Regional Oral History Office
The Bancroft Library

University of California
Berkeley, California

Global Mining and Materials Research Oral History Project

Richard "Dick" Teets: The New Steel Industry in the United States, 1975-2010

Interviews conducted by
Paul Burnett
in 2014

Since 1954 the Regional Oral History Office has been interviewing leading participants in or well-placed witnesses to major events in the development of Northern California, the West, and the nation. Oral History is a method of collecting historical information through tape-recorded interviews between a narrator with firsthand knowledge of historically significant events and a well-informed interviewer, with the goal of preserving substantive additions to the historical record. The tape recording is transcribed, lightly edited for continuity and clarity, and reviewed by the interviewee. The corrected manuscript is bound with photographs and illustrative materials and placed in The Bancroft Library at the University of California, Berkeley, and in other research collections for scholarly use. Because it is primary material, oral history is not intended to present the final, verified, or complete narrative of events. It is a spoken account, offered by the interviewee in response to questioning, and as such it is reflective, partisan, deeply involved, and irreplaceable.

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It is recommended that this oral history be cited as follows:

Richard “Dick” Teets, “The New Steel Industry in the United States, 1975-2010: Richard Teets,” conducted by Paul Burnett in 2014, Oral History Center, The Bancroft Library, University of California, Berkeley, 2014.

Richard “Dick” Teets

Dick Teets, Jr. is Executive Vice President of Steel Dynamics, Inc. and Chief Operating Officer for all of the company's steelmaking divisions. He began his career in the late 1970s as a mechanical engineer for J&L Steel, which later became LTV. In the late 1980s, he joined Nucor, where he supervised the construction of the first thin-cast slab steel plant, which was one of the first large-scale mini-mill plants in the United States. He was a participant in early experiments in partnerships with Japanese steelmakers in the US, and was a witness to the accelerating encroachment of the newer mini-mills on the markets of the traditional "Big Steel" companies. In the early 1990s, Mr. Teets co-founded his own company with former executives at Nucor, called Steel Dynamics, Inc. He helped lead the company through a long period of rapid growth, helping to build and manage the capacity for manufacturing numerous different types of steel products. Today, Steel Dynamics is the fifth largest steel company in the United States.

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Global Mining and Materials Research Project

For over twenty years, the Regional Oral History Office (ROHO) produced in-depth oral histories of members of the mining community, under a project called "Western Mining in the Twentieth Century," which was overseen by Eleanor Swent. The 104 interviews in the project covered the history of mining in the American Southwest, Mexico, South America, and Australia from the 1940s until the 1990s.

ROHO has recently changed its name to the Oral History Center of the Bancroft Library, and with that change we proudly announce a new project entitled "Global Mining and Materials Research," which will focus on key transitions in technology, policy, and geopolitics that have brought mining to its current state worldwide.

Much has changed in mining industries in the years since the Western Mining project was in full production, including the increased globalization of mining operations, the decreasing concentration of mineable minerals in ore, increasingly complicated regulatory environments, new systems of environmental remediation, new technology for exploration, extraction, and processing, and new stories of political conflict and resolution. In addition to collecting interviews about mining engineering, metallurgy, and administration, we also hope to explore the history of information technology and data analysis with respect to mining, as well as the legal, regulatory, and policy history of the industries.

The interview with Mr. Teets was funded in part by the American Institute of Mining Engineers, Metallurgists, and Petroleum Engineers (AIME), as Mr. Teets is a member of the Association for Iron and Steel Technology, one of AIME's member associations. It was also funded by a grant from the United Engineering Foundation, as this interview will also be hosted on the IEEE's Engineering and Technology History Website. Thanks also to former Western Mining Project Lead Eleanor Swent, Dr. Douglas Fuerstenau, and Noel Kirschenbaum for their advice and support while the Global Mining Project was being established. Finally, we are most grateful to Dick Teets for taking time out of his busy schedule to speak to us about the evolution of the steel industry in the United States over the past forty years.

Paul Burnett, Berkeley, CA, 2015

Interview #1 October 12, 2014
[Audio File 1]

01-00:00:09

Burnett: This is Paul Burnett, interviewing Richard "Dick" Teets for the mining series, the business series. This is October 12, 2014, and this is at the Marriott City Center, Pittsburgh, and October 12, 2014. So, Mr. Teets, we're here at the Materials Science and Technology conference, and I attended this exhibit called "Comic-tanium," which relates the innovations in comic books, the scientific marvels in the world of imagination of the world of comics, to new innovations that are coming along in the world of materials science. It got me thinking because, it focuses on Captain America and his shield, it's made of a special, futuristic kind of metal, and Thor, and he has a great, big hammer made of a metal that gets repaired in Pittsburgh—he takes it to Pittsburgh to get it repaired. These are obviously very important cultural icons in American popular culture, and in the shadows, in the background, is steel, it's metal, and advances in metal. It got me thinking about the changes in the steel industry in the last thirty years. So, I wanted to start on the first moment you thought about steel and the steel industry, and getting involved in that kind of work. When did it first occur to you?

