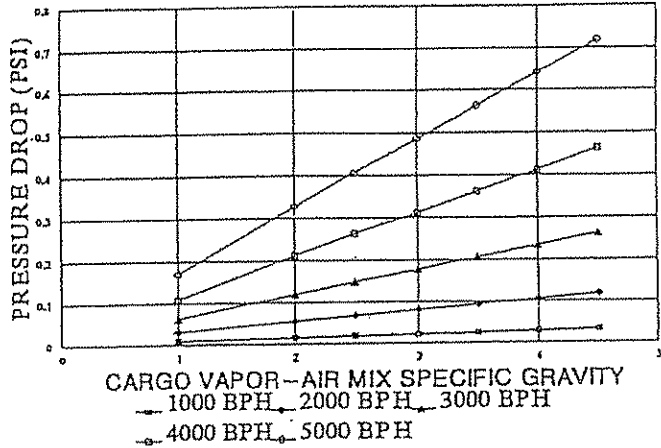
BLESSEY ENTERPRISES, INC.

GRAPH(S) FOR VAPOR GROWTH RATE (VGR) OF 100%

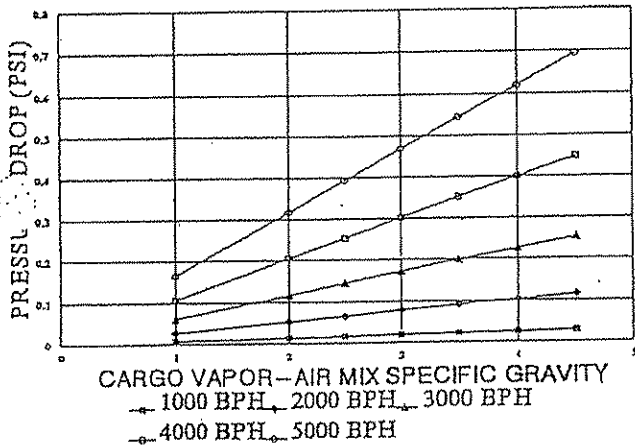
1.0 PSIG SHORE CONNECTION PRESSURE



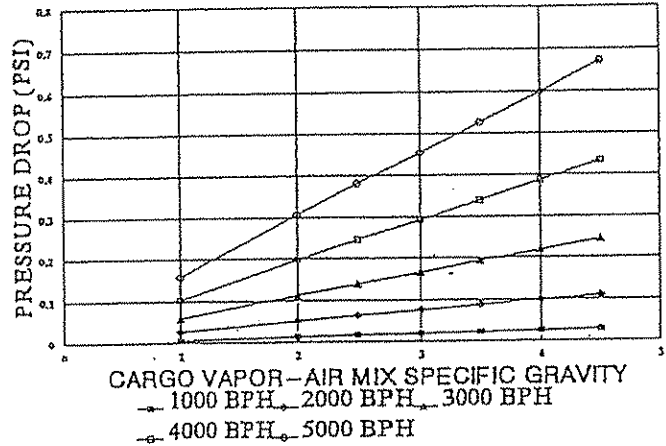
0.5 PSIG SHORE CONNECTION PRESSURE



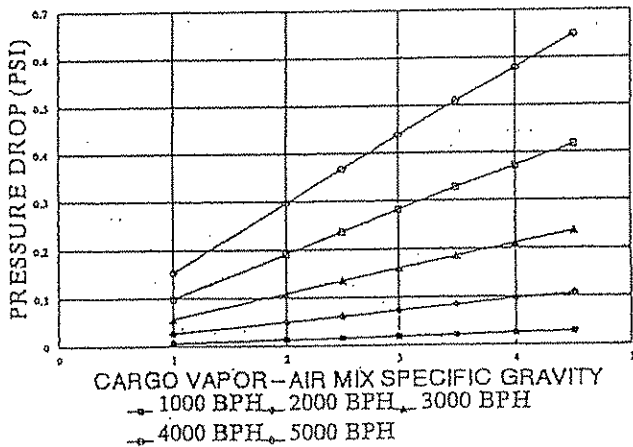
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-0.5 PSIG SHORE CONNECTION PRESSURE



-1.0 PSIG SHORE CONNECTION PRESSURE



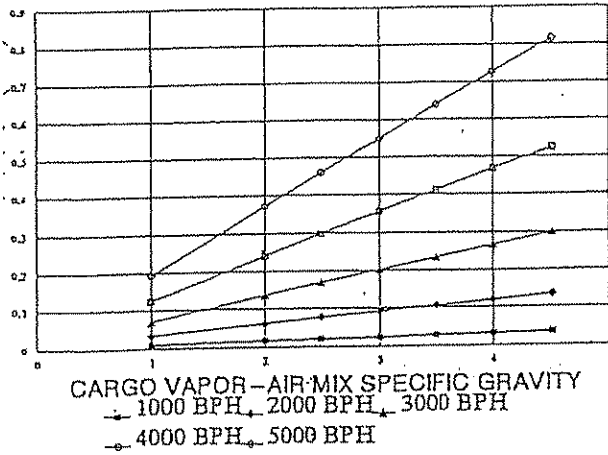
DIRECTIONS: FOR THE CARGO TO BE TRANSFER'D:

