THE MIKE ALKIN SHOW

TALKING STOCKS OVER A BEER

Announcer: Free and clear of the chatter from Wall Street, you're listening to Talking Stocks Over a Beer. Hosted by hedge fund veteran and newsletter writer Mike Alkin, who helps ordinary investors level the playing field against the pros by bringing you market insights and interviews with cooperate executives and institutional investors. Mike sifts through all the noise of mainstream financial media and Wall Street to help you focus on what really matters in the markets. And now, here is your host, Mike Alkin.

Mike Alkin: Welcome to the podcast. It's Monday September 17th, 2018. Hope you had a great weekend. It's been a while, I think it's been a couple of weeks since we last got together. I took Labor Day off. And I thought, you don't need to hear me on Labor Day and give you time to get some rest. And then I was traveling the next week and I was in London for the World Nuclear Association meeting. People from around the world get together, uranium suppliers, uranium producers, utilities, people in the enrichment phase, the conversion phase, storage, brokers, traders. So a lot of people that I got to know over a period of time. It's a great get together, and we'll talk more about my view on that and what I think about the nuclear power and uranium industry in a little bit when I have my guest on the show, who, as you can probably guess, is related to the uranium and nuclear power industry.

Mike Alkin: Aside from that, I learned not to take time off from the podcast if at all avoidable 'cause I get a lot of emails saying, "Hey dude, where are you?" And I actually thought you guys might like a break, but apparently that's not the case. So point noted, and I will continue to endeavor to do these on a very consistent basis. I had done 27 in a row, or 28 in a row. When I'm traveling ... I mean if you could see, I'm a technological mess. So I thought doing it there would be difficult with the time zone difference, and I was in meetings, and it was just ... Logistically I couldn't figure it out, but I will work on that.

Mike Alkin: So after that the weekend was good, I did a lot of power wash yesterday. I don't know if you guys just power wash, but I've been on this kick lately. I think I told you, I painted my daughter's bedroom. After the painters tried ripping me off and I told them, "No, thanks" and I painted. Actually, God I should do a lot more

of this stuff. Felt great even though I couldn't move my hands for a while. So this weekend I was in a power washing kick, so that was my thing, "Let's power wash." My walkway, my sidewalks, my driveway because from the painting issue apparently what I did is ... We painted my daughter's ceiling a navy blue. So as I was dragging everything out to the garbage, I didn't realize, but I left a long, long, trail of blue paint in the driveway, which I didn't even notice but my wife was telling me. So, when she pointed it out, I did kind of notice. But it was oil ... It was latex, but there was other oil-based paints in the trim.

Mike Alkin: So yeah, anyway, it took me four hours to do that yesterday, but I gotta tell you, it was awesome. I mean when I'm out there, when I'm painting, when I'm doing power washing I get so much work done 'cause I'm thinking. I'm just out there by myself. It's great. I love doing physical work. I get a lot of thinking done. It's great quiet time and ... So I have a five gallon gas tank, I've got the power washer, a couple of times it needed gas, and I kept the gas tank in the driveway. I got a long driveway. But I keep it in there and my wife's way in the front of the driveway and she's backing out and I'm not thinking 'cause I'm power washing. And all of a sudden, I hear screeching and I hear banging. I look up and my wife drove over a five gallon gas tank with almost four gallons of gas in it. And I thought, "Oh my God, the car's ... it's gonna blow. The gas tank's gonna blow. The car's gonna, something's gonna blow." Thank God it didn't.

Mike Alkin: But I just looked at her and I said, "Really? You didn't see that?" And there's history there, because for probably five, six years I'm going. Maybe seven years now. I get a call from my insurance agent at a well-known insurance company, who I had been doing business with for 20 some odd years. Probably 25 years. She knew me since I was a kid.

Mike Alkin: She's like, "Oh my God, Mike. I'm so sorry we had to cancel." I said, "What are you talking about?" She said, "Oh, Christina ... You know, all the accidents." I said, "What are you talking about? What accidents?" She said, "You know, over the last year she's had three accidents just in town that ... " I said, "Martha, you talking to me? It's Mike." She said, "Oh yeah." She said, "No, she's had three fender benders." I said, "What are you talking about?" She said, "Yeah. No, she's taken out three cars in town in the parking lots and she just goes, and she gives them the insurance." I said, "Well how much were they?" She goes "Nothing." I said, "What do you mean?" She goes, "They were, you know, a couple grand or fifteen hundred or whatever but she gave them the insurance, there were no police called cause those parking instances, she sometimes leaves a note."

Mike Alkin: So I call my wife, I said, “What did you do?” She said, “Oh, I didn't even wanna bother you and tell you.” She said, “But yeah,” she said, “you know, maybe I have depth perception issues?” Anyway, turns out, so we had to go get a new insurance, actually turned out to be less money. But now it's fine, and as far as I know, she's been incident-free for quite some time. So yeah, but when I saw her drive over the gas can, or I didn't see her but I saw the end result, I just thought, "Really? Come on."

Mike Alkin: So anyway, but that was my weekend, it was good, great time. My daughter, for those of who've listened before and any of you who know my story, back about three years ago, we almost lost my daughter. She was twelve at the time and she got very ill and, by the grace of God, we all got very lucky, and she's now a thriving high school student and is a freshman, and she's on the varsity kickline and it was one of, she was, I think they took five or six girls out of fifty that tried out, and so it was the first varsity football game in our town, and the kickline was out there. Kickline think of like the Rockettes, that's what they do. So, she was out there, and she looked awesome and it was just sitting up in the stands as a proud dad, but thinking about where she was three years ago, so it was a really nice time.

Mike Alkin: And then a lot of football, and my Jets, my J-E-T-S, Jets, Jets, Jets. I mean, you just ... They played on Monday night, they opened the season. Sam Darnold, number one pick outta USC, he crushes it. We think we have our next Joe Namath. They dominate the Lions, right, they just mop them up and down the field. I'm excited, cause you know I'm a Met fan, and, my God, when the season started out 11 and O, I told ya something would happen and sure enough here, they're twelve games under five hundred, they just can't suck enough.