01-00:02:03

Teets: Well, a little over thirty years ago, I graduated from college in 1977. So, in all honesty, when I was a senior in college, I was actually expecting to go into the aluminum industry because my father was a mechanical engineer, an executive with Alcoa Aluminum. As I'd followed him from a college perspective at Lafayette College, in mechanical engineering, I just sort of naturally assumed I'd follow him also to Alcoa. When I had mentioned that Alcoa was coming to the college to interview, that I was going to sign up, he said, "Well, that's not going to happen. You can't interview with Alcoa." I said, "Well, why not?" It was just shattering to me. He said, "Well, you can't work there—not as long as I work there—because it would never be fair to you or your supervisor because you'll never know if you ever earned that bonus or that raise, and it wouldn't be fair for him or her to have to give you a raise or determine whether you deserve one. So, you just can't work there. I don't care if you work for a competing aluminum company or anyone else, but you just cannot work for Alcoa."

So, all of a sudden, I had to rethink the aspects of what I might want to do, and so, I just didn't want to compete against Alcoa, so I looked to steel as a natural competitor. Thought, well, that's where I'm going to focus my energies, and that's what I did, and ended up getting a couple of offers in the steel industry, and lo and behold, chose one of those.

01-00:03:57

Burnett: What was your degree in?

01-00:03:58
Teets: Mechanical engineering.

01-00:04:02
Burnett: What year was this?

01-00:04:04
Teets: Nineteen-seventy-seven, yes, sir.

01-00:04:09
Burnett: This is a time of great tumult, I guess, socially and politically, and some people talk about it as the decline of big steel, right?

01-00:04:25
Teets: Yeah, very interestingly, as I was entering the steel industry in ’77, from right around there through ’79, tremendous layoffs were occurring. Imports for that period of time were at their peak. Foreign vehicles—Nissan wasn’t even a name, but Datsun, which you never hear about today, was a forerunner of it. That was just all over, and little Datsun pick-up trucks and so forth, because they were low cost and popular and so forth. It was a terrible time in the steel industry, so it was kind of difficult for us as young engineers being introduced into the workplace, and we saw other engineers there, packing their bags and being asked to leave. We were maybe low-cost substitutes, and maybe for different reasons. We weren’t there to judge why we were being offered jobs. Again, there was a natural turnover, and company was doing their normal course of business, but it was very unsettling. Some people that started with me decided steel wasn’t going to be the place to stay because it didn’t appear to have a long-term career path available to them. They took the different route, immediately, and others, I still have a few that started with me and are still in the steel industry, working for different firms now because the companies aren’t necessarily still in existence. It was an interesting time.

01-00:06:15
Burnett: I bet. So, why did you and your colleagues stay if the writing was on the wall? Or was it on the wall?

01-00:06:23
Teets: Well, it really wasn't on the wall. There was social turmoil and so forth. When I entered college, Vietnam, the war, had just ended. I actually had been appointed to the Coast Guard Academy because I had a very low draft number, and then my senior year in high school, the war ended. So, all of a sudden, the Coast Guard said, “Hey, if you are coming here just to avoid the draft, don’t come.” Well, I got called out, and all of a sudden, I said, “Well, yeah, I guess I really didn’t look for a career in the Coast Guard.” So, all of a sudden, I had to make a very quick choice, and that’s why it was a quick fallback to the college that my dad was an alumni of. So, in my senior year, I had to make a quick change of plans, and so forth. Just things were changing, and even in politics and so forth, there was a lot of strife, even on college

campuses and so forth. Things had changed in the late sixties, early seventies, and so ’77 wasn’t too far removed from that.

So, here you had big steel and other big companies coming under change and challenge and so, it was just an interesting time. So, for myself, I worked for J&L Steel, which again, doesn’t exist today. It became LTV Steel, and it doesn’t exist, either. It had, to me, a very exciting training program where we got to spend time in different potential careers within our first year of employment. One of my assignments was working underground in a coalmine for months. I enjoyed it tremendously. A little unnerving when you put a brass tag on your first belt loop to the right of your zipper with a number on, in case you got crushed beyond dental and fingerprint recognition. Crushed or due to explosion or something else, they would know if the mating tag was still at the top of the hole, at the top of the shaft, if you didn’t come up, you’re still down there. Then, they’d look for you. So, that was unnerving, but it was exciting to some of us. I also worked in research and development, and that was exciting because it was looking for new products and changing times.

