

OIL REFINERY RESEARCH & INTERVIEWS: SCOPE OF WORK

Purpose

- Compile a list of refineries with equipment suitable for incorporating Uinta Basin Waxy Crude Oil (Black Wax and/or Yellow Wax) into their crude oil feedstock slates.
- Determine the location, total capacity and anticipated appetite of these refineries for Uinta Basin crude oil.
- Identify specific and verifiable alternate markets for Uinta Basin Waxy Crude Oil that could be served on a crude-by-rail basis.
- Determine what sort of pricing might be offered relative to WTI.

Strategy

- Review and expand the HDR Sep 2017 Pipeline Report "Refinery Target" spreadsheet to group qualified refineries by location and company.
- Determine who is responsible for crude oil supply and trading for each refinery or refiner.
- Contact crude supply representatives for a phone interview and to schedule selected in-person interviews.
- Arrange travel to minimize time on the road and cost.
- It will be impossible to get firm refinery commitments to take specific volumes of Uinta Basin Waxy Crude on a speculative basis. The approach to establishing the existence of alternate markets will be to aggregate >5mm bopd of refining capacity from listed refineries. A very small percentage of the total would consume all Uinta Basin forecast production.
- Assuming the SLC refineries take 75,000 bopd and the proposed Uintah Advantage base oil refinery takes of 40,000 bopd, a 3% average take from the refiners on the list would combine to allow the refining of 265,000 bopd of Uinta Basin crude.

Interview Questions

- Is there a place in your refinery's crude supply slate for Uinta Basin Waxy Crude?
- Which of your refineries would be best suited for refining this crude?
- How can these refineries receive crude shipped by rail?
 - Rail offloading facilities exist at the refinery? With steam? Unit trains?
 - Receipt terminals nearby can accept rail shipments and move to the refinery by pipeline, barge or truck?
 - Remote receipt terminals can accept rail shipments? Unit trains?
- What would be your refinery's maximum appetite (bopd) for Black and/or Yellow Wax?
- What would you expect to offer for Uinta Basin Waxy Crude relative to WTI if it were deliverable today?
- Would you be interested in samples of Black Wax and/or Yellow Wax for testing? If so, which crude and in what quantity, shipped where?
- Do you have any questions or a need for additional information?

Approach

Compile a list of prospective refineries and their capacities. Done. Preliminary lists includes 19 refineries owned by 8 refining companies, with aggregate capacity of 6.3MM bopd.

Determine most efficient means of contacting refiners' crude supply officials.

Most officials identified.

Phone calls.

Follow-up visits to:

San Antonio for Valero Energy and Andeavor;

Houston for Motiva, Chevron, Shell, Calumet(?) & Exxon;

Possible later visits:

Findlay, OH for Marathon

Chicago or Anacortes, WA for BP.

Shreveport or Indianapolis for Calumet.

Compile and document responses from refiners.

Establish a verifiable total refining capacity in excess of 5MM bopd among interested refiners.

Write report.

Estimated Cost (assuming travel only to Houston and San Antonio)

Marc Eckels' time = 12 days X \$1,400/day = \$16,800.

Travel

Airfare = \$963

Parking = \$100

Hotels = \$600

Car Rental = \$250

Meals = \$300

Subtotal = \$2,213

= \$2,213

Total = \$19,013

*Assumes round-trip flight to Houston Hobby, rent a car, stay in Houston 3 nights, drive to San Antonio, stay in San Antonio 2 nights, drive back to Houston, stay 1 night, fly to SLC.

If additional trips are desired, the daily cost should be on the order of \$1,800, depending on airfares.

PROSPECTIVE OIL REFINERY LIST FOR UINTA BASIN WAXY CRUDE OIL: UPDATED & EXPANDED JUNE 5, 2018

MTE

Refiner	Location	Atmospheric Distillation	Catalytic Reforming	Distillate Hydrocrack	Gas Oil Hydrocrack	Total Hydrocrack	Lubricant Capacity	Potential Products from UB Wax Crude	Rail Served	Steam Avail.	Comments
BP Chery Point	Blaine, WA	236,000	360,000HP	65,000	65,000	65,000		Converted Base Oil	Y	N	Designed for Bakken crude, no steam.
BP Products	Whiting, IN	430,000	650,000HP					RPPs	?	?	Considering rail rack with steam.
CalumetSpecialty Prod.	Shreveport, LA	60,000	12,000LP				12,500	Base Oil User	Y	Y	Yellow wax approved, will not take Black Wax.
Chevron	Pascagoula, MS	330,000	34,000HP	117,000	117,000	117,000	25,000	Base Oil Producer	Y	?	25,000 bpd premium base oil plant.
ExxonMobil	Baton Rouge, LA	523,200	77,000LP	27,000		27,000	16,500	Converted Base Oil, Base Oil User	Y	Y	Genesis Terminal, Baton Rouge, 60,000 bopd.
ExxonMobil	Baytown, TX	573,000	127,000LP	29,500		29,500	28,000	Extracted Base Oil, Converted Base Oil, Base Oil Use	N	N	Better fit for oil than Baton Rouge, but no rail. (Houston)
Marathon Petroleum	Catlettsburg, KY	277,000	32,000HP								
Marathon Petroleum	Garyville, LA	580,000	128,500LP	117,000	117,000	117,000		Extracted Base Oil, Converted Base Oil	?	N	Pin Oak Terminals' Mt. Airy facility under construction with rail and steam. (NO)
Marathon Petroleum	Galveston Bay, TX	571,000	139,000LP	77,500	77,500	77,500		Extracted Base Oil, Converted Base Oil	N	N	? (Houston)
Marathon/Andeavor	Anacortes, WA	120,000	34,000LP					RPPs	Y	?	Unit train capable.
Motiva	Port Arthur, TX	635,000	129,500LP	105,000	105,000	105,000	39,000	Converted Base Oil, Base Oil User	Y	N	Have own rail offload, plus 2 contract terminals nearby.
Shell	Norco, LA	250,000	40,000	44,000	44,000	44,000		Converted Base Oil	Y	N	Potential rail service. Connected by pipeline to Shell Convent Refinery (NO)
Shell	Convent, LA	240,000	40,000LP	52,000	52,000	52,000		RPPs, Converted Base Oil	Y	N	Potential rail service. Connected by pipeline to Shell Norco Refinery.
Shell / Pemex	Deer Park, TX	340,000	24,500	60,000	60,000	60,000		RPPs, Converted Base Oil	Y	Y	Kinder Morgan Deer Park Rail Terminal adjacent. (Houston)
Valero Port Arthur	Port Arthur, TX	310,000		123,000	123,000	123,000		Converted Base Oil, Base Oil User	Y	Y	Rail offload at Valero Lucas Terminal (Beaumont). 90 mi. E of Houston.
Valero St. Charles	Norco, LA	340,000		28,000	75,000	103,000		Converted Base Oil	Y	Y	30,000 bopd offload at refinery. (NO)
Valero Bill Greehey	Corpus Christi, TX	325,000	10,000	50,000	50,000	50,000		RPPs, Converted Base Oil	Y	?	
Valero Ardmore	Ardmore, OK	90,000	20,000LP	14,000	14,000	14,000		Converted Base Oil	Y	?	
Valero Three Rivers	Three Rivers, TX	100,000	10,000HP	25,000	25,000	25,000		RPPs, Specialty Oils	Y	?	Between CC and San Antonio. Eagle Ford.