RBN Energy LLC

3900 Essex Lane Suite 950
Houston, Texas 77019
OFFICE 888-613-8874
FAX 713-391-8421

# Get the Balance Right! - How Crude Oil Schedulers Keep Volumes in Check and Oil Flowing

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Published by: John Zanner

They are unsung heroes, the guys and gals who get in early, stay late, and are usually working odd hours on the weekends. They resolve issues before they arise, solve complex problems when they do pop up, and are always working the phones to get the next hot piece of intel. No, we're not talking about the new cast from Season 2 of "Jack Ryan," and no, it's not the kids from "Stranger Things." The keyboard warriors we're referring to are crude oil schedulers. They're at the forefront of the daily logistics taking place at truck injection points, gathering systems, and takeaway pipelines from Western Canada down to the Gulf Coast (and around the rest of the world as well). As more and more new pipelines get built out in places like West Texas, it's important to revisit the basics of how crude oil moves and the role that crude schedulers play. Today, we bring it back to the roots of crude oil operations and shine some light on an underappreciated group of crude oil operators.

Scheduling. When the layperson thinks about the word, they think about their dentist planning their root canal, or their contractor planning their roof repair. In the world of crude oil, scheduling refers to a person, or group of people, tasked with ensuring that every barrel that is being purchased or produced makes it to the next delivery point or sales destination. Schedulers tend to be unheralded because when they do their job well, everything runs smoothly and no one notices. But if there's a missed detail, a tariff error, or an ill-managed calendar, well, these things are noticed as they can cost companies anywhere from thousands to millions of dollars. Schedulers can range in age and experience from new hires straight out of college and junior analysts waiting to get tapped to become traders or management folks who run large teams, to lifers who often know more about the intricacies of the pipelines they schedule than the owners themselves.

Schedulers also exist along every level of the value chain. There are producer schedulers, who manage the delivery of their own production from the wellhead to a gathering system or facilitate the trucks that are buying their barrels at the lease. Then there are schedulers on those gathering and major pipeline systems, who make sure their own specific pipe runs as efficiently as possible. Every old and new pipeline that flows crude has a team of folks scheduling it. There are shipper schedulers — those who work for trading and marketing shops and are buying barrels upstream, injecting them into pipelines or buying them on the pipe itself, and moving them to a downstream market. From there, refinery and barge schedulers make up the last bit of logistical planning. Refinery schedulers work with the refinery supply team to keep operations tidy, while barge/export schedulers deal with lining up pipeline arrivals and barge dates to avoid delays and demurrage as much as possible. For the purposes of today's blog, we'll focus on the shipper schedulers, because they get to touch many different parts of the value chain and give us insight into how the myriad pieces fit together.

Next, we walk in the scheduler's shoes through a monthly business cycle. We've numbered the unique parts of a scheduler's calendar to correspond with our Figure 1, so you can always refer back to the schematic. Also, we obviously can't get into all the nuances and details of scheduling in the length of a blog, so bear with us if we gloss over or generalize some of the functions these folks perform. Keep in mind, for example, that scheduling takes place 24/7/365. And if you ask any scheduler when their own internal business cycle starts, it's likely each of them would give you a different date. So for our purposes today, we'll keep it high-level and as general as possible. We'll start on the first of the month, in this case, November 1 (box #1 in Figure 1). The scheduler is just wrapping up daily operations from the month prior (October business), wiping their brow after another successful cycle, and beginning to see volumes delivered for November business. Settlements from October begin rolling in over the first 10 days of November and volumes typically settle on or before the 20th day. For all the volumes the scheduler had flowing on pipelines, they'll receive settlement documents from each pipeline that tell them exactly how much they purchased and sold on each end of the pipe, and who it came from.

Over the course of the settlement period, the scheduler will check in with their counterparts to confirm. While crude oil deals are usually done in big, whole numbers, the amount of crude you actually deliver or receive is usually a bit different than the deal you did on paper, given that the product is a liquid and doesn't flow in nice tidy amounts. Scheduler A from XYZ Shipper will talk to Scheduler B from ABC Refinery and say, "Hey, I show we delivered 10,020 b/d to you guys on Enbridge in October," making sure the exact number ties with what's on the pipeline statement. Typically, Scheduler B confirms, and then their accounting folks take over and checks get signed. It's usually a straightforward process because both schedulers have been in contact with each other and the pipeline they did the deal on throughout October to make sure the volumes were flowing as scheduled, and there weren't any issues upstream or downstream that would affect delivery. Schedulers also typically receive Excel files, and even actual paper tickets, that back up all the volumes they moved via truck and that were delivered to truck injection stations to move onto pipelines (box #2). Hopefully, the volume they bought and moved on trucks to a pipe's truck injection point matches with what the pipeline says they received at that point (Author's note: a really boring day). If there are any volume discrepancies, the schedulers and analysts will comb through truck tickets, storage tank numbers, pipe documents, etc. to find the missing barrels. (A volume over-short analysis is a blog for another day.)