So, I worked out in the mills and in construction engineering and process engineering, and maintenance. I mean, just different things. So, there was such a myriad of different career opportunities that were made available to be considered, and you were sort of also interviewing at the time. So, as you were being presented to these different departments and divisions, they were looking at you as well as you looking at them, and then having some closure at the end of those assignments, as to what you thought of them. I’m sure they were debating as to what they thought of you, at the different plants that you visited and worked at. So, I just found it fascinating to be around the size that goes along with steel. Everything is immense, and the temperature, and the forces that go along with it, as a mechanical engineer, everything was big and everything is molten.

01-00:09:53
Burnett: Can you talk a little bit about that? About, say, the first time you went inside a foundry and saw some of this stuff? What kind of quantities are we talking about, what kind of temperatures?

01-00:10:05
Teets: Again, from a molten steel standpoint, you’re talking 3,000 degrees plus, you know, and glowing orange or yellow. These are things that you might have done in small cupolas, say, in a laboratory or on such a scale that it’s the size of a water glass. Here, you’re doing it in the size of—I’m trying to think of something that the listener can imagine—the size of a room. These ladles are thirty feet in diameter and ten feet deep of liquid metal, or bigger. That’s just the size we had. We didn’t have by far the biggest in the country. Blast furnaces that are 130 feet high and just constantly blowing hot air that’s a higher temperature than that. Our steel mill was seven miles long and they had to have a bus system that traversed employees to and from because the

employees, most were not allowed to drive their vehicles inside the plant. So, you had to have a transportation department that just moved men and materials to and fro within the plant. In the heyday of the fifties and sixties, there might have been 20,000 or 25,000 people working in these steel mills. In the heyday, now, not when I got there. When I got there, there were 5,000 or 6,000 or 7,000 people still working there, on a steady basis. So, this was just amazing to see the orchestra that was necessary to, in the end, create finished goods of all different types that were going out the door. So, whether it be slabs or bars or pipe or wire or you name it—strip or coil—just amazing, the magnitude of the equipment. It was a mechanical engineer's dream, just to be associated with it, whether you were doing process engineering or maintenance engineering or production.

01-00:12:23

Burnett: You mentioned it's like an orchestra. You're being brought through there to, you talked about the program that J&L had at the time, which was a kind of professional development program? They want you to know each part of the industry.

01-00:12:38

Teets: Sure, and then one of the training programs that I thought was actually of very good value was for four or five months, I was actually assigned to work for an engineering company that did work for us, for J&L. I was assigned to a company in downtown Pittsburgh and I was not allowed to work on any work that was being done for J&L. Actually, I worked on a project for a competing steel company. I was paid by J&L to work on this other project, under the direction of this engineering company, and that was done so that I would better understand how to professionally work with suppliers to our company. Whereas, like electrical engineers were sent to either GE or Westinghouse, so you understood there's a professionalism that's required to deal with vendors on a go-forward basis. Sometimes, you say, well, you try to get the very lowest price when you're dealing with them, but there's more to it than just low price. So, I think more people ought to wear the other person's shoes for a while.

By not even working on your own—because if you were working on a project for J&L, you might be trying to impress someone who might be your boss someday or something—by working on a project that was with a competitor, you were isolated, and therefore, there was no pressure to impress. You were just there to do a good job and to learn how a supplier to your company worked, and see the relationship between a competitor and this engineering vendor. So, there were many very, very good programs. Other competing steel companies had similar professional training programs, but I didn't experience those. This was the one that J&L had.

01-00:14:32
Burnett: Now that you got very quickly into managing and then later, founding companies, is that a principle that you took with you? Even if you didn't necessarily do all of those kinds of programs?

01-00:14:40
Teets: Didn't do all of them and so forth, but I do believe that when I work with young professionals in our company, the results are what I look for, and that's to talk to people. Again, I like to have everyone try to emulate the professionalism that I was taught, and in conjunction with, when you're doing the purchasing and so forth, understanding the balance between—because you're going to be dealing with those same vendors again and again. Assuming that they're going to do a good job for you, they're going to give you a product that's what you wanted and you expect them to, so therefore, if you just drive to the lowest price the first time, then they're going to be hesitant to deal with you and maybe give you an inferior product because they have to get to the lowest price. Therefore, it's not going to work real well, and nobody's really going to be the winner. So, I think if you understand how it works like that, there's a balance that's maintained, and everyone can actually be a winner.

01-00:15:41
Burnett: Well, you seem to be saying that it's a human relationship, too.