Mike Alkin: But here, the Jets start out great, on the road, in Detroit, rookie, his first pass he throws a pick six, goes the other way, comes back, great composure, he's a beast. Jets dominate, I gotta tell you, the whole town, everyone was fired up. I could not wait, til yesterday. That's why I was out power washing really early, I was out getting it cranking, cause one o'clock I'm coming in, I'm gonna watch the game. It was a debacle. They're playing the Dolphins, down twenty nothing, I think at the halftime. I mean, you just can't make it up. Being a New York sports fan is so insufferable, now I'm not a Yankee fan I can't stand the Yankees, so don't count that. But my stock, my sports pedigree is Islanders, Mets, and Jets.

Mike Alkin: The Islanders last made the playoffs in 19 ... or won a playoff round in, I don't know. Well they won one recent, but '93 was the last time they won one series. One series since '93? I mean I can't keep saying they won four cups in a row from 1980 to '84, I mean you gotta let it go right? Now I've let that go. But here, Mets, disaster. Islanders, disaster. They let top free agent go, John Tavares went to Toronto, good luck. And the Jets. So anyway, that's my sports life. I keep saying I'm looking for a new football team, I'm on the prowl. Hey, I like Cleveland, maybe I'll become a Browns fan, I don't know.

Mike Alkin: But anyway, we're gonna talk uranium. I have a guest ... I was at the WNA, and the WNA really turned out to be a little more of what I saw when I was at the Monterey Nuclear Fuel Buyers Conference in June, where for the first time in a while at one of these conferences I saw what I would say was a marked turn in attitude and belief, where inventories are getting a lot tighter, the utility buyers, my belief from that Monterey conference was that they know they're gonna have to pay higher prices.

Mike Alkin: And that's all because the supply production cuts that we're seeing are starting to really take hold and I really started speaking publicly on this about April of last year, on Real Vision TV I did a piece, and then in June I spoke at a conference and laid out the uranium story as to why I thought it was the best risk-reward I'd ever seen. And, cause production cuts were gonna have to keep coming, and I thought underfeeding was starting to slow down, which we'll talk about, don't worry if you don't know what underfeeding is. But I just thought it was a great setup and from an equity buyer's standpoint the risk-reward is outstanding. And I think we're starting to see the turn, we are starting to see a turn. And I got more conviction on that, which is hard to do cause I have tremendous conviction in the thesis, but leaving the WNA I felt even better, if that was possible.

Mike Alkin: So anyway, we're gonna bring on a uranium guest. Some of you may know his work, he used to be a sell side analyst for many years, and now he is on the board of directors of two uranium companies, Fission Uranium and Ur-energy. And I wanna say one thing, I do put a disclosure on these at the end that there's an investment vehicle with uranium stocks that I'm in charge of, I do, in the case of Fission and Ur-energy, I own the stocks, but I wanna stress this.

Mike Alkin: For those of you who follow me on Twitter, I never comment ... When I first started using it, back ... It shows that I was on

Twitter since '09, but I never really used it, I was just a tourist. I think maybe two years ago I started talking about it, I might've mentioned a couple of companies very quickly, but just general stuff. Then I realized there's no very ... A couple of years ago, I said I don't wanna talk about companies because I don't like the debate that occurs. People talk their own book, if you watch CNBC or you watch all these talking heads, these guys go on there, it's always with an agenda.

Mike Alkin: And that's ... I'm trying to educate people on uranium, and let them make their own investment decisions, and I don't go and talk about it and also, when I talk about it on a podcast, if I have a guest on and I say, in my investment vehicle, I own these stocks, that doesn't mean anything. Obviously there's something I might like about it, but you don't know if it's one of my biggest positions or one of my smallest, if I own it for a certain reason, or ... some uranium names I trade in and out of, other uranium names are core positions for me, and I hold, and so when people on Twitter ask me "What do you like?" Or ask me about individual names, I just don't comment on them. I'm happy to talk macro uranium.

Mike Alkin: I do disclose to you though, that if a guest is on and I happen to own a company they're affiliated with in the portfolio, I do tell you that. But don't take anything from that, because like I said, I don't say its position's sizing, I don't say when I bought it, do I plan on trading it, do I not. But I wanna fully disclose that there's a position there, so everyone has different reasons for owning things, and they have different ... I use a barbell approach in my fund, where it's my highest conviction, my ideas, are the very biggest, and my ideas I kinda like but I don't think have as much upside are much smaller positions, so, and I don't disclose that as to how I'm positioned, so, anyway. We're gonna bring on a guest, and you know him from a sell side analyst, he's on the board of Fission, he's on the board of URG, his name is Rob Chang, and Rob has been around the uranium space for a long time, and we're gonna get him on the phone. So Rob Chang, welcome to the podcast.

Rob Chang: Well, thank you, thanks for having me.

Mike Alkin: It's good to speak. I love talking to the uranium industry veterans, I've learned a couple of things over the years there. There's not many uranium industry veterans left.

Rob Chang: True, very true.

Mike Alkin: Because many of those have gone the way of the dodo bird unfortunately. But Rob, it's such an opaque industry, and so mysterious to many people, and just really complicated. So it's great to be able to talk with someone who knows the industry for a long time, so, for our listeners who may not know who Rob Chang is, shame on them. No, I'm kidding, but share with the listeners what your background and your involvement in uranium space.

Rob Chang: Sure, I've been looking at uranium through some way, shape or form since, I guess 2005, 2006. I was at BMO Capital Markets when I first started it out of school, helping the research team over there cover certain things, uranium being one of them. Shortly thereafter, I did jump over to a company called Middlefield, where it ran one of the first uranium funds that were around, and I was actually the associate portfolio manager during that time for a couple of years for the uranium fund there, and the smaller of the two funds were actually more under my mandate, and I had more control over that one.

Rob Chang: So I've been looking at uranium since 2006, 2007 or so, as a fund manager anyway. After that, when I left the buy side and joined the sell side, I took a look at the space, really loved it, and when I continued my career on through different sell side brokerages, Octagon first then Versant Partners, and later on Cantor, I carried the uranium torch throughout that time. So I've been looking at uranium since beginning '05, all the way to now, and after finally stepping away from the sell side at Cantor, I decided to join the boards of a few of my favorite uranium companies, that being Ur-energy and Fission Uranium. But, throughout the career, I did look at uranium quite extensively, to the point where, when I was the Head of Mining for Cantor, I was still carrying that torch pretty strongly.

