

Report Date: 10/23/2025
Company: Ramaco Resources Inc.
Ticker: METC US
Industry: Rare earths “mining”
Stock Price (USD): \$39.82
Market Cap (USD): \$2.36 billion



We Believe METC’s Brook Mine Is a Hoax and Management Has Pumped the Stock with a Potemkin Mine and a Fantasy Economic Assessment

- We are short Ramaco Resources (METC) as we believe it has manipulated key data to make its rare earths project, Brook Mine, appear profitable to investors. We spoke to 15 experts and veterans of the mining industry, including 6 PhDs, with over 400 years of combined industry experience. Not one of them thought Brook Mine was economically feasible. Some did not mince words, describing the project as a “*pump and dump*”, “*modern day fraud*”, “*shit show*”, and “*science project.*”¹
- We would say that Brook Mine is digging a worthless hole in the ground, but drone footage we have taken weekly¹ reveals that METC isn’t even actively digging despite a “grand opening” in mid-July where the CEO ceremoniously shoveled coal with state and federal officials. The ceremonial pile of coal which was used for the opening along with the cones that were put out for the event remain in place as seen below. The heavy machinery METC flexed at its grand opening for DOE Secretary, Chris Wright, and Fox News is nowhere to be found.



¹ See Appendix A for the bios of the experts we spoke with. All transcripts of our conversations with experts have been lightly edited for clarity.

- CEO Randall Atkins said in July that pilot plant construction would begin “*later this summer*”² and said in a September shareholder letter that the pilot plant was “*expected to begin operation later this year.*” Yet even though they raised \$200 million, METC didn’t bother to get started until today. We think this is an empty show, just like the grand opening of the Brook Mine, done just before their earnings call on Tuesday, Oct 28th, so they would have something to talk about while their competitors land real government funding and JVs. Just last Friday, there was nothing going on at the proposed location site other than a few stakes in the ground as seen below.



- Expert 9, an advisor to the U.S. government on rare earth policy, when describing Brook Mine, said, “*This looks, smells, and walks like fraud. It talks like fraud. It probably is fraud.*” METC’s Brook Mine projects 59% of revenue will come from selling scandium oxide (\$611 million in annual sales)³ which is **25x the size of the global market**.⁴ Expert 2, with over 40 years of mining experience and considered by peers to be a leading expert in rare earths, told us: “*Scandium alone accounts for 59% of the [Brook Mine’s projected] total revenue. So, all the sudden, you go from a rare earth mine to a scandium, gallium, germanium mine...that doesn’t make sense. Those aren’t the rare earths that the U.S. is looking for.*” We believe METC had no choice but to “discover” critical minerals such as scandium due to a catastrophic collapse in its share price after [our report in December 2023](#) exposing how the rare earths at Brook Mine had concentrations that were less than the average abundance of the Earth’s outer crust.
- Expert 2 explained that “*the world’s consumption of scandium is very, very low. So, there’s very little production. The need and use for scandium is very low... it’s very limited, a very niche market.*” Expert 1 who has over 40 years of mining experience and is a thought leader on rare earths described the global demand for scandium as abysmal, “*we need one semi-truckload [for the world’s annual scandium demand].*”
- Management claims scandium oxide has experienced “*significant price increases*” recently as justification for including it in the Brook Mine’s revenue projection. *This is false.* Scandium oxide prices have apparently declined by 84% since METC began exploring rare earths at Brook Mine in 2019.⁵ Expert 9 told us, “*If they’re [METC] chasing scandium, they’re chasing a ghost...I went to a scandium conference. It was just on scandium and there were some incredible presentations that just showed the complete meltdown in expectations.*”

- Expert 11 told us that, *“a lot of the prices... that were used in that Fluor report are probably 400% over what they should be, okay, 400%, 600%.”* METC asserts that there is not a *“reliable western index for scandium”* as their justification for claiming they will sell scandium oxide for \$3,750/kilogram. However, we were told by someone familiar with the matter that a recent deal marketing non-Chinese scandium oxide did not even receive interest from buyers at ~\$700/kilogram. Sumitomo Metal Mining’s Philippines facility is capable of singlehandedly supplying 85% of the world’s scandium oxide demand at a price of <\$1,100/kilogram.⁶ Rio Tinto’s Quebec facility and Australian miner, Sunrise Energy Metals, could easily cover the additional demand if China continues to control the export of scandium at a much more competitive price than METC can. Expert 14 explained that *“Scandium has a demand problem, not a supply problem.”* Expert 9 told us *“Every single player in the scandium market was burned because everybody was counting on \$1,000 per kilogram, \$800 per kilogram”* and prices of scandium oxide have dropped below that threshold. Meanwhile, METC is continuing to tell investors it can fetch \$3,750 per kilogram.
- Based on our conversations with several experts, the U.S. (and the rest of the world) do not need China to supply them with scandium oxide. There are several projects outside of China which we point to in our report which offer a significantly cheaper potential supply of scandium oxide than METC could ever offer. As Expert 7 told us, *“there’s really no demand for it [scandium], so no one bothers to produce it.”*
- The Trump administration has just inked a deal with Australia for both countries to invest \$1 billion each in rare earth mining projects in a move that should increase the supply of non-Chinese rare earths dramatically. The Export-Import Bank later announced seven letters of interest for projects, including one for Sunrise Energy Metals, which has far superior grades of scandium compared to METC. The US is funding METC’s competitors with hundreds of millions including a joint venture featuring NioCorp (NASDAQ: NB) [announced today](#) with Lockheed Martin and the Department of War, while METC apparently isn’t even digging at its Potemkin mine.
- Expert 9 told us that *“It’s obvious they [METC] are lying and playing loose and hard with, you know, with everything.”* Here is an obvious lie: METC’s website claimed China controls 100% of the market share for scandium.⁷ Expert 10 tell us we *“can’t really use [METC’s] scandium numbers”* explaining that they think it *“skews the value.”* Expert 2 touches on this, saying *“In the olden days, the frauds were pretty straightforward. You salt the core. You add gold to it. Today, they play a different game...They’re saying, yes, we think that this is economic. They’re not saying that it is. They’re saying we think it is. Well, at some point, it’s going to come out where it’s not economic”*
- The bullshit METC is spewing hasn’t gone unnoticed in the rare earths’ community: Expert 11 reported, *“There’s nobody I’ve talked to that thinks that this is actually a legitimate effort.”* By way of further explanation they said, *“There’s nothing in Ramaco that gets you excited if you are truly in the rare earths business.”* Expert 9 was more pointed in their remarks to us: *“You at this point for sure have talked to enough people like me to know that no geochemist, no mineral extraction expert, nobody doing hydro met chemistry who believes what they’re [METC] saying.”*