01-00:15:49
Teets: It's not just in selling the finished product. I was in project engineering, in the end, where I ended up with my first assignment, and again, then I was dealing with these equipment suppliers just like that assignment was. So, again, you do the engineering, you do the design work, but then you had to go and purchase the equipment. Now, we had a purchasing department that did a lot of the purchasing, but as a design engineer, you had to work through the specifications and understand how the equipment was supposed to work together. You had to decide, well, do you want it to work with pneumatics or hydraulics or electrics, and what would be the best, and is it going to be outside and therefore in the wintertime, is the air going to be dry if you use pneumatics? Is the hydraulics going to be appropriate? Electrics might be the very best, but it might be the most expensive, so therefore, would you make a design consideration? I mean, there's so many aspects to it. All of it came together. And if you really drove the supplier down to the lowest number, they may not give you the very best professional advice because you need them as a partner, going forward. That's what you need to explain to the young engineers that come and work for you, and say, "Okay, there's a relationship that needs to be built with each and every person you deal with." Even your competitors, there's a time when you have to know how to deal with them in associations and so forth. So, it's very important, going forward.

01-00:17:09
Burnett: It seems like it echoes what people talk about the history of business, that large concerns, large corporations, after a while, they were not just competing on price, right? They were also competing on other variables, like different kinds of quality, different measures of quality. As an engineer, I imagine you have to think about the nature of quality, right? It's not just one variable; it's many.

01-00:17:38
Teets: I'll share this with you, that as an operator, running mills, something that you may not recognize: we compete every day with other steel companies, and we say, lovingly, we want to drive out competitors out of business every day. But I want to do it based on quality, on service, on price—but price determined in a fair and efficient manner, where we're making a profit, and so forth. Many of our competitors, we share spare parts with them. If they break something and we have it, we'll give it to them, with the understanding that if ours breaks, we get it back immediately. If ours doesn't break, when they get their new one, we get the new one. They keep the one that they took from us. My father, who I already said worked in the aluminum industry, he could never fathom that. I probably believe it's still that same way today in aluminum, but the steel industry is a fraternity in a different manner. It's such a capital-intensive industry, it's so big, and we went through so many times, it's such a cyclical industry.

There were so many years where there was no money made, or millions—hundreds of millions—of dollars lost, that nobody can afford to have every spare part. So, you know what spare parts, in many cases, your competitor has, or when you bought a new rolling mill, the company that sold you that rolling mill, you know who they sold others to. That was the reference list. You can't afford a spare for everything, so if you broke it and you didn't have it, you would immediately call that company that supplied the rolling mill and say, "Does anyone in the world have this part? I'm down, I'm broke down, and the repair could take weeks or months." Then, they would look back through their records and say, "You know, there's this other company." Now, whether it's domestic or it's foreign, who knows, but they would tell you, "This other company has one."

Now, I don't know if they'll give it to you or sell it to you or whatever. Then, you'd say, "Okay, I appreciate that information." Then, I'd call so-and-so up and say, "You may not know me, or you do know me," but through our associations, you get to know people and you call them and say, "Hey, I'm in a jam and I'd appreciate the help." Now, they might say no, but there'll be a day when they break something, and you never want to be that day when they call you and say, "Hey, I need something," and then you say, "You know, if you remember, there was a time when I called you, or I heard that someone else called you," because we talk, "and you didn't give them a spare part. They're our friends because we share." Spare parts can cost $1 million or

$500,000, and so, again, we have hundreds of millions of dollars of spare parts throughout the company, and you can't always have just the one. So, it's interesting—the steel industry is an amazing industry in a lot of ways, but again, I want to beat everyone every day. Don't take it lightly—we want to win, and everyone wants to win, and I know they want to beat me, too. And that's okay.

01-00:21:25
Burnett: Do you have that relationship, say, internationally? Are you talking about the American steel industry?

01-00:21:37
Teets: I would tell you that it's very much American. Well, from a spares perspective, we would know internationally where they might be, and I would say that we have shared, but it's not near the case—it's really a domestic fraternity because our associations are mostly domestic. Like the Association of Iron and Steel Engineers, and now it's the Association for Iron and Steel Technology. They are expanding into a much more global organization, but we're not on first-name bases with that many foreign companies. Because the suppliers, let's say, in China aren't necessarily usually the same suppliers, so the gearboxes are different, and the gear settings, the specifications under which they are manufactured are different. So, therefore, finding the exact match—because many times they are so exact where, again, I've bought a rolling mill, a single-stand temper mill identical to what someone else bought because it shortened my delivery time. I knew exactly what I was buying and I was satisfied with it, and I saved money because the engineering was done. So, when they broke their drive shafts, they asked the equipment supplier who else has one, and lo and behold, it was me. Again, they were my direct competitor, but I said, "Hey, I got them. I don't need them right now. Sure, I'll share them with you."

01-00:23:41
Burnett: So, it's an informal understanding?

01-00:23:45
Teets: Yeah, because actually, my boss couldn't understand us doing. The first time he ever heard of it, said, "Hey, we got them down," it's like, "keep them down." I said, "Whoa, whoa, whoa." He didn't come from the steel industry; he came from a different sector. I said, "That's not what we want to do because there will be a time, trust me, there will be some time, two in the morning, when something breaks that we don't have, and we will be calling that company or another one and asking for help." It happens, trust me. It happens.