Mike Alkin: So Rob, yeah that's pretty cool, so here you are, '05, good time to start in the uranium space, really, to start looking at it. So I mean, you have seen literally the bottom, going to the top, and then the bottom again. And so you've lived the cycle, and if you're like me in my career, the longer I go, the more I learn, and it just becomes more institutional, you just kinda recognize things, and there are so many times now where I look now and say "Oh geez I wish I knew back then what I know now." So, talk to listeners if you can about, walk us through, take us back to '05, and when you started to see the run-up. Talk about what that felt like, and if you can equate it to how you're thinking about the world of uranium now.

Rob Chang: Right, so, the way uranium looked during '05 looks the same as we saw weed stocks right now, or what rare earth elements a few years ago, Bitcoin last year, that type of hype where there was just so much interest in that space, anything with that name, with uranium in there, went up and went up very aggressively. When I was at BMO, there were several deals that were happening, there was M&A happening, and effectively anything that had that name in there was an instant home run. That was frothy, and that's certainly what that looked like back then.

Rob Chang: Fast forward a little bit, it certainly has slowed down significantly, and effectively only the strongest have survived so far, where by ... I think we first, when I was running my fund, we looked out and I think there were over 300 different companies globally that had uranium in some way, shape or form either in their description or in the name. Now I can probably say there is 50 total, and of that I would probably say the quality ones are probably about a dozen. That's my personal opinion, but it's definitely whittled down from the large group and the mania that was in the past to what we have today.

Mike Alkin: Well, over the last several years anyone who became a uranium tourist during the peak, you see these companies change their names to whatever's a hot commodity. I think most of them have disappeared for the most part. When I think back to the prior turn off the bottom, at the time I think in '03, '04 you had about 23 reactors that were under construction, and you had a lot of new supply coming online, and then, you'll know, back in '06, '07, after the uranium price really started to go on a tear, then you started to see a lot of the hedge funds come in and buy the physical price and they just took it to the stratosphere. And then, the global financial crisis came and it was shoot first, ask questions later, and that's when these hedge funds were getting liquidated, not necessarily liquidated, but just getting withdrawals across the board, even if you had a good year you were getting some withdrawals. Uranium sitting in physical storage wasn't something that they needed to hold on to.

Mike Alkin: So you see the price come in, and I look to today, and I say, "Wow there's 58 reactors under construction and, with the exception of let's say Salamanca in Spain and a few of the other smaller ISR mines in the US, but for real size to come on, as I look out as these reactors come on and hit the grid, when I look at real size mines that need to come on to be able to meet this demand over the next several years, you need a much higher uranium price. So, back then, 23 reactors, new supply coming online, Cigar Lake

was around the corner, and today you don't have that. So can you compare and contrast, if you look back through the two, what we may say are bottoms?

Rob Chang: Between the two, certainly there was a lot more of a rosier outlook back then, because of course there wasn't any big run-ups, there wasn't that cynicism that now follows uranium around from the many, many people who have lost money on the first go-around. So that's why there's been a bit of longer take-off runways, because it's just more people to convince and fewer people who really just jump in with you before. But that's in any type of hindsight goal type of investment. The difference between the two really, is a few things I wanted to point out, and forgive me for maybe not necessarily answering your question directly when I say this, is.

Rob Chang: One of the things I always wanted to point out is primary supply has always been below global demand. It's been like that for decades, so when people complain or point out the fact that there is a lot of inventory right now, which is one of the reasons why prices or the interest in the uranium sector hasn't been quite as strong. They point it to the large inventory levels are out there. But, if we agree, and it's factual that primary supply has been less than consumption for decades now, by and large that means inventory levels were significantly higher a decade ago. But what happened a decade ago? We saw the massive run-up to plus 100, into the mid-100's really. So if inventory levels were higher back then, why is it worse now, because inventory by definition has to be smaller, given that supply has always been less, or primary production has been less throughout the many years since then?

Rob Chang: So that's one of the arguments always had in the ridiculousness of the inventory argument. I do agree that inventory matters, but it didn't matter 10 years ago, so why does it matter so much now? And that's always been one of my bigger issues there. And to go back to answer your question, that's one of the main fundamental standing points I have when I say that uranium has to be $70, $80 plus in order for global supply to meet global demand. There is so much additional supply coming on, and you alluded to it, from all over, in particular China but from all over, and when you look at the [inaudible 00:22:33] -

Mike Alkin: You mean additional demand, is that what you're-

Rob Chang: Yeah, sorry, sorry, my correction. When you look at the additional demand coming on, and you look at what's available for supply, there is not much that can produce in size, and when I say size,

you're looking at ten million pounds per year, twenty million pounds per year, that's production. It's really only the couple of mines that Cameco have shut down, and that's pretty much it. If anything, the ones that could do it before, the Rössings of the world are now winding down. You do have a few mines maybe in Africa that could possibly turn on, but that's the key problem.

Rob Chang: In order for the large mines in Africa, which is what's going to be needed for supply to meet demand, to turn on, with their cost structure, they're gonna need an incentive price in the 70 to 80 dollar range because their all-in sustaining costs legitimately are probably in the 50 to 60 dollar range, really. I know everyone comes out with studies that show 30's, 40's, the reality is, numbers are usually much higher in real life-

Mike Alkin: Well, Rob, you know what's funny? At the WNA last week, you look at the companies and they all talk about their costs, and everyone is in the lowest decile. I wanna meet the guy, the producer that's not, right? It's kind of funny when you look at it, real low quartile, low decile producers, sure you are. And then you look at, but it's so interesting because the costs that they are, I think they overshoot on the downside during a downturn, but their costs are generally higher than what they are, and obviously there's your C1 cash costs, then there's your all-in sustaining costs, and obviously on the board of an ISR miner, in-situ recovery miner, you understand this that there are well field development costs, you have to pay for the header houses, there are well heads that need to be replaced, right?