- Several rare earth experts we spoke with repeatedly shit on the Brook Mine's rare earth grades:
 - *"They're exceedingly, exceedingly low grade...they're not even in the fairway grade wise"* – Expert 1
 - *"There is no rare earth mine in the world that even comes close to mining grades that are that low"* – Expert 2
 - *"This is a science project, okay...those economics just don't work."* – Expert 3
 - *"So, it's no more enriched than, again, the dirt in your backyard...that's not economical, obviously."* – Expert 5
 - *"We can all agree that the [scandium] cut-off grade should be at least 100 parts per million...in line with the market...they don't have SC [scandium] there. It's not there."* – Expert 8
- Ignorance is bliss and we think METC's management has avoided talking with knowledgeable experts because it would torpedo their pipedream known as the Brook Mine. Expert 10, a leading rare earths researcher, who METC previously attempted to engage with saying *"They [METC] sent me data, had me analyze it, and I basically said, I don't see anything."* Expert 10 opined to us that METC was *"seeking a more favorable opinion because they never came back to me."*
- Expert 11, a former C-suite rare earth executive with more than 40 years' experience described Weir's Technical report on the Brook Mine: *"The report they [Weir] put out was not a report. It was the most incompetent pieces of paper assembled together with a staple I've ever read, no background, no nothing, and confirming this and that."* Expert 11 went on to dub Fluor's report on the Brook Mine as *"equally incompetent."* A former Fluor engineer shared their reasoning for how these reports can become misleading, *"You just close your eyes, look in a different direction, and that's not your problem right...I've seen so many projects where the numbers are just inflated, and then I look at the project later on and I question how did they even arrive at this number."*
- The Street promotes the Brook Mine as the only *"primary"* scandium mine in the world, but we think this is blatantly wrong. Expert 1 was quick to dispel this notion: *"I will not use the term mine because they [METC] don't have any, it's a resource, but a questionable resource."* Expert 2 agrees, *"They call it the Brook Mine, technically in the mining industry, if you have a mine, that means you actually have an operation that's profitable. They don't have anything out there."* We think analysts should speak to some of METC's less-promotional peers. For example, we spoke with a rare earth executive who competes against METC who told us *"We're negotiating directly with the White House...We're not part of the fraud clown show and the whole circus and bullshit. We don't need to be."*
- We think METC (or the Street) will try to rebut our report by claiming Fluor independently signed off on METC's preliminary economic assessment (PEA) summary concluding the Brook Mine is economic. But, unlike other mining companies, METC did not release the full PEA for its shareholders to review. Expert 2 told us *"The fact that they didn't release the Fluor report tells me this is not economic."* Critically, METC, not

Fluor, provided the pricing inputs for the project. Expert 2 who's spent the past 20 years specializing in rare earths explained *"This [Brook Mine] is unlike anything else in the world...when you scratch the surface and you don't have to scratch very deep, it's not viable. It will never be viable."*

- Expert 11 walked us through their thought process for assessing a rare earth project which we think would be helpful for the Street to read before they opine further on METC:

Expert 11: *"You form a team...you select an engineer...you go out for a bid...you're selecting your vendors. You're selecting everything...you're excavating and getting things ready...you're committed you know...So those are the stages, simply put, the stages of the project. Do you see any of that at Ramaco?"*

Wolfpack Interviewer: *No, of course not.*

Expert 11: *Okay. So why would anybody believe anything that came out of that dumbasses mouth?"*

- Expert 13, a former Fluor engineer, cautioned us on taking a PEA at face value (if METC is ever to release theirs): *"So because it's a PEA, you can say anything."* Expert 13 further explained: *"What you have to understand is that it is a company that comes to pay for the service, the one that has the final say. It's not the people who do the work. Yes, the reputation is important, but it's also important to pay the bills. So, you want to make things easy for them, right?...If you're told you cannot question this, then you cannot question that. And that's it. It is what it is."*
- We originally published on METC in December 2023, prior to its inclusion of three critical minerals (scandium, gallium, and germanium) which now make up 83% of the Brook Mine's projected revenue,⁸ when the stock traded at \$16.78. In April 2025, before the latest rare earth pump began, it was trading at \$6.68. After METC's inclusion of scandium in the Brook Mine's technical report back in May, the stock has increased 5-fold, trading at \$39 a share. We expect METC shareholders to be sorely disappointed when it comes to light that the Brook Mine *"will never be viable."* Expert 8 predicted a massive devaluation in share price, *"So you're company [METC] now is going to have a pretty massive devaluation...I've seen this time and time again...this is when this shit goes really bad."*

The Potemkin Mine: We Visited METC's Brook Mine Via Drone and It Appears That When the Cameras Stopped Rolling, The Digging Stopped and Everyone Went Home

"If you're trying to pump and dump, you've got to be good, you've got to be a charlatan. And Randall Atkins is a master manipulator of people and a manipulator of the press." –
Rare Earth Industry Expert

On July 11th, Fox News reported that the U.S. was opening its first rare earth mine in 70+ years as media crews and politicians descended on the Brook Mine for a grand opening filled with extensive fanfare.⁹ Department of Energy Secretary, Chris Wright, joined in on the event, proclaiming from the bottom of a mining pit that Brook Mine's opening was *"America answering the call"* to establishing rare earth independence from China. Below, we can see Atkins and Wright shoveling a pile of coal to celebrate the opening of the mine.



It seems that METC built this mine for show. All the sparkling clean heavy machinery shown on Fox News and the DOE's [YouTube Channel](#) has now magically disappeared from the site. The DOE's footage of the Mine, shown in the image below, shows a plethora of equipment which appears to be leased from the Wyoming Machinery Company.