01-00:24:23
Burnett: These are other steel companies but they also might be like machine tool companies that make the rollers, or things like that?

01-00:24:31
Teets: These are other steel companies like us who have bought from the same company, then, and we would know who has those parts in their warehouses. Again, we try to have as many as we can, but there's always that unique piece that you just may not have. Or you broke one, and then you break another one, and you say, "Who would have two spares?" Well, not me, and you say, "Damn."

01-00:25:04
Burnett: Is this general in the American steel industry? I'm thinking about the European steel industry, the *giant* companies, they had the Zurich 17, and there were like, these seventeen steel companies that were accused of colluding.

01-00:25:22
Teets: Well now, that's different. This has nothing to do with the marketing side or pricing. This is only on maintenance.

01-00:25:36
Burnett: I see, yeah, it's completely different in that sense, but I'm wondering if in the European case, or to take another case like Japan, for example, it has the Ministry of Industrial Trade [ed. note: Ministry of International Trade and Industry], so in other words, they have these large umbrella organizations that could be either the government or the private sector that can coordinate those things. But in the American case, you don't have that.

01-00:26:00
Teets: Yeah, we don't have that. We do it through private organizations that we have that are technology-driven or in our case, technology, not lobbying organizations or government-funded in any way, shape, or form.

01-00:26:18
Burnett: Right, and so, these are kind of informal.

01-00:26:20
Teets: So, I would think they could and maybe do, or should, but I can't answer that. I don't know.

01-00:26:28
Burnett: But what is happening in the late seventies is that the large mills, Republic Steel and US Steel and Bethlehem Steel, they're out of business by the early 2000s. That model is dying even when you enter the steel industry, and what most people don't know, there's this whole other model of making steel. Can you talk about how companies such as J&L Steel and eventually Nucor, how they're different from the big ones?

01-00:27:06
Teets: Yeah. It was kind of interesting. J&L, when I joined it, I chose J&L over some large steel companies that had offered me jobs coming out of college because in talking to my father— and I agreed with him—he said, "Wouldn't you

rather be a big fish in a small pond? So, go to the smaller steel company, and if you're good, you might get noticed." Made sense, so I go to J&L and work there for a few years, and I moved around. Shortly, in two years or so, next thing you know, they end up buying Youngstown Sheet & Tube. So, then I moved to Youngstown and worked there. Therefore, J&L went from being seventh or eighth in size, they buy a bigger company that was having problems. We were, I think a very well-run company and had good cash reserves and so forth, so we buy a bigger company. Now, we become bigger. Okay, so my plan maybe was not necessarily working out, but that's okay. It was kind of exciting. Then, two years later, and I moved around from Pittsburgh to Aliquippa, Youngstown, and then, next thing you know, the company decides they're going to merge with Republic Steel. So, then we're number seven now, and we buy the fifth-largest steel company, and boom, now we become the fifth-largest or fourth-largest steel company. So, things are changing.

The funny thing is, every time we do it, we're trying to find these synergies, but we keep getting more of some of the things. We get more coalmines, we get more iron ore mines. Some of the things we're saying we don't need, and yet, now, the last time when we merged with Republic, both of the companies were looking at putting in electro-galvanizing lines, which was the rage in Japan and so forth for automotive companies. Here in the United States, one or two of the automotive companies were hot on it, but it was a little bit, not fully across the board, and so forth. I was always trying to stay on top of technologies. That's why I was moving to different places and gaining some knowledge. I said, "Hey, I'd like to move—I'm okay with that." The funny thing is as we were doing poorer as a company, I went to this one employee meeting, I hear this company, they say, "This darn company called Nucor, those guys and imports are just always after us, so we're selling off our wire business and we're selling off our rod business, and we're going to tear out the equipment and send it to India or send it to China."

Now, this is the early eighties. "Those darn guys, they use this electric arc furnace technology, but they only make cheap steel that's low quality, and we're going to continually focus on our flat-rolled world. That's the automotive [market], and that's what we're good at, and they'll never be into that. They'll never be there." Then, the next breath, they say, "The automotive companies are saying we got to cut, like, $10 out of our costs, and we're going to take that out of the coalmines and the iron ore mines. Those are the guys that cost too much." Hmm. So, it's not us, it's somebody else—it's always somebody else." I'm still a young engineer and I'm thinking, "hey, where's the plausibility here?" But that was kind of interesting. I thought, okay, I'm game. Then, what are we going to do? We're going to go build this $400 million electro-galvanizing line because everyone's building one. They're using different technologies, but everyone's building one.

01-00:31:01
Burnett: Can I ask what the electro-galvanizing line does?