Mike Alkin: There's a lot of stuff that goes into it, and so it's fascinating to me when I look at the sector and, like you, I'm public on Twitter, and I talk a lot about it. I run a uranium fund, so I get bombarded with stuff, and I get snippets of information. But, like you, and on the sell side, I know you've modeled out all the reactors and all this primary supply, the secondary supply. When you do that math, and you do your own math, not the WNA math that forecasts all these mines that we just talked about coming into production regardless of price, but when you do your own math, and you lay it out and you do closures and really aggressive closures around the world, as you said there's not enough primary mine supply, and these things need to come on, and the costs are higher on an all-in sustaining basis.

Mike Alkin: So, for me, that's been one of the, over the last three years and really deep-diving into the industry, is the disconnect between what really is the economic reality, and the perceived reality. And I have found that to be a great informational void that creates, I think, asymmetry in the stocks. Right? And it's complicated, and

I get the question a lot, which is, "Hey where'd you get all this information?" Okay, you wanna sit down and model out every reactor? It takes you a long time. That's what, it takes time, and where all the mines in the world, or the prospective mines in the world, or what the utilization rates are in the mines. Now guys like you, by the way, when you leave, that's a big void when you leave the sell side, because you were able to update people on that type of stuff.

Mike Alkin: So, these new mines that need to come on, I mean talk about your experience, cause I know how I view it, when you're bringing on a ten million pound mine, it takes years and years and years, and that has been stopping now. I mean, you've seen people really just shut that down, all that timelines, the permitting, the licensing. Can you talk about how long it takes to bring on one of these mines?

Rob Chang: The uranium is probably the most regulated commodity in the world, given that it can be used for defense reasons and a variety of other reasons, and the fact that it's radioactive, there are safety issues. So it likely is the most heavily regulated, and by definition, by extension rather, the most difficult to put into production. So, from my perspective, from greenfield discovery to actually going into production, generally speaking I would say it's 10 years, maybe more. If it's in the US, possibly longer, given that the US is very difficult to permit, although Trump has made some decent headway going that way, and that's one of the things he has done well.

Rob Chang: Those who believe that they can put something into production within four years to seven years, maybe seven years possible if everything goes well, but I think it's still a stretch, because you also have aboriginal/native issues in the area, and there are almost always going to be some of that to deal with. The exception to that, of course, are the countries where those issues don't really exist, so the Kazakhstans, the Africas, where those regulatory issues are not as important, quote unquote, or not as tightly followed, or could be solved from various other means, let me just put it that way.

Rob Chang: But, in general, in your first world or your ideal locations, North America type of locations, it'll take a long time for those to go in production. And that's something that investors really need to understand is, sure management could possibly say "We think we can go into production five to seven years from now" but it's not really that likely. The exception is if it's already producing, so if you have a [curve 00:28:20] producer and it ... The easiest one,

really, in my opinion, would be something in Kazakhstan where you don't really need to do much, and you don't really need to have any checks and balances, and pretty much you can put it into production as long as it's economic. That's kind of the loosey-goosey way of saying Kazakhstan could probably do it quickly, Africa in the same sense.

Rob Chang: If you look at North America, you're probably looking at an ISR type of producer. Those could probably do it quicker because there's less capital involved, but then on the flip side there's still a lot of regulation that you have to deal with, so they could be good to go, but then another two or three years happen because they have to go back and forth with the EPA, the NRA, the whole bit. The exception to that is if they're already producing, and then it's kind of a [bullpen 00:28:59] amendment to a current agreement. That's when it can happen pretty quickly, the six months to one year time frames, but that's really probably only with an ISR. If you're going conventional, I struggle to see anyone doing it faster than seven years from greenfield to ten years.

Mike Alkin: No I agree, and you just brought up Kazakhstan. You know, it's interesting with Kazakhstan, and probably for me, where I depart with a lot of the consensus is, we looked at Kazakhstan, I spent time over the years modeling out those mines over there and the CAPEX that has been spent in Kazakhstan has declined monumentally since 2013. And when people think about the Kazakhs, they think, "Oh the lowest decile, they produce at 10 bucks a pound, 12 bucks a pound, and that's it."

Mike Alkin: Well, that is, I think, completely inaccurate, and because of the mining they do, the ISR mining, and as I just mentioned earlier and you know from Ur-energy and the industry, that there's massive costs involved every year. There's those well field development costs, further exploration, you gotta build out the mine further, and paying for the header houses, and when you look at the CAPEX decline, which is down probably 80% or so, there's a lot of catch-up spending that needs to be done. And some of those mines are getting very, very long in the tooth and production is down from those tools, from those mines, and when you don't reinvest the capital in an ISR mine, it's hard to stay ahead of your decline curve.

Mike Alkin: And so when I look at all of that stuff coming out of Kazakhstan, we see the production cuts and the parlor game that people play as well. At 35, they'll just turn their spickets on. I argue these production cuts, not necessarily even of their will, sure they want to manage the market and as a 41% market share player, they should be able to influence it, but I go a step further and say I

think some of these production cuts are not of their will, that the lack of spending is catching up to them, is kind of how I've been thinking about it, and yes their nameplate capacities is high, how much can they ultimately produce, but if you're not spending to stay ahead of that and reinvesting there, I think it catches up to you.

Mike Alkin: So I think Kazakh production could be down pretty meaningfully over the next several years, and the other thing that I think, people talk about the cost to produce, that's their cash costs, but they have all of those other costs. They do have some reclamation, people always think, "Oh, they don't reclaim anything, it's Kazakhstan, they don't care about the environment." There are reclamation costs, there's well field development costs are high, and when I go in and look at the all-in sustaining costs per pound, there are many of those mines that are well into the $20 per pound range, and there's an incentive margin, and I think a lot of times, I'd like your view on this, I hear people say, "Oh well here's their costs" and they think that if the price of uranium gets there, that's what their gonna produce it for. I mean, they're a business. Everyone says, "Well, I'm talking about Kazakhstan, but they're not a business" but they're gonna be a business if they go public. But there needs to be incentive margins, so talk about how miners think about that.