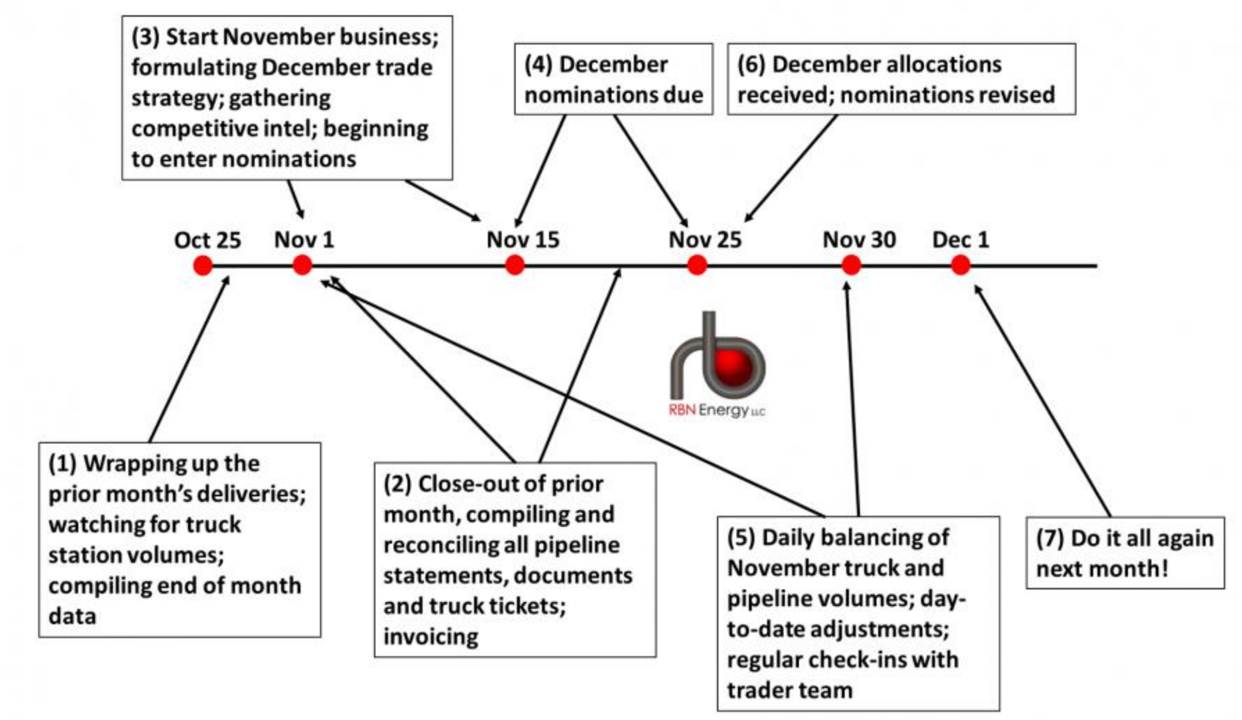


Figure 1. General Crude Oil Scheduling Timeline. Source: RBN (Click to Enlarge)

As the scheduler transitions out of October business into early November, they're heavily focused on making sure the first 5-10 days of November go according to plan (box #3). The scheduler is making sure, for example, that if they told Enbridge they were going to deliver 10 Mb/d to a specific truck injection point connected to a pipeline, they're close to that number on a daily basis. Deliveries must be ratable, meaning your trucks can't deliver 2 Mb/d one day, 18 Mb/d the next, on and on and for an average of 10 Mb/d. Truck stations can typically only handle so much volume per day, and you don't want to have too many trucks one day, waiting around to unload, charging you for the extra hours that they're sitting there. Schedulers also try to keep their producers happy. If you're buying volumes at the lease, and a well is producing 10 Mb/d, you better have adequate truck coverage to make sure the lease storage tanks aren't getting too full. And if a producer tells you a well is going to make 5 Mb/d and it's now making 15 Mb/d, you better get more trucks out there pronto, and give your trader a heads-up that you might be long volume that month. There are also other complications that can crop up and require impromptu decisions. What if you're buying volume off a gathering system, and your producer isn't quite hitting their production mark? Should you go buy additional volume on the pipeline, or do you trust your producer will make up that volume? Traders and schedulers have the opportunity to make tweaks to nominations, but these are often at the pipeline's discretion. All of these scenarios are happening fluidly, and the fog of the oil field is heavy, so schedulers and traders need to get a general sense of what their position is on a daily basis, balance it out over a couple of days and make gut decisions. Are we a little long barrels right now? Maybe in five days we'll be balanced again? These are the kinds of conversations taking place all day long on trading floors.

