

	Size of interface (bbls)					Color	Detection Method Comparisons (bbls) BOI/EOI																					
	Interface	API	4 PPM	15 PPM	30 PPM		Interface ahead of API	Interface behind API	Color ahead of API	Color behind API	Interface ahead of 4 PPM	Interface behind 4 PPM	Interface ahead of 15 PPM	Interface behind 15 PPM	Interface ahead of 30 PPM	Interface behind 30 PPM	Color ahead of 4 PPM	Color behind 4 PPM	Color ahead of 15 PPM	Color behind 15 PPM	Color ahead of 30 PPM	Color behind 30 PPM	API ahead of 4 PPM	API behind 4 PPM	API ahead of 15 PPM	API behind 15 PPM	API ahead of 30 PPM	API behind 30 PPM
Head of Batch wrapped with FCLL (LS#2) EOI Critical																												
White Oak		71+	71+	71																								
Manhattan Remote	243																											
Junction	245	328	462	235	183	/25	27/			/159	58/		58/68		58/16							/134	0/		0/93		0/145	
Lemont	107	292	438	292	183	/156	29/			/302	29/	/156	29/	/47	29/							0/146		0/0		0/109		
Chicago	206	330	612	290	281	74/165				49/455		49/133		49/75								/257	25/		25/65		25/123	
Elmhurst	192	371	443	242	196	/162	25/	/162	25/	/253	6/	/52	6/	/6	6/	/253	6/	/52	6/	/6	6/	19/91		19/	/110		19/161	
O'Hare	no data	389	457	297	227																	0/69			0/91	0/6		
Tail of Batch wrapped with FCLL (LS#2) BOI Critical																												
White Oak		59+	59+																									
Manhattan Remote	205																											
Junction	194	192	197+	173+	173+	26/24				50/53+		74/53+		74/53+								24/29+		48/29+		48/29+		
Lemont	157	211+	211+	163+	163+	44/98+				44/98+		92/98+		92/98+								0/0+		48/0+		48/0+		
Chicago	154+	129+	129+	129+	111+	0/+				0/+		0/+		18/+								0/+		0/+		18/+		
Elmhurst	238	316	237	210	178	27/105		0/79		27/26		54/26		86/26		0/0		27/0		59/0		0/0		27/0		59/0		
O'Hare	no data	247+	219+	192+	192+																	28/+		55/+		55/+		
Head of Batch 2 wrapped with RBOB EOI Critical																												
White Oak																												
Manhattan Remote																												
Junction																												
Lemont	179																											
Chicago	258	317	459+	317	251	18/77				/197+	8/	8/51		8/15								/116+	18/		18/26		18/92	
Elmhurst																												
O'Hare																												
Head of Batch 2 wrapped with RBOB BOI Critical																												
White Oak																												
Manhattan Remote																												
Junction																												
Lemont	260																											
Chicago	224	296	596+	340	276	/55	17/			/311	61/	/55	61/		61/9							/256	44/		44/0		44/64	
Elmhurst																												
O'Hare																												
Tail of Batch 2 wrapped with RBOB BOI Critical																												
White Oak																												
Manhattan Remote																												
Junction																												
Lemont																												
Chicago	208	368	401	342	310	0/160				0/193		59/193		88/193								0/33		59/33		80/33		
Elmhurst																												
O'Hare																												
Calculated Interfaces	1%	0.10%	0.01%																									
G/D	247	334	467																									
D/D	271	353	511																									

Interface sizes above are based on Controllers selections for Interface and Color Columns, and assumed beginning and end of interface for API and Sulfur from lab tests
Other columns identify difference in 2 detecton methods. Number ahead of slash is the beginning of the interface (BOI), numbers after the end of the inetrface(EOI).

Interface detectors were not working at O'Hare for the test batch
We did not sample deep enough into the batch at Chicago on either batch
Flow rates during batches were 1600 B/H or 27 B/minute

Results:

Head End - EOI Critical

A: Interface detector seems to lag behind the gravity at the beginning of the interface (17-29 Barrels), 2 sample lead by 18-74 B

B: Interface detector seems to lead gravity at the end of the interface (55-165 B), Junction tended lower, but is at middle of line

C: Interface detector seems to lag behind the sulfur at the beginning of the interface (6-61 B), 1 sample lead by 49 B

D: Interface detector leads the 4 ppm point at the end of the interface by a large margin (159-455 B)

E: Interface detector leads the 15 ppm point at the end of the interface (51-156 B)

F: Interface detector is around, but tends to lead. the 30 ppm point at the end of the interface (6-75 B), 3 samples lags by 9-16 B

G: The one Color data point seems to track the interface detector

H: Gravity is around the beginning of the sulfur break (25B lead to 44B lag)

I: Gravity lags the 30 ppm point at the end of the interface (64-161 B)

J: Gravity lags the 15 ppm point at the end of the interface (0-110 B)

K: Gravity leads the 4 ppm point at the end of the interface large margin (69-257 B)

L: Interface Detector seems to lead 15 ppm point at end of RBOB interface by fewer barrels ((51-55) than for FCLL

RBOB and FCLL seem to be similar

RBOB interfaces tend to be longer

Tail End - BOI Critical

A: Interface detector seems to lead the gravity at the beginning of the interface (0-44 B)

B: Interface detector seems to lead gravity at the end of the interface (24-160 B)

C: Interface detector seems to lead the sulfur at the end of the interface by a large margin (26-193 B)

D: Interface detector leads the 4 ppm point at the beginning of the interface (0-50 B)

E: Interface detector leads the 15 ppm point at the beginning of the interface (0-92 B)

F: Interface detector leads the 30 ppm point at the beginning of the interface (18-92 B)

G: The one Color data point seems to track the interface detector but 27 B later

H: Gravity lags the end of the sulfur break

I: Gravity leads the 30 ppm point at the beginning of the interface (18-80 B)

I: Gravity leads the 15 ppm point at the beginning of the interface (0-59 B)

J: Gravity leads the 4 ppm point at the beginning of the interface (0-28 B)

RBOB and FCLL seem to be similar

RBOB interfaces tend to be longer

Conclusions:

Add 150 barrel protection volume at head end of batch for O-O changes

Add 100 barrel protection volume at head end of batch for G-O changes

No protection required for tail end of batch