Rob Chang: Right, you bring up so many things, there's at least four different tangents I could take off of what you just said. It's-

Mike Alkin: Keep going, go, run, run, run, Rob, run.

Rob Chang: I love talking about it, and just as an aside, you clearly are well-connected and know what you're talking about, because you are saying things that not many people know about, and I'm frankly impressed. So that's nice to hear as well. A couple of things, I'll try to rhyme off as many things as I can, because there's quite a many things I wanna chat about there. ISR sustaining costs certainly, like any others, have been declining because people are trying to save money. I do want to put that relative to conventional, it's still lower though, so it's not as crippling, and that's the reason why you see ISR miners still produce as more and more conventional miners not.

Rob Chang: In terms of just talking about Kazakhstan, I know I'll go back to costs in a second because I definitely wanna talk about that. There is a belief out there, that Kazakhstan is declining. They haven't been telling anyone that, but it's declining because the

current sands that they're mining from are depleting, which absolutely makes sense. And I agree with your point, everyone is not spending that much money, because there's not really that much margin to gain or breaking even on, most companies are actually losing money, so they are not really reinvesting to find the additional sand that will help them continue production going forward. So they're just doing a natural decline there as well.

Rob Chang: There's also a conversation I remember having with someone a while ago saying that the current level of sand which are very economic are pretty much depleting, and that the next level of sand is substantially deeper, and will cost a lot more money for them to mine from, they just haven't gotten there yet. Well, and they haven't spent the money to get there, and when they do the operating costs will be higher simply because it's deeper. So that's the other thing to consider, we'll see about when that happens, but we need to have higher incentive price to even have them do the exploration point. And also again Kazakhstan, much like everyone else, everyone talks streamline costs because that's the lowest number, it makes everyone look good, and if you don't say anything, I won't say anything, and we'll all [crosstalk 00:34:20] great low number that's super low.

Rob Chang: Which frankly is a bit of a plug for Ur-energy in a sense, because when I was an analyst, they were the first one to really come out and aggressively break down the entire cost numbers, so that everyone can see transparently every part of the cost number, and frankly it's because they have the best cost structure, they can get away with it. But having that type of transparency is fantastic and everyone should really be only looking at all-in sustaining costs, because that's really the only number that matters. All the other costs are kind of BS, because if you can't run the company, who cares? It's great that this one location is making money, but if the whole thing doesn't survive, there's no point. So all-in sustaining costs matter.

Rob Chang: Going back into talking about costs, specifically. Costs from Company A versus Company B are not the same thing. There are various reasons why these numbers are different. One is whoever's doing the study, yes they are third-party, but let's be honest, these guys are paid to provide studies, very rarely do you see studies come out where the numbers show that the thing is not economic, right? Let's just call it what it is-

Mike Alkin: You don't see that make the light of day if it did, so.

Rob Chang: Exactly, so these guys are incentivized to have a number that works, otherwise they will not get more business, more people go to them, so yes it has to be reasonable, yes it has to be within 40% or 25% based on the rules of what it should be, and those are really wide numbers anyway, to meet a certain type of limitations. But yeah, when people point to studies to say, "Well that's what the study number says," well, that's great, but look at what the other operations surrounding them are doing, and that's probably the more realistic number. So that's one of the things I wanna say.

Rob Chang: Two, there's a lot of way one can actually hide where these costs are. I'm not gonna name company names because I just don't wanna do that, but I know some miners have reported very low costs, but that's because they took massive wipe downs on all sorts of things prior to that, so they took a gigantic bath so their cost numbers are lower because they basically have written off a whole bunch of other things that they should have been reporting, that they would have normally reported, but because they've written it all off, it no longer shows up on their bulks [crosstalk 00:36:29] costs. So that's one.

Rob Chang: The other is just frankly, if it's a company that is not in production, they can hide behind the fact that they're not in production, or they haven't produced in a long time. So the numbers that they have are no longer relevant to what's currently happening right now. The ones that matter and the ones to really focus on are the ones that are currently operating. Look at their numbers and realize that there is a reason why they're still operating, so if someone else says that they're just as good, they should be operating as well. That means, just by simple logical truth, just by comparing that, by definition the one that is not producing has something with it that is not quite as good as the one that is operating, otherwise it would be operating as well. So that's just common sense that people need to look at when they look at these numbers, because sometimes there's a fairy tale and there's some that's a reality, and the reality is the one that gets audited, get checked, those are real numbers.

Mike Alkin: So let's talk art versus science here, of investing. And you are active on Twitter, Rob is @omnipotent32 is his Twitter handle, I am footnotesfirst, and Rob chimes in with fantastic stuff. But watching, monitoring the Twitter flow as I see, and I see people talking about individual companies, and as I mentioned earlier, I don't. Oh, I mentioned earlier in the podcast before you came on, I think, I don't talk about the individual names. But I'm happy to share whatever macro insights I might have.

Mike Alkin: But, a lot of stuff I see is management said and the presentation says and management said, and now Rob you may not know this but the first half of my 20 plus year career in the hedge fund world, I was a dedicated short seller. So I wake up in the morning looking for things that possibly are not accurate, and that's how I originally came toward at the uranium case, I said, "Well it's gotten destroyed, let me see if I can prove the bare case, if I can I'll go home, cause I'm not gonna short something down 95%." And I couldn't, but ...

Mike Alkin: A lot of times, and I see it on Twitter, when people are investing in any company, any industry, you gotta do your own work, number one, and you've gotta understand, and not everyone has the skill or interest or desire to do that, but, especially in the mining space, where I often say to people, "Mining is similar to the biotech industry where they're issuing equity a lot, and they're raising money all the time." And you can't raise money, for biotechs they're doing it cause they gotta do the next round of R&D, research and development, and for miners they gotta go drill, they gotta go find stuff, and so you always gotta be a little careful when you're looking at any company, right, cause they do put their best foot forward in these presentations. I mean, I get to know management teams and I like many of them personally, but I'm always kind of stepping back and saying "Okay, does this make sense?" I mean you've been around this, the mining industry, for a long time, so I mean what would you say to listeners who are not professional investors, but they kinda get the thesis? How do you avoid some of the land mines that are out there?

