COQA Light Sweet Crude
Subcommittee Meeting – 06/24/2022
Denver, CO Meeting

Next meeting: 10/26/2022 Sugar Land, TX

Light Sweet Crude Subcommittee discussion and planning meeting.

Highlights:

- Member Attendees
    - Aaron Dillard (Retired)
    - Amanda Townsky (CME)
    - Andrew Sullivan (Exxon Mobil)
    - Anthony Ciravolo (Exxon Mobil)
    - Arden Strycker (SGS)
    - Bill Lywood (Crude Quality)
    - Clint Bram (Citgo)
    - Dennis Haynes (Nalco Water)
    - Derek Taylor (Plains)
    - Felipe Tello (Motiva)
    - George Lywood (COQA)
    - Henry Ostermann (Clariant)
    - Michael Mayers (ExxonMobil; online)
    - Michael Neilands (Suez)
    - Mindy Kuhn (Marathon)
    - Pat Swafford (CVR)
    - Randy Segato (Suncor; online)
    - Richard Dobies (Phillips 66)
    - Sam Lywood (Crude Quality Inc.)
    - Satbir Nayar (XOS)
    - Terry Thompson (Enterprise)

- Meeting Opening
    - Aaron opened meeting with greeting and introductions

- Discussion on Light Sweet Crude gravity
    - In the previous meeting, there was an issue discussed about Domestic Sweet specification at Cushing. The stream seemed to be making a change from the 42 gravity range; specifically it is 38-42. When the specification was set, the focus was on blending over about 15 years and 42 looked really good as a number.

- There is new drilling in the Permian basin and new material coming in lighter; such as 42 to 46. Those crudes are going to Cushing and other crudes are coming down to Houston with new technology horizontal drilling and such. Should we be working on increasing the spec from 42 to 44? Aaron proposed to get some thoughts around the room; pros and cons.
- Rick asked how often the numbers were higher or lower. The lighter it gets the more a refinery may become constrained on light ends. Higher would then have less value where it produces a constraint. Concern was noted about the variability.
- Tony expressed the same concern from a refinery perspective. Indicated he was interested to know what the range would be. Commented that a range of 6 feels like it is getting wide.
- Derek asked George to pull up Laura's slides (General Meeting presentation). He commented that from his perspective and looking at argus perspective (slide 23 in presentation), this is just from the perspective we see. What is interesting is WTI Midland is already at a floor of 40 and max 44 as you look at pipeline average. We are already there for last 15 to 20 years. (Slide 22) what is interesting is Delaware 45-46 and Cactus too already have light getting blended in. If it is not possible to deliver against contract, it kind of kills liquidity against contract.
- Rick noted that the barrels are taken but bought at discount relative to evaluating the constraints.
- Derek suggested that something to look at would be what happens with 44 API and base components and see how much light ends you get.
- Rick noted may still have a problem depending on price. If you raise and expand API gravity you are hurting the people refining it.
- Derek suggested it will still be possible to run but will be tougher to deliver.
- It was noted that the discussion was around 7.5 MMBPD under the contract CRM and Rick suggested it was more like 10-11 MMBPD total.
- Appears to be getting lighter and that is concern. Also concern about liquidity and better measurement of what is coming in. BTU analytics did a good job in presentation explaining how things are getting lighter.
- Rick suggested a lot of those barrels are coming to Houston and not Cushing.
- Tony suggested that if the barrels cannot get into WTI because they are light, Houston would be another outlet.
- Derek commented if you take production coming on line, the barrels are getting lighter, so what would go to Houston is going to be lighter as well, so it will be tougher and tougher to deliver.
- Rick noted the industry is not configured to refine these light crudes.
- It was stated that CRM is indifferent regarding supporting a change in specification as many of the other specifications are more important. If there is a condensate can you tighten up the other specifications.
- It was suggested that as EVs start pumping into the market, condensates would be better cleared overseas.
- Aaron noted that there were great points on both sides. He asked if we need to get more data around it? Terminals in Cushing are already testing. The crude specification is 42 to 44 and additional properties. So does it look that much

different and how does metals and other look? It was asked if we could confirm the differences at present.