01-00:31:05
Teets: It electrolytically plates zinc onto strip. It's very exacting, it's very weldable and paintable, and you can do one side or two-side coatings. I mean, beautiful finish, no spangle like hot-dip galvanizing, which is what had been done heretofore in all galvanizing applications. This was the new rage, and so, we were going to build one. When we merged with Republic, it was decided to build one in Cleveland. So, I put my hand up, I said, "I'll move, I'll go there." So, I went up there originally as the maintenance engineer to build it and got it up and running, and so forth, and then shortly thereafter, I was made the operating manager of the facility. It was ultra-modern technology. It was amazing.

01-00:32:02
Burnett: This was like a green field site? This was from scratch?

01-00:32:07
Teets: No, it was a brown field site because it was inside of the existing... It was in the Republic side because there were two steel mills, J&L and Republic were side-by-side in Cleveland and they had torn down some of the cold mills in the Republic side and made it a brown field site. We had our own union inside of there, but it was an independent facility. Even when LTV went bankrupt, it was not affected by the bankruptcy. It was the only, out of probably, I don't know, fifty or sixty companies, was the only one that was not dragged down into bankruptcy because it was a partnership with Sumitomo Metals, and it was excluded from the bankruptcy. So, it was really novel, and here I was, part of that, and so on the cutting edge of technology. I was really honored to be part of that team.

01-00:33:14
Burnett: That's kind of daunting—you're building something, well, it's not from scratch because you have existing parameters to work with at a brown field site, but when you were brought on to build this plant, how did your previous training impact – this kind of training in the different areas – did that give you the confidence to do that kind of work?

01-00:33:37
Teets: Well, it did because I had the experience with working with so many of the people we were expected to work with. Research and development, because it was cutting-edge technology, I had the construction engineering training, so we were building with contractors on a daily basis, so I was right out there in the fields with pipe-fitters and welders and millwrights and ironworkers, and the like. I was hiring my own employees because I was originally the maintenance engineer, mechanical maintenance guy, so I was hiring my own mechanical maintenance individuals and welders and pipe-fitters and so forth to be on the team. Then, I was in charge of the chemical plant. That was my responsibility, to make sure it was designed and built and installed properly,

and then I was training our employees on the operation of the chemical plant, as well as the line, simultaneously. Then, I had to order the materials, the chemicals, and everything that would go into it, all the zinc and so forth. So, I wasn't involved with the steel side of the production; I was involved in having everything that went into it, so all the acids and all the chemicals and the nitrates. You name it, all of that, I had to understand it. I went to Japan. They had a similar line in Japan at one of Sumitomo's lines, sister lines. So, I went there for a while, like a month or so, and learned how to operate theirs and work side-by-side with their engineers. Then, after that, brought some of our employees over there and taught them on their line what they would experience on our line. It wasn't identical, but it was close, but we had to make some differences just because ours was slightly newer and the technologies and the different specs for American equipment, that was different. But we used a lot of Japanese equipment because of partnerships and trading companies and the like.

But then again, going back to my dealing with the vendors, the things that I had learned, so right across the board, I'm using my engineering skills and so forth. Also, I had worked shifts. I had worked shifts before I'd gotten that job, out on the BOF and Caster, and you know, a lot of midnight shifts and so forth. So, I didn't mind volunteering to be out there and work steady midnights for a couple months with the contractors and our own employees, just to make sure that somebody was out there that would know what was supposed to be getting done, so that we were staying on schedule when it looked like we were falling behind.

01-00:36:10
Burnett: You're really hands-on.

01-00:36:13
Teets: It was easy for me, number one, because I was single. I hadn't been married, I didn't have any kids, and so, I didn't mind it. Anyone who had kids never wanted to volunteer for midnight shift, and especially steady for months. Number two, I think I look at all that as a learning experience, you can do so much more at night when there's actually a lot less bureaucracy around. So, you can talk to people and learn about things and show people about, hey, let's look at this in more detail. So, I just think a lot more gets done, actually, on midnight than when you're in meetings all the time during the daytime.

01-00:36:54
Burnett: People often say in executive positions that they get most of their work done before people show up and after they leave because everything else...

01-00:37:03
Teets: Or on weekends, you know? It's real.

01-00:37:09
Burnett: So it's not a forty-hour a week job, and hasn't ever been.

01-00:37:13
Teets: Yeah, no. [laughter]

01-00:37:17
Burnett: So, this was an effort of J&L to modernize, and they have some kind of partnership with Sumitomo.

01-00:37:26
Teets: Yeah. Now, it was LTV by that time. It was LTV, so it was LSE—L for LTV, S for Sumitomo, E for electro-galvanizing. So, this was an attempt to stay on the cutting edge and to, again, they were in bankruptcy, but they were still trying to fight their way through it. All the while, you had these companies, like Nucor was out there, and there were other mini-mills that were still growing in their size and growing in their competency, but all the while, not in flat-rolled, but getting better and better in bar products and so forth, nipping at their heels, and either in standard bar, carbon bar, merchant bars, or even in light special-bar quality, SBQs, and making it more and more difficult for the integrated guys to stay in any of that business. So, it kept making the big integrated guys keep retrenching back further and further into only flat-rolled, either in strip, sheet, or plate.