1. OBTAIN: (a) VAP.-AIR MIX GROWTH RATE (VGR), (b) VAP.-AIR MIX SPECIFIC GRAVITY, (c) MAX LIQUID TRANSFER RATE (MLTR), & (d) PRESSURE TO BE MAINTAINED @ THE SHORE CONNECTION.
2. SELECT THE GRAPH PAGE THAT APPLIES TO THE LESSER OF THE SAME OR NEXT HIGHER 'VGR'.
3. FROM THAT PAGE, SELECT THE GRAPH THAT APPLIES TO THE NEXT HIGHER 'SHORE CONNECTION PRESSURE'.
4. ENTER THAT GRAPH WITH 'SPECIFIC GRAVITY' & 'MAX LIQUID TRANSFER RATE' TO DETERMINE 'PRESSURE DROP' FROM THE MOST REMOTE CARGO TANK TO THE SHORE CONN'N.
5. IF THE SUM OF 'PRESS. DROP' + 'SHORE CONN'N PRESSURE' IS LESS THAN 80% OF THE P/V SETTING, THEN THE 'MLTR' IS OK.

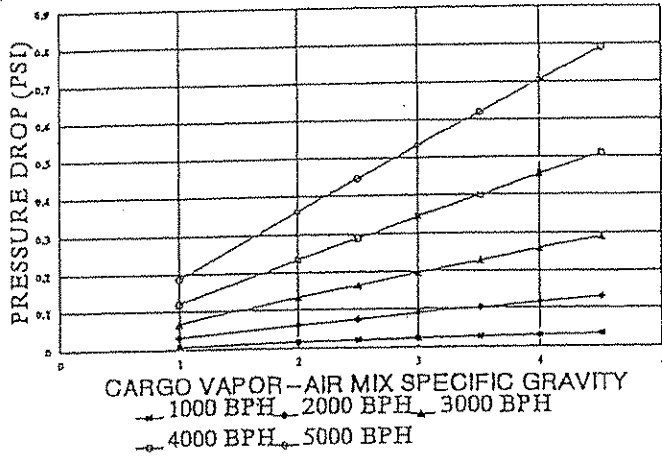
- A. FLOW RATES SHOWN HEREON (I.E., 'BPH') ARE LIQUID TRANSFER RATES.
- B. PRESSURE DROP IS FOR CARGO VAPOR-AIR MIX FLOW RATE OF 'VGR' TIMES THE LIQUID TRANSFER RATE, AND IS FROM MOST REMOTE TANK TO SHORE CONNECTION.