Rob Chang: That's very difficult for a retail investor to access, frankly. I've had this conversation with a few people on Twitter, more offline, but I have. The problem many people run into is, especially in an opaque business, as you mentioned for uranium, there is a lot of knowledge that is not readily available, and there's a lot of knowledge out there where people are just not willing to share it because either they make money off of it on their own so they're not gonna share it for free, or there's no incentive for them to share it because it could their own positions in some way, shape or form. So it is incredibly difficult and I actually feel sorry for the regular investor looking at it, because they just don't have this access, they can't just call up Company A or Supplier B or Utility C like I can, just to find out the information because they'll tell me and won't [crosstalk 00:40:47] so to speak.

Rob Chang: That being said, my number one suggestion would be stop looking at the internet for suggestions. Everyone has a reason for saying

what they say, probably including me, so always find out how someone is getting paid when they tell you something. That's the first thing I say because I see a lot of stuff where I just cringe thinking "I can't believe someone is recommending A because of B," because I think it's just frankly not even truthful. But they say it, and people believe it, because they're out there talking and if enough people say it or if some people say it and they look like they're reputable, they go for it.

Mike Alkin: The power of incentives, right? You gotta understand what people are motivated by.

Rob Chang: Exactly, so even with my own, I don't even give tips, but even my own suggestions, people should try to figure out if I have any possible reason to say certain things. I'd like to think I don't, but still, investigate it cause you should. But it's important, so I think investors should really look at the company itself and look at the financials, look at what's actually reported there, and then compare to what everyone else is doing in the area. If Company A is saying they're doing incredibly well, and Company B right beside them has higher numbers, why is A better than B? Don't just believe the line that A's going to be better than B because it is, there's gotta be a reason. Is the grade better, or if it's ISR, is the mobility of the minerals better, or is ... there's gotta be a reason, right?

Rob Chang: At the end of the day it's all costs, in my opinion, and grade matters. So companies like Fission and NexGen with the really high grades look great. Cameco looks great, because they have high grades, that solves everything. But, other than that, there has to be other reasons to why one asset is usually pretty good. And that actually lends itself to the whole acquisition comment, because I see people talking about "Well, X Company just bought Y asset, this is fantastic, this should make the company much stronger." Well, as a former analyst I always think "Well someone has to be selling this thing." So [crosstalk 00:42:57] right? Why is Company X so much smarter than Company Z, who's selling it?

Rob Chang: Company Z has more information, they own it, so why are they selling it? There's gotta be a reason why they're selling it, and that's really important to find out. If Z is in trouble and needs to get rid of assets, sure, but they would still not get rid of their best asset, they'd get rid of their worst ones if they can, but maybe they know they won't be able to sell it, but that thinking process has to go through, as opposed to just thinking "Oh great, they bought this? Instant ten million dollar extra valuation, instant fifty million

dollar extra valuation." It doesn't work that way, so it has to make a lot of sense, and I think that's something that investors really need to do, is dig in, try to find someone they trust who has no agenda, and see what they think, and definitely look at what others in the area are doing and compare.

Rob Chang: One of the things I always ask, or one of the best questions I learned from one of my colleagues when I was on the buyer side was, you speak with the CEO of Company A, you ask them, "What is your favorite company outside of yours in the space?" And then they can get a chance to talk about some other guys, and then you get to hear a more truthful opinion about other people. Alright, that's a great question. If you have access to management, ask them that question.

Mike Alkin: Rob, that's one of the best questions to ask, and on a couple of fronts. A, you get to see their knowledge of the industry, and it's such a wide spectrum in the uranium space. There are some guys I talk to who can tell you about many of the projects that their competitors, if they're in the same area, or other parts of the world. Then there are other guys who you can tell just aren't engaged, right? And it's such a great barometer on how to do that. And then there's other guys who are out there just slamming every other company, and it's interesting, I see that more in industries, and I noticed it in uranium early on, years ago when I started looking at and talking to the CEOs. They're fighting, in a downturn as brutal as this, they're all fighting for that last bit of investor capital one to keep them afloat. And so it all, I noticed, God it's become a sport. They all beat the crap out of each other, saying how everyone else's projects suck, and, but your question I think is just spot on in terms of ask them who they like, yep, that's a great point.

Mike Alkin: One of the things we didn't touch on, and I'd like to kick around and so, some of the things that, when I started looking at the industry back in '15, now I had looked at it throughout my career, but not intimately. Looked at it in '07, at the peak, from the short perspective, clearly missed that. But I was looking at 15 different industries and had a lot going on, I had an analyst working for me, and it just wasn't a focus. Looked at it in post-Fukushima as a potential wrong early on after Fukushima went down and I didn't get involved, and so, but as I started peeling this onion back, and I started looking at it, and one of the things that became clear to me was a lot of commentators on the industry were not talking about secondary supply.

Mike Alkin: It was easy to find primary mine supply information, but the big swing factor, so you have, you mentioned it earlier, you have primary mine supply has trailed demand for years and years and years, decades, many decades. And so, the balance has filled up from either inventory or secondary sources of supply, and one of the big secondary sources, as you know, obviously, from '93 to 2013 was the Megatons to Megawatts Program, where the Russians were down-blending highly enriched uranium in 22,000 intra-continental ballistic missiles to low enriched uranium and selling it to the Americans. In some years, that was as high as 20 million pounds, and in the world of uranium and demand supply, that's a big number, and so post-Fukushima you still had a couple of years where that was pounding the market where the Japanese reactors went offline.

Mike Alkin: And then, you have some MOX, mixed oxide fuel, that is also source of secondary supply. For a while, there was some Japanese inventories hitting the market, but then you had the Department of Energy in the US came for the clean-up of two of their gaseous diffusion plants that were closed, and they didn't have it as a line item in their budget, so they started to sell some excess uranium into the market. But the big 800 pound gorilla was at the enrichment plant, where they were able to underfeed, and just basically I'll shortcut this for those of you listening for the first time.