As the settlement period wraps up a couple of weeks into November, and day-to-day ops are requiring focus, schedulers get even busier. They're still dealing with tracking deliveries and daily volumes for November business, and now their trading shop is also doing deals for the upcoming month: December. Nominations for space on most major pipelines are usually due from the 15th through the 25th of each month, and there is no mulligan if you miss a nomination deadline (box #4 in the diagram). Prior to the nomination period, traders and schedulers are hashing out their strategy for the next month. Do they want to be long lease barrels, short lease barrels, long pipeline space, short pipeline space? Do they expect any big market changes in December? These questions will inform how much volume they nominate and where they will make sales. Keep in mind, marketing groups often have “term” purchases and sales, meaning contractual volumes to buy or sell for three-, six- or 12-month periods, or longer. Those term deals can provide much of the starting point for their trading slate each month.

If you know you have a 10-Mb/d sale lined up with someone on a pipeline for the next six months, you’re going to want to have purchased some or all of that volume early in November for December flows. Schedulers will typically confirm every deal their trader makes, even though the trader does it when they execute the deal, and the whole thing is eventually written on paper. But good schedulers can catch errors just by pinging their scheduler colleague on the other side to say, “Hey, we’re buying 50 Mb/d next month off Cactus II?” These conversations take place informally via platforms like ICE Chat (Intercontinental Exchange; Yahoo Messenger was previously the big platform) or more formally via e-mail. The biggest things? Make sure you get your nominations in on time, and make sure you get them in correctly. It doesn’t happen often, but every now and then, you hear a story of a scheduler who forgot to nominate a pipeline, misread a deadline, or put in one too many zeroes, and that’s an awful position to find yourself in.

Schedulers also create a lot of value during this time by sharing information and gathering as much intel on the market as they can (box #5). They may want to talk to Joe Scheduler to get an idea of how his book is shaping up, find out what Joe’s opinion is on the market, and oh, they just had lunch with Jane Scheduler, who told them she’s going into the month short volume because she heard production is abundant. Commercial tips and data like this, shared with your own trader, are what set the great schedulers apart from good ones.

Once nominations go in, the pipeline allocates space to each shipper. This can be the requested amount, or less, depending on how much of the pipeline is apportioned (box #6). Under apportionment, pipelines will accept volumes from their shippers with firm or committed pipeline space and ration out a percentage of the remaining space to those shippers who do not have firm space, often referred to as walk-up shippers. Typically, pipelines give shippers 24 to 48 hours to accept the allocated pipeline space, so the scheduler and his or her trader bosses huddle up and formulate the rest of their plan for the upcoming month. Once those allocations are accepted or denied and pipeline nominations are revised accordingly, the scheduler usually has a few more days toward the end of November to catch up on anything they may have missed, prep for the settlement period and wait for the whole cycle to begin all over again. Truck stations are again a big balancing act here. If you have reached your allotment for volume to ship on a pipeline on November 25, the pipeline may lock you and your truckers out from making any more deliveries for the remainder of the month. If you still have lots of lease volume that needs a home, you and your trader are again scrambling to find another station you can take it to, someone to sell it to, or another suitable solution. All of this involves balancing operational concerns with economic feasibility, and there’s a lot of give and take. Trucking a barrel an extra 100 miles to a new station might make your producer happy, but it’s going to affect your bottom line, so you must choose wisely.

Behind every good trader is an equally adept scheduler. They really do make the crude oil world go ‘round. As box #7 highlights, once the monthly cycle ends, they start right over again for the next cycle. And the position is unique in that it requires individuals who can handle spreadsheets in addition to commanding a fleet of vehicles and field operators making rapid-fire decisions with confidence. Good schedulers are hard to come by, and great ones are invaluable.



"Get the Balance Right!" was written by Martin Gore, and was the seventh single released by Depeche Mode. Recorded at Blackwing Studios in London in December 1982, the record was released in January 1983. Produced by Daniel Miller and Depeche Mode, the song went to #31 on the Billboard Hot Dance Music/Club Play chart. "Get the Balance Right!" appears on the compilation albums, *People Are People* and *The Singles 81-85.* Personnel on the record were: Martin Gore (synthesizer, guitar, backing vocals), Alan Wilder (synthesizer, backing vocals), Andy Fletcher (synthesizer, backing vocals) and Dave Gahan (lead vocals).

Depeche Mode is an English electronic synth/pop band formed in Basildon, Essex, England, in 1980. The band took its moniker from a French magazine of the same name, which translated means "fashion update." The group has released 14 studio albums, seven live albums, 10 compilation albums and 55 singles. Depeche Mode has sold 100 million records worldwide. The band has won one BMI Award, one Brit Award and one Ivor Novello Award, and has been nominated for inclusion in the Rock and Roll Hall of Fame. The band, with original members Gore, Gahan and Fletcher, still records and tours, supplemented by touring musicians Christian Elgner (drums) and Peter Gordeno (bass, keyboards, backing vocals) for live performances.