GRAPH(S) FOR VAPOR GROWTH RATE (VGR) OF 105%

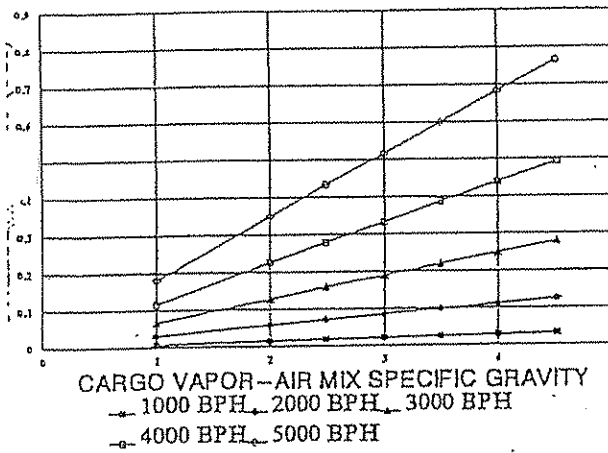
1.0 PSIG SHORE CONNECTION PRESSURE



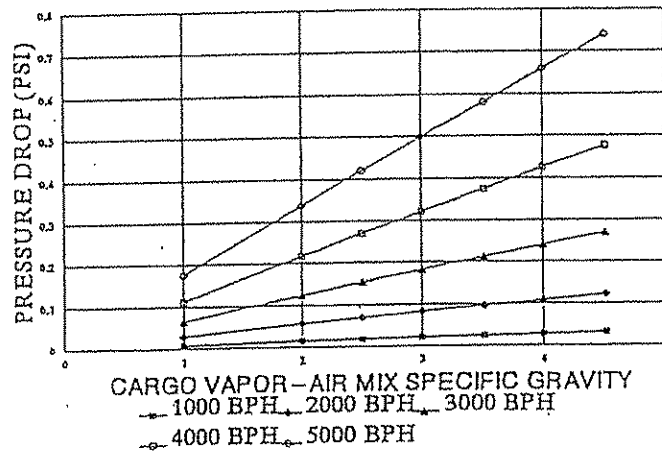
0.5 PSIG SHORE CONNECTION PRESSURE



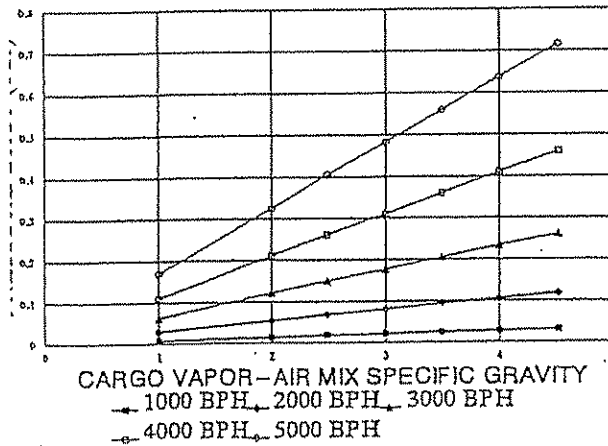
0.0 PSIG SHORE CONNECTION PRESSURE



-0.5 PSIG SHORE CONNECTION PRESSURE



-1.0 PSIG SHORE CONNECTION PRESSURE



DIRECTIONS: FOR THE CARGO TO BE TRANSFER'D:

1. OBTAIN: (a) VAP.-AIR MIX GROWTH RATE (VGR), (b) VAP.-AIR MIX SPECIFIC GRAVITY, (c) MAX LIQUID TRANSFER RATE (MLTR), & (d) PRESSURE TO BE MAINTAINED @ THE SHORE CONNECTION.
2. SELECT THE GRAPH PAGE THAT APPLIES TO THE LESSER OF THE SAME OR NEXT HIGHER 'VGR'.
3. FROM THAT PAGE, SELECT THE GRAPH THAT APPLIES TO THE NEXT HIGHER 'SHORE CONNECTION PRESSURE'.
4. ENTER THAT GRAPH WITH 'SPECIFIC GRAVITY' & 'MAX LIQUID TRANSFER RATE' TO DETERMINE 'PRESSURE DROP' FROM THE MOST REMOTE CARGO TANK TO THE SHORE CONNEC'N.
5. IF THE SUM OF 'PRESS. DROP' + 'SHORE CONNEC'N PRESSURE' IS LESS THAN 80% OF THE P/V SETTING, THEN THE 'MLTR' IS OK.

FLOW RATES SHOWN HEREON (I.E., 'BPH') ARE LIQUID TRANSFER RATES.
 PRESSURE DROP IS FOR CARGO VAPOR-AIR MIX FLOW RATE OF 'VGR' TIMES THE LIQUID TRANSFER RATE, AND IS FROM MOST REMOTE TANK TO SHORE CONNECTION.

BLESSEY ENTERPRISES, INC.

SUMMARY TABLE FOR "ETHANOL"								
(VGR = 1.070) (S.G. mix = 1.132)								
PRESSURE DROP VS LIQUID TRANSFER RATE FROM MOST REMOTE CARGO TANK TO VESSEL VAPOR CONNECTION PRESSURE DROP IS BASED ON VAPOR-AIR MIX @ VGR * THE INDICATED LIQUID TRANSFER RATE (TABULATED DATA IS FOR THE INDICATED PRESSURE AT THE SHORE CONNECTION)								
LIQUID TRANSFER RATE				PRESSURE DROP (PSI)				
PERCENT MAX XFER RATE	LIQUID BBL PER HR	LIQUID GAL PER MIN	LIQUID CU FT PER MIN	1.0 PSIG PRESS. @ VAP. CONN.	0.5 PSIG PRESS. @ VAP. CONN.	0.0 PSIG PRESS. @ VAP. CONN.	-0.5 PSIG PRESS. @ VAP. CONN.	-1.0 PSIG PRESS. @ VAP. CONN.
20	1000.0	700.00	93.6	0.0089	0.0087	0.0085	0.0082	0.0079
40	2000.0	1400.00	187.2	0.0335	0.0325	0.0315	0.0306	0.0296
60	3000.0	2100.00	280.7	0.0731	0.0709	0.0687	0.0665	0.0644
80	4000.0	2800.00	374.3	0.1280	0.1239	0.1199	0.1159	0.1122
100*	5000.0	3500.00	467.9	0.1979	0.1916	0.1860	0.1796	0.1739

* MAXIMUM LIQUID TRANSFER RATE