So, what has been going on at this site after this elaborate dog and pony show? We used a drone to visit the exact mining pit where Wright and Atkins stood shoveling coal at the grand opening of the Mine. Amusingly, there is no sign of new development. In fact, they never even tidied up after the event, the cones are still out, and the ceremonial line of coal that they were all throwing about remains in place as can be seen below:



Source: [Wolfpack Drone Visits](#)

As Expert 11 who saw news coverage of the event remarked, *“the pictures look pretty staged. I’ve never seen the floor of an open-pit mine look that clean, and obviously crushed rock was laid down so they wouldn’t get their shoes dirty.”*



Source: Wolfpack Drone Visits¹⁰

Brook Mine's Grand "Opening"



3 Months Later...



Source: [Fox News Coverage](#) Of Brook Mine & Wolfpack Drone Videography

Despite multiple site visits during working hours over several weeks, we never observed the equipment mentioned in news reports or any active work. Seeing no mining activity, we also visited METC's iCAM Research Center multiple times.

In his July shareholder letter, Atkins stated construction would begin *"later this summer"* with the plant *"hopefully"* in place by the end of the year.¹¹ By September, he doubled-down, saying the pilot plant was *"expected to begin operation later this year."*¹²

When we visited the proposed plant site on the other side of I-90 last Friday, we saw that the company had finally put down some stakes and we thought that they must be getting ready for some sort of ground-breaking announcement shortly before earnings on Tuesday, October 28th, 9:00 am. And lo and behold, METC announced this morning, a few days before earnings, that they were making a ground-breaking at the site.



We think that this ground-breaking is just the same sort of announcement that we saw with the grand opening of Brook Mine, a big show that allows management to talk about something in their earnings call.

And is there any chance this is done by end of the year as Randal Atkins claimed in his earlier letters? Expert 4 gave us a different timeline, putting Brook Mine's commercial production in the 2030's:

"I can just see this pilot plant taking four years to run, which means you're not going to get commercial production until the 2030's, five years later than they say."

We Think METC Misled Investors When It Claimed Scandium Oxide Has Experienced "Significant Price Increases." Scandium Oxide Prices Have Declined 84% Since METC Began Its Rare Earth Exploration at Brook Mine.

METC issued a Preliminary Economic Assessment (PEA) Summary of the Brook Mine on July 10th, declaring that 59% of Brook Mine's projected revenue will come from scandium oxide.¹³ For those paying attention, this was the equivalent of pulling a rabbit out of a hat since METC had never included scandium in its [May 2023](#) or [March 2024](#) technical reports. METC's latest technical report now unveils the sudden inclusion of scandium oxide due to "*significant price increases*" as seen in the company's technical report below.

FALSE. Scandium Prices Have Declined By 84% Since METC Began Rare Earth Testing

- As a result of significant price increases for Scandium, Ramaco has resumed the inclusion of analyses for this mineral in its Inductively Coupled Plasma - Mass Spectrometry (ICP-MS) testing schema. Limited analyses for Scandium had previously been performed but were discontinued due to relatively low concentrations encountered and a relatively low price at the time.

Source: Brook Mine May 2025 [Technical Report Summary](#), p. 1

We don't know what "price increases" METC is referencing as scandium oxide prices have dropped 84% since METC "began exploring the potential of a REE deposit within its Brook Mine property."¹⁴ One thing that is true about scandium (both for oxide & refined product such as metal) is that the market is very small and opaque, so quality data is tough to come by – unless you speak to the best scandium experts in the world, like we did.

An important distinction to make is METC intends to produce scandium oxide. Scandium oxide from the Philippines trades for about \$1,100/kilogram whereas other Western-friendly countries such as Canada or Australia have projects which we have been told are willing to sell it for less than \$1,000/kilogram. A refined form of scandium oxide, scandium metal, trades for ~\$3,800 a kilogram out of China, so how exactly does METC think it will be able to sell the raw oxide at nearly the same price?¹⁵ Expert 4 identified this as a red flag:

Yes, Scandium metal prices today are around that price, which tells you that Scandium metal is five times as expensive as Scandium oxide. So that's a red flag,

We Believe METC Inflated the Market Price of Scandium Oxide by More Than 5x to Massage the Results of Its PEA Summary to Make the Project Appear Viable on Paper

We believe METC included scandium in its analysis because it is not well known or understood, making it more difficult for investors to conduct due diligence without consulting those with significant expertise. Expert 7 told us "Less than a handful of companies or facilities will produce it [scandium] globally because the demand is so low that only a few people will do it." Expert 6 informed us that both scandium and gallium (77% of Brook Mine's projected revenue comes from these elements) are "small potatoes."

We talked to over a dozen experts in the rare earths mining industry and they obliterated METC's spin on the facts. Expert 2 said "Ramaco wouldn't even be on my list to consider for a scandium or gallium source in the U.S" explaining that one of the best opportunities for scandium production within the U.S. would be for copper miners to install a circuit to capture scandium that currently goes into their waste piles.

After conferring with experts, (including those intimately familiar with scandium) we think METC likely pulled its assumption that it would earn \$3,750/kilogram for scandium oxide right out of its ass as experts informed us that Western-friendly scandium oxide can be obtained for less than \$1,100 kilogram. Expert 7 commented on METC's projected scandium price "*their value for Scandium seems very disproportionate.*"

In Fluor's PEA summary, they specifically mention that METC, not Fluor, provided the pricing and production inputs,¹⁶ which enabled the project to be dubbed economically viable by Fluor.

1.8.2 Rare Earth Pricing

A key component of the financial model is the pricing of the end products. Ramaco provided a detailed price list for each of the rare earth and critical mineral oxide products, reflecting current market conditions.

Source: METC PEA Summary, p. 27

As expert 13, a former Fluor engineer, explained:

"The engineers are a lot of the times provided with the numbers. The decisions are made above their heads...and you don't get reasoning for those numbers"

"If you see what the long-term price of this scandium or things like that, and [they] tell you, well it's going to be this, then you have to take it. You might ask questions, but it doesn't mean that people will listen to your questions. You simply don't have access to the information as to how they make those assessments."