01-00:38:32
Burnett: Part of this story, a huge part of this, is gradual shifts from old smelting and rolling technologies to new smelting and rolling technologies that are really, really efficient by comparison. Can you talk a little bit about the differences?

01-00:38:53
Teets: Sure. Even the integrated guys knew about it because one of my first jobs at J&L in ’77 was an attempt to shift into the electric arc furnace technologies. On the South Side of Pittsburgh, when I started at J&L in ’77, I think they had eleven operating open hearths. Now, open hearths were really dirty, pollution-wise, and so forth. Totally inefficient. Eleven of them. The plan was to install two, I think, I want to say 320 or 350-ton electric arc furnaces, two of them, inside this operating open hearth shop on the South Side, Carson Street. So, my very first job during my training program, during this year cycle, one of the jobs I had was walking the steel work, checking all the bolt connections with a torque wrench. So, I was up above the steel on a beautiful day, on rainy days, 100-and-some feet up in the air. In those days, we didn’t even tie off. I mean, this was well before OSHA. Maybe OSHA was in existence, but they didn’t have rules. So, oh, there was days when I was scared stiff some days. It was terrible. But walking around on these steel beams with this four-foot torque wrench, checking every bolt to make sure they were tightened sufficiently.

01-00:40:23
Burnett: And hoping there was no wind.

01-00:40:25
Teets: Yeah. One rainy day, I slipped, and my hardhat fell. That's a whole story I could tell you, that I couldn't move. I was just frozen. I was so scared, I couldn't move, and a guy had to come and take the wrench from me and tell me to sit down on a beam and shimmy down to the next joint and then get my senses. It was pouring rain, and all these ironworkers are running past me, yelling at me because I was blocking one of the routes to get out of the rain. It was one of those things, and finally, he says, "Okay, now just stand up and walk slowly to the next joint, and let's walk down to the ladder," and we get down. Then, it was just like, hey, you got to get your senses, and finally it stopped raining, and he says, "Okay, now we got to go back up because if you don't, you'll lose your nerve and you won't get up tomorrow. So, we got to go back up and walk the steel again." So, it was one of those things.

Those were the days, I had a guy who lived with me and they built the Mellon Bank building here in Pittsburgh, and they lost an ironworker one day. He fell to his death and I said to him, "That's tragic." He says, "Yeah, but you know, we put $1 million in every bid for every forty floors because we assume that $1 million will pay for all the legal fees and pay the widow and everything, and we assume that we'll lose one person every forty floors." That was just the way it was in the early eighties. I mean, again, tragic. I know the beam I was walking was probably ten inches wide, but at that moment, it felt like a four-inch balance beam, like from the Olympics. But I'm sure it was ten inches wide or so, but yikes! Those are just experiences.

So, we were putting in these two electric arc furnaces because the company knew we had to advance because others were. I don't know how many hundreds of millions of dollars this project was. They ran huge cables up in the river, from the nuclear power plant all the way out of the border of Ohio, up through Ohio, in the river to keep them cool, because they would have taken bigger cables if they had been above ground. So, in the river, though, it was in the river, up here to the South Side, to the transformer station. I can remember when we'd fire them up, testing them, and we break windows in the houses and stuff on South Side, and the train station—you're not from here, are you?

01-00:42:51
Burnett: No, no.

01-00:42:52
Teets: Oh, there'd be fancy restaurants over here, and the Station Square, all the lights would go dim at eleven o'clock because we'd fire them up at eleven p.m., and all the bars and the hotels and everything, the lights would all go down because we'd suck all the power down in the South Side of Pittsburgh. We did that for months. That project, I hate to say it, never came to fruition. We never finished it, and then they tore the equipment out, tore all the open hearths out, ultimately. It was just one more tragedy in the steel industry, that the technology was there but we chased the market that, ultimately, the market

went away. We were too late. We were so slow, that we weren't capable of capitalizing on the benefits of the technology into a market, that by the time we actually did the right thing, the market was gone.

01-00:43:46
Burnett: Was that a big lesson for you, personally, or was it just something that everyone...

01-00:43:49
Teets: Oh, speed! Yeah! I can tell you more stories later on about trying to buy from Bethlehem Steel when I was already at Nucor. I said, "I know why you guys went bankrupt"—remind me. All the while, you're reading about these mini-mills using this technology around you, but people knew it. Even J&L had one electric arc furnace in Cleveland, so they knew the technology and used it, but they weren't driving towards it because they had so much money invested in iron-ore mines and people and the unions. I've always said, just for the record, I'm not anti-union—I'm non-union, today. I was never anti-union. I worked union in the big mills, and these guys were always my friends. I said it was management, I think, that was really at fault for a lot of the problems that happened. It just became antagonistic, and they fought over everything. There was no reason to solve the problems, in most of their minds, because it was almost—I always said that half the people employed by the steel mills were just there to fight the fights. That's just wasted energy and wasted money.