- Derek stated that Midland WTI and WTL can be 44+ up to 50.
- Aaron asked what do we have for Domestic Sweet and WTL total volume? Derek responded that it is a significant number total but WTL mostly goes to coast. Rick suggested it will be blended in if there is a constraint to go to. Maximum consumption is 2027 to 2030 and after that it will probably go flat, but that is others' opinion that has been discussed.
- Bill confirmed that will need clearer specification going forward, and Aaron added that there is probably an opportunity for further evaluation.
- It was suggested to go to pipeline companies and ask to share data on traditional Domestic Sweet and ask about new streams. It would be appropriate to explain what we are trying to accomplish. There may be opportunity to work with Executive Board to directly reach out to terminals and also work with Sam Lywood to track and trend data. That way we could see if it would make sense to recommend change to CME. It was asked that there is definitely a lot of crude between 42 and 44 so does there need to be 41-45? Rick suggested that Magellan is really tight and has not drifted. Question was asked about MEH.
- Aaron asked if the COQA needs to ask the terminals for data?
- Rick suggested that the quantity of barrels of light crude being produced be looked at. Derek responded that the information would be available from the terminals. WTL is in the stream. Rick asked if it would be possible to keep it separate. Derek responded that pipeline tariffs dictate what is blended in.
- Aaron clarified that from a historical perspective we have tried to represent the base stream going into Cushing and that was the goal of the specifications. Ask pipelines to show what the incoming stream looks like and look at the barrels and see if that would be a basis to recommend to CME; so look at what is coming in the natural stream as recommendation to CME.
- Rick posed the question on what stops it from creeping up if more and more lights come in? What stops that? He commented that he would like to see it stay in a closer range.
- Mindy commented API does not always mean anything such as if DSW stays 42ish but the naphtha keeps going up. A question is if 44 then how much more naphtha will that be.
- Bill noted that one thing in the back of his head was on heavy crude and adding DSW and so compatibility issues and the lighter crude on compatibility.
- Aaron summarized with a statement on good comments on both sides. It would be appropriate to reach out to terminals, get more info in addition to NYMEX would like to understand what is being seen and experienced, and to use that information to develop future recommendations.
- Rick suggested that changing the specification would lower price of whole stream, keeping separate can increase price.
- Aaron noted that pipelines add to pipelines. They need to move, so reality is around how to manage streams where a lot of this may be going on already; need to understand it better.

- Randy stated it was in great chat around specifications for refineries and for marketing. Specifications are collective and cannot talk about gravity alone, but like the fact that it is a narrow range and that it would be good to let other markets develop for the other lighter streams and nomenclature. Part of refining complexity is looking at future yield and demands, but if kept stable range would minimize issues and be good for Domestic Sweet. Naphtha is vital risk vs full range naphtha constraints; C4- also understood. View is to let it ride for a while to see how market develop. Thinking of letting it stay.
- Aaron confirmed that it would be good to get some data to discuss. He noted Randy had excellent point. We did a lot of studies for 20 years around DSW to get to where we are today, so needs everyone's support. We can reach out to terminals and share. Can send to crudemonitor.us and look at 1 years or 2 years. Derek suggested that there may be differences during the Covid 2020 time period, so can look at data but mostly 2021 would be good. Bill suggested to look at the previous 18 months. Derek confirmed there would be data and asked what the time period was before. Bill responded that previously it was 2 years, but for present situation 18 months makes sense. Rick backed that up based on producers not pushing when demand was not there during Covid. Agreement on 18 months.
- Bill asked what grades? Derek suggested WTI as a big component and WTL can be added, and Bill indicated he would like to see DSW as well yet agreed on WTI.
- Aaron asked if NYMEX specification is based on incoming numbers. Amanda responded yes. Aaron suggested that it would be good if we could get data around components also. Rick stated that there are specifications on distillation and components and it would be good to look at 20%. Bill reconfirmed to add WTI and WTL. Derek indicated that the terminal companies would also have this and can ask for it.
- Relative to these specifications, Derek noted that there is a larger pool outside of DSW that could get into a liquidity issue depending on how the specifications were set. Aaron clarified we are discussing WTI delivered into Cushing. Amanda asked if this is more around volume or quality, and Derek responded quality is the focus as that is important to refiners. Bill noted that producers would also be focused on volume.
- Aaron suggested to move forward we could contact Cushing, Plains, Enterprise, Enbridge, and asked for others to which Magellan (note: did not catch but sounded like 'deep rock or rose rock'). As a go forward, it was suggested to develop a letter to connected carriers to ask for data.
- Aaron indicated he would get with Bill to reach out and get comments. It is clear as a responsible organization that COQA is in an area of responsibility and oversight, so this would be a good way to understand and see what this issue looks like today. I think going forward this will add clarity.
- It was asked to confirm we are going to be looking on volumes and quality for WTI, WTL, and DSW monthly aggregated quality specifications, and Aaron confirmed yes. Derek noted that that is what we have done in the past. Bill asked about section 200 list or markers and Aaron responded that Light Sweet crude is in section 200. Bill stated we will ask for block, and Amanda noted whatever is important to refiners.