The ability to control the inputs for the end products is a great way to assure that your mine is economically viable *on paper*. James Kennedy, a well-known expert and executive for a rare earths company, [publicly released a deck](#) eviscerating the pricing projections made by METC. As shown in the image below, Kennedy points out massive pricing overstatements for many of METC's elements.

product is detailed in Table 16.0-1 as follows:

Table 16.0-1 Product Pricing

	Price (\$/Metric Tonne)	% Of Production	% of Revenue	~Actual	% Overstatement
NdPr	130,000	20%	8%	\$78	~ 165%
Gallium	770,000	8%	18%	\$400	~ 190%
Scandium	3,750,000	5%	59%	\$759	~ 500%
Dysprosium	850,000	2%	5%	\$227	~ 375%
Germanium	2,435,250	1%	6%	\$1900	~ 128%
Terbium	3,000,000	0%	4%	\$1000	~ 300%
Total	904,711	37%	99%	\$3964	~ 230%
Other REEs	4,806	63%	1%		
Total	335,189	100%	100%		

Average CM prices are more than double market price
Sc, representing 59% of economics is 500% over market

Ramco must be assuming they will get a DoD +75% index/premium price for all CMs.
There is no reason to make that assumption, as the DoD deal was for MP's Nd/Pr.
Regardless, Ramco's price assumptions far exceed DoD premium pricing

Source: [LinkedIn](#)

As referenced in Kennedy's chart above, METC overstates the price of scandium oxide by ~500%. This assessment by James Kennedy was echoed by many experts in our discussions with them. For example, Expert 4 told us that METC is juicing their numbers, saying:

"I assume they had to include it [referring to scandium, gallium, and germanium] because otherwise, their NPV's are less than zero. So, my take of this, in summary, is that enough of these things have been put in until the NPV was what they needed it to be and until the rate of return and payback was something that was acceptable."

Given the vast chasm between the market price of scandium oxide and the price input provided by METC for Fluor's report, we believe that METC manipulated the price of scandium oxide to make project viable.

Expert 4 expounded on his commentary that METC included newly discovered critical minerals as the Brook Mine has *"no other opportunity in here [its PEA Summary] because they've [METC] essentially maxed it out, they've sugarcoated."*

Several of the experts we spoke with were harsh in their criticism of METC's PEA summary due to what they viewed as critical omissions. Below we've included some of expert 9's commentary discussing METC's PEA summary:

It's sufficiently vague ... but basically what they're saying is that we will magically withdraw all of these clay seams and recover a hundred percent of it from basically what is a low grade, very soft coal deposit.

...

*I think it's just that they, these engineering companies are just becoming less and less credible. You know, they, they, **they'll generate pretty much anything you want if you pay them a fee***

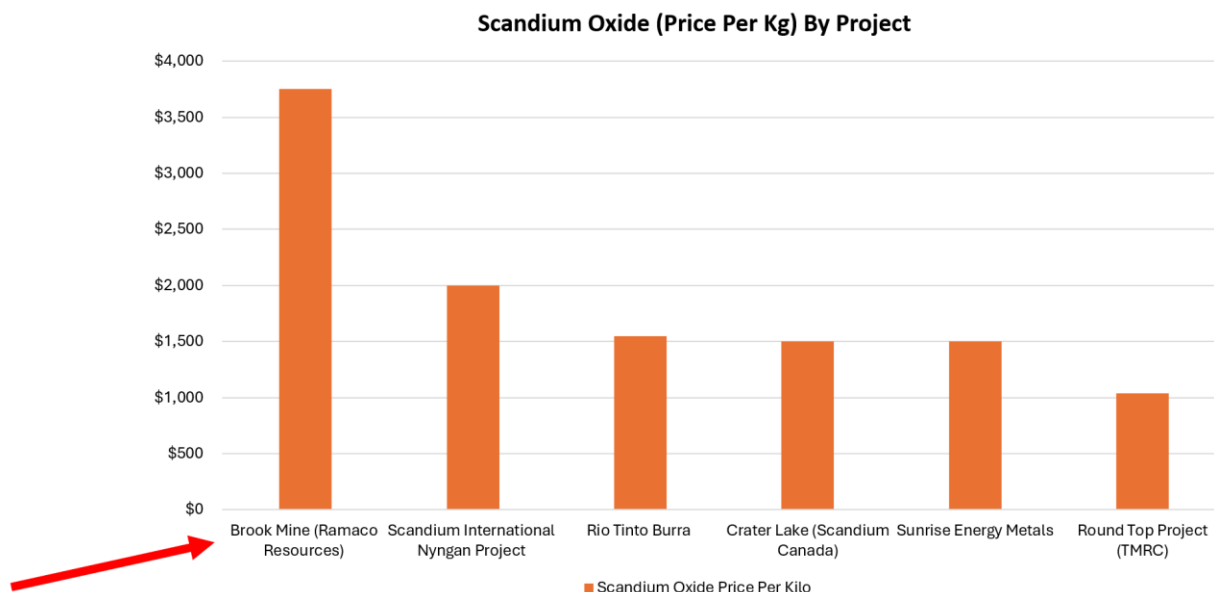
We think the truth is that METC's Brook Mine is essentially worthless.¹⁷ As Expert 1 eloquently put it, *"the only value of this thing is a stock manipulation play. It's a pump and dump. That's what it's been ever since it began."*

There Are Numerous Alternative Projects Outside of China That Anticipate Selling Scandium Oxide at Far Lower Prices Than METC Because METC's Grades Are Terrible

Even if demand for scandium oxide were to significantly increase, we think METC's projection of \$3,750/kilogram would still be a hopeless fantasy. There are several projects in the works by non-Chinese mining companies that expect to sell scandium oxide at far lower prices than those used by METC to prop up its myth of viability. Rio Tinto's Quebec facility and Sunrise Energy Metals have both received interest from the U.S. government to provide scandium supply.

NioCorp, a peer of METC's, even received a \$10 million grant from the Department of Defense to accelerate its efforts to increase the domestic supply of scandium, including a joint venture announced today with Lockheed Martin and the Department of War.

Based on our analysis below, METC has the highest projected price per kilogram of scandium projects we reviewed outside of China.

