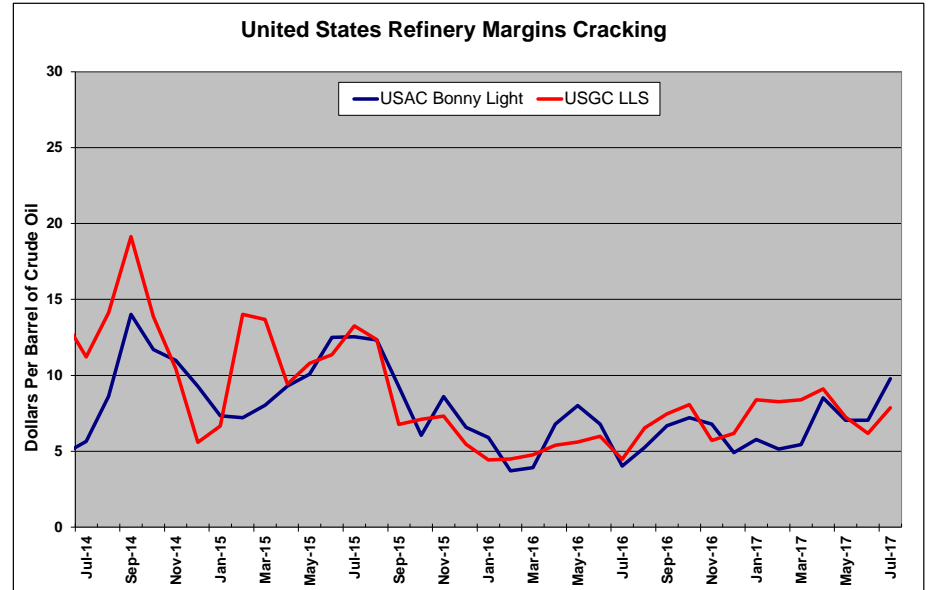
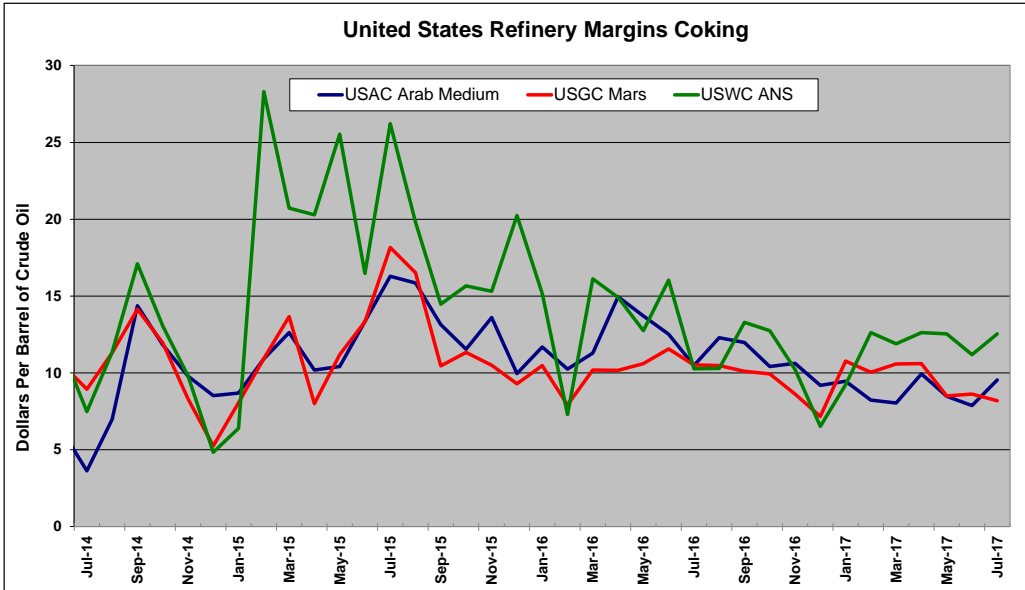


TM&C Model Based Refinery Margins

monthly average dollars per barrel of crude oil



United States Gulf Coast - Mars								
	Coke Margin	Crack Margin	Coke Yield	Crack Yield	Freight	Coke Netback	Crack Netback	Spot
2016								
August	10.47	5.16	52.55	47.24	0.37	52.18	46.87	41.71
September	10.10	6.66	52.79	49.35	0.37	52.42	48.98	42.32
October	9.93	6.87	57.08	54.02	0.37	56.71	53.66	46.78
November	8.62	6.47	51.30	49.15	0.36	50.94	48.79	42.32
December	7.17	5.27	56.94	55.04	0.36	56.58	54.68	49.41
2017								
January	10.77	8.69	61.06	58.98	0.36	60.70	58.62	49.94
February	10.04	7.75	61.69	59.40	0.36	61.33	59.04	51.29
March	10.59	8.15	58.83	56.39	0.36	58.47	56.03	47.88
April	10.61	7.86	60.65	57.90	0.36	60.29	57.54	49.69
May	8.49	6.50	56.35	54.37	0.36	55.99	54.01	47.51
June	8.63	6.92	52.93	51.22	0.36	52.57	50.86	43.94
July	8.18	6.58	54.37	52.77	0.36	54.01	52.41	45.83

Worldwide Refinery Margins - Arab Light Cracking							
	United States			Worldwide			
	Gulf Coast	West Coast	Atlantic Coast	ARA	Mediterranean	Singapore	
2016							
August	6.19	5.53	7.31	6.01	5.94	3.46	
September	6.64	11.24	9.05	7.68	7.58	5.47	
October	5.72	10.49	7.61	7.45	7.51	3.97	
November	4.68	9.89	8.02	7.78	7.93	5.71	
December	5.22	6.47	7.06	6.15	6.05	3.47	
2017							
January	7.01	9.43	7.80	6.84	6.87	5.47	
February	7.03	11.28	6.16	8.38	8.44	4.73	
March	6.91	11.14	5.96	6.31	6.31	2.10	
April	6.79	11.56	7.74	7.49	7.62	2.84	
May	5.62	11.85	6.48	7.89	7.83	2.53	
June	5.21	10.64	6.17	7.84	7.40	3.83	
July	6.63	10.97	7.78	8.59	8.62	4.27	

Margins based on Platts pricing and freight assessments and TM&C modeling system. Margins include variable cost. Other crude oil refinery margins available on request.