- Aaron thanked all for participation and suggested moving to the next topic.

- MAP Update
  - Aaron introduced that there is a sub group called MAP that has be looking to try to do something around the Houston metroplex by starting out asking the question does there need to be common specifications. All of the lines have their own specifications which leads to the further question of what we can do. It is known that many of the methods are different, so an idea to start is to look at the methods that are different and work on commonality. Frank Hagardorn works with Mike and they are leading this group working closely with Arden. They have drafted a recommendation document now ready to be published, and Arden will give an update.
  - Arden noted that there are 7 persons in the group. Metal analysis with D5708B and D8252 were reviewed and there was the recommendation to put together a white paper with table comparing methods with some of the specifications. Frank has been putting together the white paper and comments were returned. Based on the comments, Frank decided to detour because of divergent opinions, so he decided to split it and produce a second draft focused specifically on comparison of methods for metals.
  - Also, D6708 is being considered for comparing D5708B and D8252 to determine the relative agreement in the range of interest for Light Sweet Crude oils, and if applicable, determine if a bias correction could improve the agreement. An action item was to get more data from ASTM PTP and collect additional data to do something like a roughness study. What we got back was limited data and the conclusion was there was not a way to do this based on what was available. Conclusion was sent to the group for review by September 1.
  - A conclusion of the 2nd draft was to push the comparison back to the subcommittee of the ASTM and not take it further as there is not the information to proceed.
  - Aaron commented that it is good to know the situation and have a better picture of feedback from the Houston area. Sounds like there are opportunities.
  - Arden affirmed there are still some opportunities to work on and continue with other areas.
  - Satbir asked what the recommendation to ASTM was? Arden indicated that the request for PTP data was met but it was not enough and still early so this will be tabled until more data is available.
  - Bill clarified for the group that MAP is looking for a recommendation on what and when one sets up a crude quality monitoring program, these are the most usable tests block by block, not to force them to do it, but as recommendation.
  - Arden suggested that in his review of the 1st draft it did not hit him that the purpose was to put a recommendation forward for quality monitoring test methods for light crudes. Heavy crudes are not part of the discussion. Focus here is quality monitoring so there are some constraints.
  - Bill suggested that at the start as a table is put together, there are modernizations that are not in the rules and regs, so we took another step to look at D5708, D664

and D8045, etc. Before recommending, it is important to know how confident we were with the methods, so if I understand what Arden is saying, the idea to do a deeper dive has changed, but there is still work to do on a different level.
    - Aaron thanked Arden for the summary.

- General Discussion
    - Aaron noted that we have initiatives going with the Light Sweet crude specifications at Cushing. He asked if there were thoughts on anything else and opened the floor for comment.
    - Derek suggested that there was an idea from Rick about breakout sessions on issues and asked if this would be a good format to discuss. Rick noted that it was more of a general discussion for the main meeting.
    - Aaron commented that this subcommittee was developed to look at specifications at Cushing, other thoughts would be to look at Houston as well. We have not given up on Houston, so would like to ask if this is enough.
    - Rick noted that one thing we have not looked at is the qualities that are going overseas if that is going to be part of our market from a crude quality perspective.
    - Aaron responded that the challenge would be getting information around that and then using that information to define value to it.
    - Rick suggested that inspection companies would have information and may be able to indicate where problems are.
    - Aaron and Arden discussed that overseas they have IP methods, and that maybe we can review the notes that Dennis S took in meetings on the subject.
    - Aaron restated that it would be good to get more energy around the Houston complex. Can have more discussion later.

- General Discussion
    - With that, Aaron thanked everyone for joining and concluded the meeting of the LSC Subcommittee.