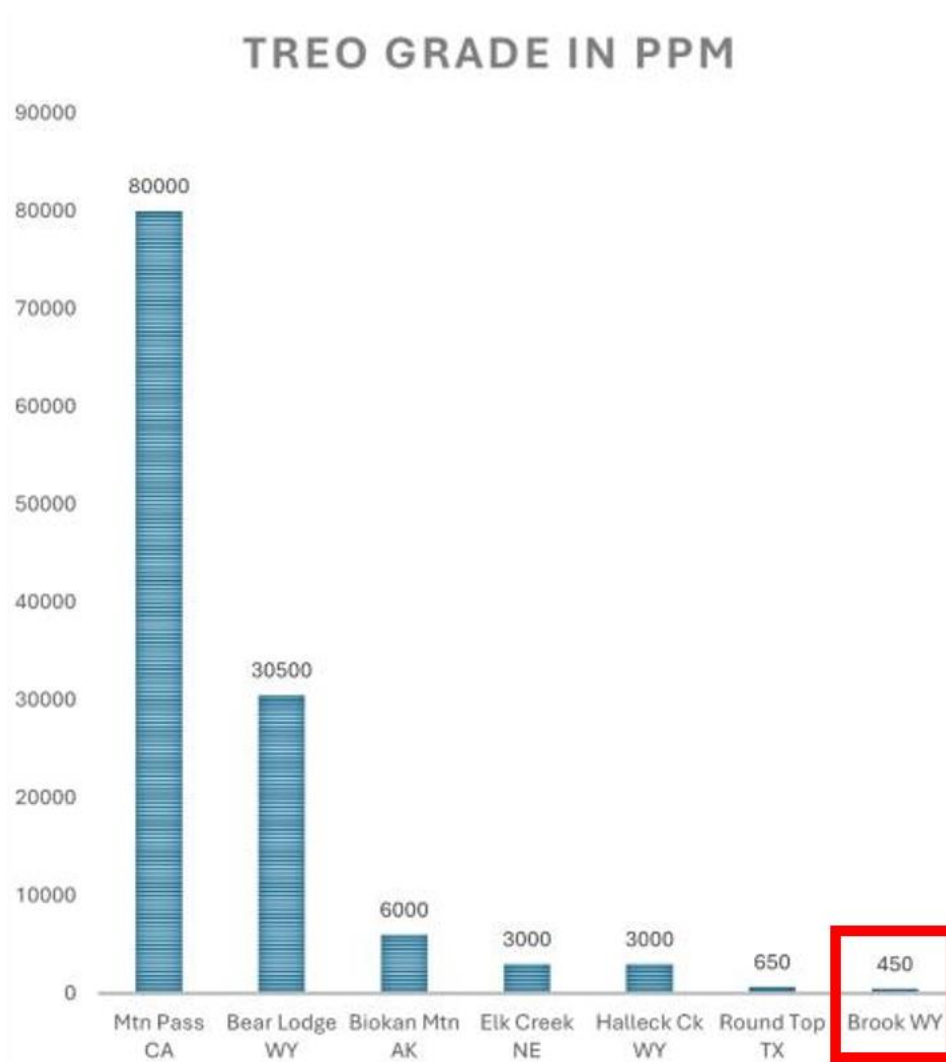


Source: Wolfpack Analysis¹⁸

As shown in the chart above, there are much more cost-effective routes of obtaining scandium oxide from projects outside of China. It seems a key reason for this disparity is that METC's grade is lousy. And a chorus of experts made this point over and over again:

[T]big red flag that came out was the total grade. It was not just low; it was ultra-low. And as I said, there is no rare earth mine in the world that even comes close to mining grades that are that low. – Expert 2

Michael Thompson, an expert in rare earths, and chair of a company focused on the pursuit of rare earth deposits in the US and other regions publicly released a chart illustrating the total rare earth oxide grade for various projects located in the US. As seen in the chart below, Brook Mine's grade appears to be awfully low compared to peers.



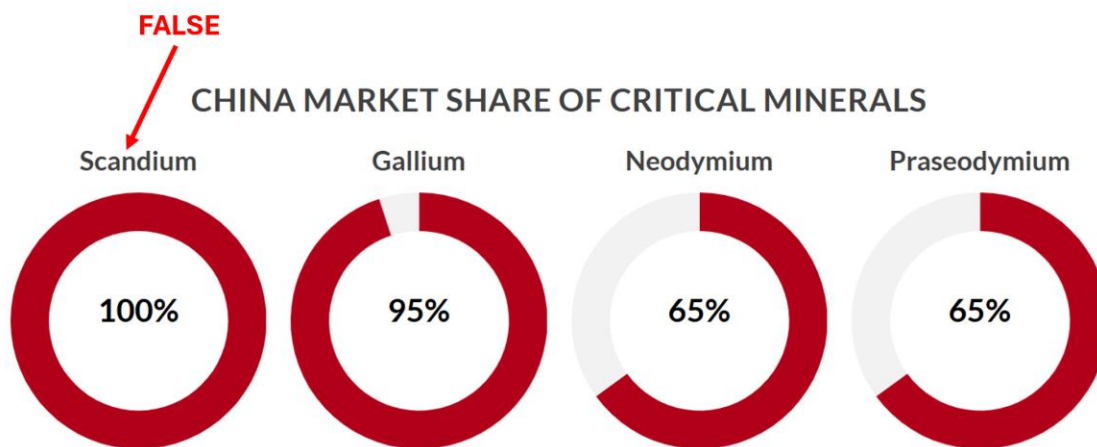
Source: [LinkedIn](#)

We Estimate the Global Market for Scandium Oxide Is \$25 Million. Just One Company, Bloom Energy, Buys 70% Of the World's Scandium Supply. A Former Employee of Bloom Thinks METC Has No Chance of Selling to Bloom

Expert 1 told us that the amount of scandium the world needs “*fits in less than one-semi truck.*” Almost every expert we spoke with echoed this point. Based off conversations with Expert 14, we estimate the global market size for scandium oxide is \$25 million annually.

Bloom Energy purchases 70% of global scandium oxide production, according to a former Bloom employee we spoke with. The company uses it to produce solid oxide fuel cells that convert fuels like natural gas or hydrogen into electricity without combustion. While METC promoters emphasize China's critical minerals export restrictions and supply chain diversification needs, a former Bloom employee told us the company anticipated this issue and diversified its supply chain years ago.

Bloom Energy has a partnership with a facility in the Philippines that we were told could ramp production from 7.5 tons¹⁹ annually to 30 tons of scandium oxide annually if demand increased.²⁰ This one plant is capable of servicing ~85% of the world's scandium consumption.²¹ We think METC's management team is either knowingly or ignorantly misleading investors when they told investors on their website that China controls 100% of the scandium market, given that there is already significant supply available outside of China.