Mike Alkin: The nuclear fuel cycle goes from: comes out of the ground; it gets processed into something called yellow cake; it gets sent off to a converter, turned into UF6; then it goes to get enriched so that ... 4% or so for nuclear power, 90% and above for making bombs. But it's there that has created a real headache for investors for uranium mining companies, it's created a real problem and there's a process ... The way the contracts work is the uranium miners deliver uranium into the converter, and the only thing they care about is, at the end, that the nuclear power plant gets the amount of uranium in the form of fabricated fuel pallets that they need. And the nuclear power plant only cares that they get those five billion pounds a year or whatever number it is that they're using.

Mike Alkin: So, but in that process, the way the technology works at the centrifuge is, and Rob you know all this, but I'm just getting there for those who don't know it. The enrichment plant, if they have some slack demand, and they work off of a unit called a separative work unit, it's called SWU, and if they have some excess capacity, they can spin those centrifuges longer, and when they're enriching the uranium, they actually can extract some more enriched

uranium product, some end product, that they can then sell off into the nuclear power plant scene, sell their fabricators. And so they basically, think about it like an orange juice machine, if you needed a gallon, you'd squeeze a bunch of oranges. If you needed a little bit more, you could keep squeezing and getting some more. Well, when they have this excess capacity and excess separate work units, they have the ability to do that. And there were some years where it was putting 20, 25 million pounds a year into the market.

Mike Alkin: And an enrichment plant has very, very costs to build and very, very low costs to operate. Very low cost of electricity, especially with the new technology, the centrifuge technology. I know a gaseous diffusion had 10x the amount of electricity cost. So this secondary source of supply has been pounding the market, and now we're starting to see, and one of the things I spend a lot of my time on, is understanding that excess source. Now I believe that, because of where the tail assays are, which is where they're spinning that uranium down to, and I won't get into a physics conversation here, but you're at the lower bounds of where you can go.

Mike Alkin: An Eastern centrifuge, the Russians, their centrifuges are designed to go down to 0.1, and the Western centrifuge can go to 0.17, and when you look at market shares, you're sitting at about 0.14 if you blend those two. And the tail assays today are sitting at 0.15. So they can't go much lower from spinning a tail's assays, and then if they were to try and even go lower, if they can figure a way to do it, the lower you go down on a tail assays, the more SWU capacity you use. And I think that's why we've seen SWU, which was as high as 175 to 200 back during the peak, in the heyday, now it's sitting in the high 30's. So, very long winded way of saying the biggest source of secondary supply, which has been underfeeding, you can make a very strong argument I think that that's somewhat starting to either abate, or has at least peaked. I think it's abating and I think it's gonna come down.

Mike Alkin: But how come, Rob, and I know you know this, and you've talked about it in the past, but why do you think, when I started three years and I was really diving into this space, why did I have such a hard time from other commentators, not talking about the significant source of excess supply into the market? What is it about the enrichment process that seemed to get lost on the market during this long downturn?

Rob Chang: I think the long explanation that you just did is the reason why it's difficult for many people to understand it. It's because it's

technical, it requires some time to get your head around it, and for investors who may not be used to it, or not maybe as committed to trying to figure out, it's a difficult concept to understand. I'm glad you're using the juice example because I heard that many years ago and I've used it ever since, and it's been a great tool for me to tell people how this whole thing works, by using number of oranges and how much juice you can get out of it to explain it.

Mike Alkin: It really does, it kinda breaks it down, right? Cause I've had people say to me, "Explain the physics." First of all, I'm not a physicist, but second of all, I spend enough time in it to understand, hey this is kinda how it works I think. But it is a fascinating thing, and because the fuel cycle has so many stages and it's so complicated that there are ways to really just pick off, if you will, sentiment and consensus.

Mike Alkin: And what struck me when I really first started looking at space three years ago, what I liked was, at one point in time, in '07 I think, the market [inaudible 00:52:47] industry was 130 billion, then it was 60 billion around Fukushima, something crazy. And then, when I started looking at it, it was four and a half billion dollars, with one company in half the market cap, and what that told me was there's not a hedge fund on the planet, really, of any size, and by size I'm talking a billion, two billion plus, that could invest in this sector. Because they would have to own the whole company, right? And you know this from being on the sell side, right? During the boom years, you're gonna see the big hedge funds come out and they're gonna be having their analysts spending time getting up to speed, but during a downturn, and the market caps of the companies are so small, they can't own enough of the company to make a difference, so they disappear.

Mike Alkin: And then on your smaller hedge funds, unless you're a natural resource fund, and I know you dealt with those up in Canada, but if you're a generalist hedge fund, which most are, there's many more of them than there are natural resource funds, and you're running fifty, a hundred, two hundred million dollars and you're a generalist fund, you're not in the business of catching falling knives, and you don't have the manpower to devote to learning this very complicated topic. And during a downturn, there were only a few guys left. You were one of the last guys in the sell side who understood this and were talking and educating people. A lot of the desks had closed, a lot of the trading desks, a lot of sell side analysts had gone, and so there's this void of information. But when you think about secondary supply, I mean, when you're looking at it, and I know from watching your twitter feed you're

rather bullish, how are you thinking about secondary supply in your mental calculus?

Rob Chang: Yeah, I do follow it pretty closely, and fortunately for me but unfortunately for others, I rely heavily on my contacts to get a good sense of where the numbers, because it's the most opaque of the entire business, is the secondary supply situation. I do follow it. I do agree with you, I think the enrichment source has pretty much peaked or will no longer be as big of an issue as it was, just based on math and based on science, it just cannot squeeze out any more than it is currently doing right now. And I do believe that we're going to have significant increase in demand that will overwhelm supply from any direction, primary or secondary. But I believe that there is going to be a bit of a wind down, not only just from the enrichment side, but the DOE selling of the material has abated, has significantly declined-

Mike Alkin: Yeah, they've put that on hiatus.

Rob Chang: Yes, Which is just fantastic, getting us the annual or semi-annual kick in the pants that they would give us all the time by selling a whole bunch. So I think secondary supplies are slowing down, and actually, and this isn't specifically related to what you said, but it's sort of the evidence of a supply source, many people think that Japan, the inventory that they have could be sold back out into the market very easily and impact the market. It's not as simple as people think, and I wanted to highlight that. Reason being is that utilities usually hold it in fabricated fuel assemblies, and one fuel assembly doesn't necessarily fit into another one, generally speaking you can't just take one and throw it into another, so if someone was really willing to buy the uranium that a Japanese utility may be selling if they had to, they would actually have to incur the additional cost of not only getting it from them, but disassembling the entire thing and refabricating the entire thing.

Rob Chang: So, if the uranium price is low, you could argue that you might as well just buy it from the regular source and not have to deal with the Japanese inventories, it'll really end up costing a lot more, unless the Japanese utilities were willing to sell it for a major discount, which I guess is possible, but they see things the same way we do, in that we believe that uranium prices are going to be significantly higher in the future, so unless you're in complete distress, it's unlikely they'd be willing to sell it at a big discount right now, knowing that in five, six years, they'd have to buy it back at significantly higher prices later. But that's a chance I just took on that you might not be wanting me to take.

Mike Alkin: So, last question for you Rob, is Section 232, and I have to ask, you're on the board of Ur-energy and are one of the two petitioners that petitioned the United States Department of Commerce on the grounds of national security from Section 232, which was put on the books in 1962 I believe it was, where if an industry's in distress and you can make the case that there's national security interests at heart, then you should be able to get some relief. And Energy Fuels and Ur-energy petitioned the Department of Commerce, and their argument is the US consumes 30% of the world's nuclear power, it's 20% of our electric grid, and we import 98% of the uranium that we use, and if there's not some sort of ... and we import it from state-owned entities that are selling at lower costs. What's your view now on 232, and Commerce has until April to make a decision, but can you talk your view of Section 232 and where it goes from here?

Rob Chang: Right, I can't speak too much into detail, because it is something that we're live on and I'd rather defer to Jeff to speak on behalf of Ur-energy and I am on the board. On a more higher level, I do agree with the concepts of 232. And just looking at security of supply, just making this more of a security issue, when you look at global uranium production, one could argue that Russia has influence to up to about half of global production, if you count its current production and all the former states or countries that Russia has some influence over, you could argue that Russia can control up to 50%, if not more. And for Americans who are concerned with something like that, protecting domestic production would certainly be top of the list in my mind, so I believe that it is relevant.

Rob Chang: It may not be the most economic thing right now to do, because you are supporting an industry that's not as economic, but when you look at the potential of someone possibly, not saying it's easy, but it's possible if they could influence 60% of uranium to suddenly be not available, that'd be pretty crippling. Especially 20% of US power, so I think it makes a lot of sense.

Mike Alkin: Great, real quick, before I let you go, I see, you are the CFO of a blockchain company. By the way, I know nothing about cryptos, blockchain ... The publisher of the podcast, Frank Curzio at Curzio Research, he publishes this podcast, and I know Frank has a newsletter he calls Curzio Crypto Intelligence I think it is, and he's always talking to me, he's excited about blockchain and all this stuff, and I'm like "Yeah Frank," I get a blank look, but I know he's working on so many interesting things. Why blockchain and what are you doing there?

Rob Chang: Well, blockchain I'm excited about, I think we're sitting at the same point as the beginning of the internet, in terms of how transformational internet was to the world. I believe blockchain with its ledger system and the disperseness, is distributed ledger, rather, I'm not saying [crosstalk 01:00:09] distributed ledger system where security can be spread out and there's no centralized control. I think that will be transformational for all sorts of industries, for security reasons, for anything from potentially ordering an Uber to controlling supply chains to securing currencies, which is what we're seeing the most active use right now. I just think that this technology will transform the world and right now we're at the first or second inning of that, maybe just the first inning of that. With my own company via blockchain I am the CFO but we're unique in that we have a mining operation as far as a few investments in exchanges as well as accounting and also a smart contract system, which is a way for payments to be exchanged universally, without having to negotiate on a contract by contract basis, as well as we have an exchange. So it's exciting given that we're on the market for supplied business, companies within that business so I'm excited. And I'd like to think that I'm actually connected into two of the most interesting sectors, being blockchain and uranium, so hopefully people will take off.

Mike Alkin: That's great, well good luck with that, and I really appreciate your time. It was good to catch up and talk uranium.

Rob Chang: It was a pleasure, any time.

Mike Alkin: Thanks Rob. Okay, I hope you enjoyed the conversation with Rob Chang, long time veteran of the uranium space and very knowledgeable guy about understanding the industry and he's seen boom and bust before, he's seen it I this industry. I apologize if you heard any background noise, so I have a, those of you who don't know I'm technologically clueless for the most part, and my computer was acting up on me, so I took it to a part of my home where I was on Wi-Fi and not the hooked into the wall, and so it could have been a little choppy. You might have heard my dog, my 7 year old golden retriever Annie, running around, and I apologize if you heard that. And you might have heard my house phone ringing, cause I don't know how to shut it off, so if you can get past that, I hope you enjoyed the show.

Mike Alkin: I just wanted to let you know that I am the co-founder and chief investment officer at Sachem Cove Partners LLC, and due to industry regulations I don't discuss any of Sachem Cove's funds on this podcast, and all the opinions expressed by the podcast

participants are solely their own opinions and do not necessarily reflect the opinion of Sachem Cove or its affiliates. And this podcast is for informational purposes only, and it should not be relied upon as the basis for investment decisions. Clients and/or affiliates of Sachem Cove Partners may maintain positions and securities discussed on this podcast.

Mike Alkin: And I will be back next week, I don't think we'll be speaking uranium but we will have another interesting guest. So I hope you have a great week and, like I said, if I can recommend ... Oh, before I forget, I watched the Jack Ryan series on Amazon, it's awesome. Really liked it. I'm a big Jack Ryan ... I'm a big fan of the whole series, but it's eight episodes. It's actually season one, they're coming out with another one, so I definitely recommend it, it's a great watch. So have a great week, and I'll talk to you next week. Thanks.

Announcer: The information presented on Talking Stocks Over a Beer is the opinion of its host and guests. You should not base your investment decisions solely on this broadcast. Remember, it's your money and your responsibility.