Source: Company [Website Archive](#)

Just don't take our word for it. Rare earth expert James Kennedy recently published a table [on LinkedIn](#) detailing that China only mines 55% of the world's scandium. Kennedy took the opportunity at a recent [critical minerals presentation](#) to discuss METC's Brook Mine:

“Another one that they’re looking at is Ramaco Resources...I’m sure a lot of people are aware this is suddenly the world’s largest rare earth deposit on the Planet Earth...the problems are that pragmatically speaking that’s just not going to happen...it’s just not very realistic”

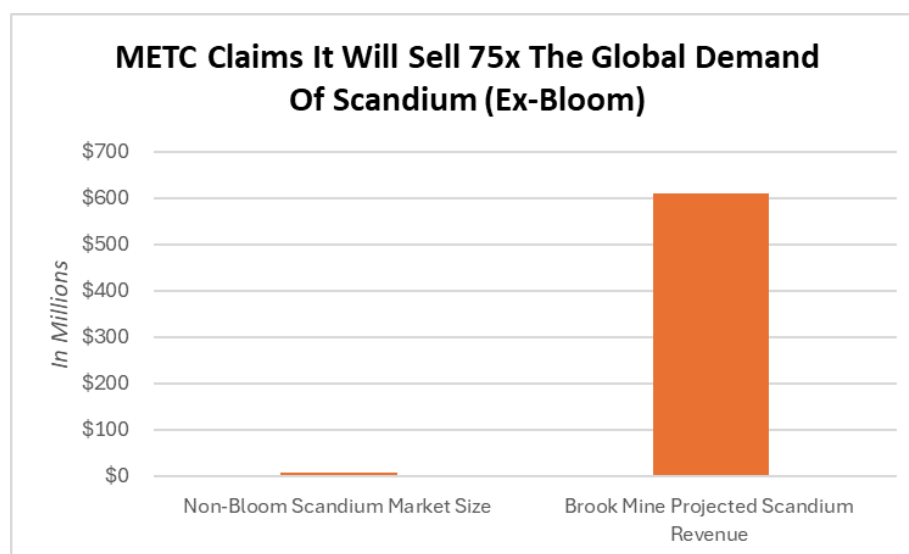
We think METC providing misleading facts about the scandium market shows the level of diligence management has done on their purported, largest earning oxide product.

Expert 14 told us that scandium production in the Philippines has been temporarily closed due to weak demand, which is evident when investors see real market prices, instead of the fantasy numbers METC offers. In our view, the fact that this production facility in the Philippines cannot even afford to stay open consistently demonstrates how little demand there is for scandium oxide and how that the loss of Chinese-supply will have a transient and negligible effect on the market. As Expert 14 told us, *“Scandium has a demand problem, not a supply problem.”*

METC’s Scandium Oxide Revenue Projections Dwarf the Entire Existing Market. Since the World’s Largest Consumer of Scandium Has Already Secured an Alternative Source, The TAM for Scandium is Miniscule

Approximately 35 tons of scandium oxide were purchased in 2024 with Bloom making up ~70% of the purchasing volume. We estimate that global consumption of scandium oxide excluding purchases by Bloom is approximately 11 tons a year.²² For reference, the global size of the non-Bloom scandium oxide market is only worth \$8 million annually.²³ Yes, just \$8 million—for all the remaining scandium oxide—in the world. Yet, METC has the gall to tell shareholders they will earn \$611 million annually from the sale of their scandium oxide.

We estimate in our analysis below that METC intends to sell roughly 75x the global market demand of scandium oxide if we exclude Bloom’s consumption (since they have a cheaper source lined up already).²⁴



Source: Wolfpack Analysis

Bulls may astutely point out that demand could increase significantly for scandium in the aerospace industry because it can be used to create an alloy that is stronger and lighter weight than traditional aluminum parts.²⁵ However, Expert 1 said the aerospace industry would only be interested in scandium metal, a refined product of scandium oxide at *“a tenth of what the current market price is. Because that’s the only way anybody could afford to use it on a large scale.”*

Scandium Isn’t the Only Data Point METC Appears To Have Altered. We Believe Brook Mine’s Potential Gallium Sales Could Be Overstated By 22x.

Brook Mine’s 2nd largest earning element is gallium, which is projected to make up 18% of the Mine’s revenue. METC claims they will sell \$188 million of gallium a year.²⁶ We are skeptical of this ambitious claim considering the U.S. market only appeared to purchase \$8.5 million worth of raw gallium in 2024.²⁷

Data from the U.S. Geological Survey show the U.S. exports virtually no raw gallium.²⁸ Nearly 95% of the gallium we do import now comes in the form of gallium arsenide wafers.²⁹ If METC intends to sell anywhere near \$188 million worth of raw gallium annually, we believe they will be forced to compete on price with cheaper APAC product along with new circuits opening in North America which can more cost effectively capture gallium. Expert 1 told us that gallium capture can be done *“much cheaper [via capture as a byproduct] than what these people [METC] will be able to do... they [METC] do not even have a process, a proven process about how they’re going to extract this stuff.”*

We learned from experts that government support for aluminum refineries and zinc smelting operations could attach a circuit to separate out the gallium that’s currently discarded. Expert 15, a rare earth executive focused on gallium, told us that *“there’s no way to get the gallium cheap”* when mining for it as METC intends to.

Expert 15 informed us: *“There’s already an excess supply of gallium. It’s just artificially turned off right now. So, there’s tonnes of gallium available in the world, just no one’s grabbing it. The only reason there’s any reason to do it outside of China is because China is no longer supplying it.”*

While METC management can honestly parrot lines about gallium dependency on China, we think there’s much more promising projects that the government will entertain financing before they reach METC’s doorstep. Mining giant, Rio Tinto, recently announced the success of a pilot gallium extraction facility in Canada.³⁰ Further, a Tennessee based Zinc-smelter is claiming its facility can produce as much as 80% of annual U.S. germanium and gallium demand.³¹

In our opinion, there’s no need for the Department of Defense or DOE to fork over billions of dollars in subsidies to support a project that has not even entered the digging phase when far more feasible projects exist to support gallium production in the U.S. The DOE appears to understand this and has offered \$6 million for companies that are able to prototype a process that will capture gallium as a byproduct.³²

METC’s PEA “Summary” and Its Reliance on Scandium is Just the Latest Iteration in an Ongoing Grift—From “Coal to Cars” to 100 Years of Rare Earth Supplies, METC’s Randall Atkins Is Always Selling the Story People Want to Hear.

In our initial report, we covered the questionable history of Randall Atkins and his brother Charlie. Charlie was convicted for tax fraud *twice*, the first time being in 1987 as part of The Securities Group.³³ Randall played a part in this tax fraud scheme and was later found liable for “conversion” (a legal term of art for behavior that is considered a form of theft)³⁴ and held liable for \$32 million in a bankruptcy proceeding.³⁵

Randall’s appeal did not go well:

“[Randall] Atkins' conduct directly violated his fiduciary duty as a partner of [The Securities Group] and [The Monetary Group] to refrain from personally profiting from the misuse of partnership assets.”³⁶

Randall Atkins eventually moved into mining and became the CEO of METC, a company that was originally focused on metallurgical coal that continues to produce modest returns. The market appears to value this part of the business at \$8-12/share considering that has been the floor price when the air comes out of whatever hype Randall Atkins is able to spin up concerning the Brook Mine.

Brook Mine has nothing to do with METC’s metallurgical coal business. Randall Atkins [reportedly](#) purchased it for \$2 million in 2011. This was a strange purchase because it was a failed thermal coal mine, and the economics of using thermal coal have only gotten worse since 2011 thanks to natural gas.

While it may have no commercial value, Brook Mine has proven to be very lucrative as Expert 1 referred to it as a “*lifestyle*” mine because Randall Atkins has used it to repeatedly raise money that can pay for his lifestyle.

In 2017, the company promoted its “[Coal to Cars](#)” initiative where it claimed it would use coal as feedstock for carbon fiber and a host of other carbon products. This initiative appears to have been largely led by Charles Atkins, who was an executive at METC until he got into trouble for tax fraud—again.³⁷ The idea that the coal from Brook Mine would be suitable as a feedstock for carbon fiber appears to have been put to bed by a study published in 2023 (though this nonsense is still put in front of [investors](#)).³⁸

In 2023, Randall Atkins struck it rich when the Wall Street Journal wrote an article on the potential of Brook Mine to be a source of rare earths. He later claimed that Brook Mine could supply the U.S. with rare earths for 100 years. Unfortunately for investors, as we pointed out in our first report, the concentration of the identified rare earth elements in the company’s technical report was less than the average abundance in the earth’s crust, meaning that you could stand just about anywhere and probably have a similar abundance of rare earths under your feet. The stock

ended up falling from over \$16.78 shortly after our report and was just at \$6.68 in April of this year when this latest promotion began.³⁹

The recent PEA summary proves our point since the potential revenues of all the rare earth elements identified in the initial technical report are nowhere near enough to offset the costs of Brook Mine.⁴⁰

But Randall Atkins had another card to play. In the PEA summary, METC introduced a new critical mineral, scandium (and to a lesser degree gallium) that would cumulatively contribute 77% of potential revenues and make the Mine profitable.⁴¹ We think this sudden emergence of new rare earths that rescue METC's rare earth narrative is best understood in light of a humorous point made by an expert we spoke with:

*A very famous investor in our sector had a quotation when he was reviewing the rare earth elements. He said, now, one thing you can keep your eye out for is there's some new elements out there, and they're called **fraudium**, **scamium**, and **storium***

We think the idea that scandium will make Brook Mine profitable is a hoax, and the pitch used to sell this hoax to investors is pack-full of misleading and false information.

METC Tells Investors the Brook Mine Is Worth Up To \$14 Billion. We Think Management Is Completely Incompetent or Lying.

We first opined in December 2023 that METC would not be able to economically mine assuming it had the average processing cost of its rare earth peers at \$9 per ton of ore.⁴² Now, METC is telling shareholders its processing cost will be \$70 per ton.⁴³ Yet, the company is proclaiming the Brook Mine could be worth up to \$14 billion. We think this is absurd and many experts agree:

"There are many, many other better supply sources, much richer ... all over the world. And it boggles my mind that they would even think that this is going to be a profitable operation" – Expert 1

For the past decade, Randall Atkins has run a relatively successful coal business at METC. We believe there's some value to ascribe to METC's coal assets between \$8 - \$12/share. However, we think the company's rise in share price from \$8 a share in June to over \$39 due to the rare earth hype is extremely overdone as we believe the Brook Mine's economic viability rests on the sale of one oxide product, scandium.

METC's latest technical report opines that detailed market studies or material supply contracts for scandium are not available yet. Like when METC told shareholders China controls 100% of the scandium trade, this too is misleading. We learned from someone familiar with scandium oxide trading that buyers are not even willing to pay ~\$700/kilogram for non-Chinese product. We think METC can only continue inflating the price of scandium oxide in its projections for so long.

We believe if METC continues with the Brook Mine project, the story will end in tears with management having the potential opportunity to incinerate billions in shareholder capital in the

process. METC has already raised \$200 million from the sale of stock at a 19% market discount the day after its cheaper, U.S based scandium competitor announced a \$10 million award from the Department of Defense.⁴⁴ Expert 1 opined that raising money was always the point:

These promoters, which is what Randall Atkins is, they are masters at stretching this out as long as they can, and it's a long-term pump and dump, but in the meantime have you ever heard we use this in the mining business all the time we call them lifestyle companies

Yorktown, a long-time mining private equity backer of METC, took the opportunity to dump \$30 million of stock following the company's redux rare earth pump.⁴⁵

In late September, the U.S. Defense Logistics Agency (DLA) agreed to purchase 6.4 tons of scandium from Rio Tinto over the next five years which is to be placed in the National Defense Stockpile.⁴⁶ The DLA's justification for awarding Rio Tinto the contract is that the company's Quebec plant is "*the only domestic source of scandium oxide that meets current and future DoD requirements.*" We find it incredibly amusing that METC claims it will be able to sell 162 tons of scandium annually,⁴⁷ meanwhile the U.S. government only feels the need to stockpile 1.3 tons annually.⁴⁸

As part of Trump's major deal with Australia to jointly invest over \$2 billion in its mining sector, Australian scandium competitor, Sunrise Energy Metals, just received a letter of interest for up to \$67 million in potential financing from the U.S Export-Import Bank.⁴⁹ We think this decreases the need for further federal dollars in this sector and diminishes METC's chances of securing government funds. However, the federal government is known for wasting money so they may throw some amount METC's way; but in our view, the government would probably get a better return on investment by simply flushing their cash down the toilet.

Appendix A: Expert Biographies

- Expert 1 has a PhD in Mineral Economics and 40+ years of industry experience. Several experts we have spoken with regarded this expert as an authority on all things' rare earths.
- Expert 2 has a Masters in Geology with over 40 years of industry experience. This expert has spent over 20 years focused on rare earths and is considered by many to be amongst the rare earth industry's leading experts.
- Expert 3 has a Masters in Geology with more than 40 years of mining industry experience.
- Expert 4 worked as a C-suite executive for a METC competitor and has over 20 years of industry experience.
- Expert 5 is considered to be one of the top coal researchers in the United States.
- Expert 6 has over 40 years of industry experience and holds a Masters Degree in Economic Geology.
- Expert 7 has more than 20 years of industry experience and holds a PhD in Geoenvironmental engineering.
- Expert 8 has worked extensively in the Powder River Basin in the past and has more than 20 years of industry experience.
- Expert 9 is a consultant to the U.S. government and mining industry on strategic issues related to rare earths.
- Expert 10 is a researcher with over 30 years of experience who has strong familiarity with extracting rare earths from coal.
- Expert 11 has 40+ years of experience and previously worked as a C-suite executive of a METC competitor.
- Expert 12 has more than 40 years' experience in mining.
- Expert 13 is a former Fluor engineer with more than 10 years of industry experience.
- Expert 14 is considered to be the top scandium expert in the world.
- Expert 15 is a rare earths executive who's focused on the production of gallium.

¹ We have been visiting METC's Brook Mine & iCAM Research Center weekly since mid-September via drone. Friday, October 17th was our last visit.

² METC July shareholder letter, [p. 8](#)

³ METC's September shareholder letter claims on p. 3 it will generate \$611 million from scandium oxide sales

⁴ Discussions with a scandium specialist reveal the global market size of scandium oxide consumption is ~35 metric tons annually. Assuming a price of \$700/kilogram, the global market size of scandium is \$24.5 million.

⁵ METC March 2024 shareholder letter, [p. 1](#)

⁶ As the [USGS](#) points out, this facility in the Philippines produces scandium oxalate which is then shipped to Japan to be produced into scandium oxide

⁷ METC recently removed this graphic from their website. An [archived version of the website](#) can be viewed here.

⁸ METC September shareholder letter

⁹ Fox News, Department of Energy [YouTube](#)

¹⁰ Wolfpack obtained drone videography from a licensed, third-party drone operator who abided by FAA regulations and Wyoming State and local laws.

¹¹ METC July shareholder letter, [p. 8](#)

¹² METC September shareholder letter, [p. 4](#)

¹³ METC PEA Summary, p. 27 “BROOK MINE SUMMARY REVENUE BY PRODUCT”

¹⁴ METC May 2023 [Technical Report](#), p. 6. The price of scandium oxide per kilogram was [\\$3,900 in 2019](#). In May 2025, the price of scandium oxide per market research we reviewed was \$627 per kilogram.

¹⁵ [Shanghai Metal Market](#)

¹⁶ P. 26 of METC’s PEA lists METC’s Contribution as “Production Physicals, including mined ore...”

¹⁷ It’s been widely reported across media sources that Randall Atkins purchased the [Brook Mine for \\$2 million](#).

¹⁸ Projected scandium oxide prices can be found here: [Scandium International](#), [Rio Tinto](#), [Scandium Canada](#), [Sunrise Energy Metals](#), and [Texas Mineral Resources](#)

¹⁹ When we discuss tons in this report, we are referring to metric tons.

²⁰ Sumitomo Metal Mining Co., Ltd. (SMM) [press release](#). Per a source we spoke with, SMM refers to Bloom in this PR as a “major US-based fuel cell manufacturer.” We learned from a former employee that the plant supply could be increased up to 30 metric tons annually if needed.

²¹ Per market research we reviewed and discussions with a scandium expert, we learned the global market size in 2024 for scandium oxide was ~35 metric tons.

²² Assuming 35 tons of scandium consumed annually and Bloom purchases 70% of it, the rest of the world only consumes roughly 11 tons/annually.

²³ Given scandium consumption globally (excluding Bloom) is about 11 tons annually, we can apply a market price of \$700/kg to estimate the market size excluding Bloom purchases which works out to approximately \$8 million.

²⁴ This is a good faith estimate; it is not intended to serve as an exact analysis. For those interested in learning more about global scandium oxide consumption, we would recommend visiting the USGS’s page on [scandium](#).

²⁵ Discussions with different experts; basic explanation of aluminum scandium alloys [can be found here](#).

²⁶ METC 9/18/25 [Shareholder Letter](#)

²⁷ [USGS](#) estimates 11 tons of gallium metal (worth \$4m per the USGS’s estimate) was imported into the US in 2024. Given significant rises in the price of gallium this year, we adjusted this estimate upwards to \$8.5 million assuming \$775,000 per metric ton. This appears relatively in line with METC’s proposed gallium pricing of \$770,000/ton which is found on p. 27 of their PEA Summary albeit they intend to sell their product in oxide form which could fetch substantially lower prices per experts we spoke with.

²⁸ USGS factsheet on [gallium](#)

²⁹ Based on 2024 gallium import weight statistics published by [USGS](#).

³⁰ Rio Tinto May 2025 [Press Release](#)

³¹ Nyrstar Company [Website](#)

³² See [PR](#) “U.S. Department of Energy Announces \$6 Million to Enhance U.S. Supply Chain Security Through Domestic Gallium Production”

³³ See “[Shelter adviser convicted in tax fraud case](#)”

³⁴ See “[What is Conversion](#)” by Jimerson Birr

³⁵ See, In Re the Monetary Group, 11th Circuit, 1993, decision available via Justia

³⁶ U.S. Court of Appeals for the Eleventh Circuit - 2 F.3d 1098 (11th Cir. 1993), 10, available on Justia

³⁷ DOJ [PR](#)

³⁸ See Coal to Carbon Fiber – A Novel Supercritical CO2 Solvated Process; 1 tpd batch system

³⁹ Bloomberg

⁴⁰ See our initial [report here](#)

⁴¹ METC 9/18/2025 [Shareholder Letter](#)

⁴² Wolfpack [report](#)

⁴³ Brook Mine PEA Summary, [p. 5](#)

⁴⁴ Department of Defense Award To [Nio Corp](#)

⁴⁵ [SEC Form 4](#)

⁴⁶ [US defence agency reportedly seeks to buy scandium oxide from Rio Tinto](#)

⁴⁷ METC claims in their 9/18 shareholder letter that the Brook Mine will produce 179 short tons of scandium oxide annually. This converts to [162 metric tons](#).

⁴⁸ [Mugglehead](#): U.S government intends to purchase 6.4 metric tons of scandium oxide within five years.

⁴⁹ [Sunrise Energy](#) Receives \$67m LOI from US Export-Import Bank for Syerston Project Development

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