So, tragically, when I was still working there in Aliquippa, I said, "Every day I can work here and help you help us is one more day that I keep all of you working." But ultimately, they all lost their jobs because the mills are gone. Again, at seven miles long and 15,000 employees or so, and 7,000 when I got there, and there's not one there. That's just a tragedy because most of them did not deserve to lose their jobs, but they couldn't modernize it, they couldn't keep up with it, for lots of reasons. It wasn't the unions and it wasn't only management, it was just everything. It wasn't the marketplace only. It's all kinds of things.

01-00:45:48
Burnett: I read one statistic, that I think it's the electric arc furnace, because the oxygen furnace is also more efficient than the open hearth. It has slightly different applications, but when you get to the electric arc furnace, it's so—what's the opposite of labor-intensive? It's one-*thousandth* the labor.

01-00:46:16
Teets: Not at the melting point itself, but you're not mining the coal anymore because you're melting scrap, or scrap substitutes. So, you've bypassed the coalmining, the coke batteries, the iron ore is no longer pelletizing at the pelletizing plants. All of those items are no longer there, and most of the time, the scrap is being collected locally to the arc furnace, whereas you're bringing in iron ore from Minnesota and you've got to put it on the barges and you bring it down, or in the trains, and so you have all that labor and all that

capital-intensive hardware. You bring it across the Great Lakes and you've got the huge shovels, and unloading it, and you're putting it out, and then you're shoveling it back up and putting it back in the railroad trains, and running it to the mills. So much goes into it, whereas in an arc furnace, the local scrap yard gathers it up and sends it to you in truckloads and you melt it. That's being overly simplistic, but it's pretty much what happens with it.

01-00:47:31
Burnett: So, if electric arc furnaces first take off in, I guess, Europe, and then in Japan and elsewhere, and then they're latecomers to the United States, if they require scrap, do you know where they got the scrap for Japan? Was it shipped out there?

01-00:47:51
Teets: Oh, yeah. The United States is the biggest exporter of so much scrap. Now, I can't tell you back in the sixties or so—I wasn't there. I was in grade school, and so I can't tell you with authority. We still buy scrap occasionally from Scandinavia or England or somewhere like that, but even today, in today's world, the United States exports 20 million tons of scrap a year, mostly to Turkey, but also to China, to Indonesia, and so forth, for their electric arc furnaces in the steel industry. So, I wouldn't be surprised if some of it went there. There was also scrap collection going on in their local markets in those days, feeding those furnaces. Then, when you came here, as the popularity of arc furnaces grew, and scrap collection and shredding machines and so forth grew here locally also. It depends on the exchange rates and such—I can remember when large oceangoing barges used to bring scrap to this country, but I think the exchange rate has changed and hasn't flipped back in years and years, and so, therefore we are basically an exporter versus an importer.

01-00:49:23
Burnett: So, the ingredients that you need for the rise of the mini-mill and the rise of the electric arc furnace, you need massive circulating supply of existing steel and existing iron scrap that can be melted down using that technique? It is part of a kind of global recycling operation, right?

01-00:49:50
Teets: Yeah, and most arc furnaces that make long products—let's say beams, bars, merchant shapes, and so forth, meaning angle irons and the like—they run predominantly on scrap metal. Now, the rise of the flat-rolled mini-mills that are making higher quality products that go into unexposed automotive, that go into pipe and tubular products and the like, they require a better scrap blend. They are all using, in addition to scrap, scrap substitutes, which are hot-briquetted iron, HBI, DRI, direct reduced iron, pig iron, and the like. So, those products, some come from domestic producers. We produce our own pig iron. Nucor has a big DRI facility they built in Louisiana. We built up on the Mesabi Iron Range, $450 million facility for making our own DRI or HBI up there. But you also buy pig iron from Brazil, from South Africa, from the Ukraine and Russia. So, it's an international supply network, supply chain.

01-00:51:18
Burnett: It takes off initially because of its incredible labor efficiency, and it's feeding off of this extra scrap that's part of the industrial world that we live in. But as it grows to a certain size, presumably, worldwide, you exhaust the availability of scrap, and then you go into making your own pig iron?

01-00:51:42
Teets: There's a balance. You don't ever really exhaust it because through the manufacturing process, there's always off-fall. So, when you're making products, there's always a certain amount that goes back. So, even when you're making your products in the mill, we have a certain amount that is recycled in the mill. So, if 5 percent or 8 percent inside the mill is waste, then that's feedstock. If you make a sheet of steel and someone's going to stamp a door out of it, well, where the window goes, where does that steel go? Well, that comes back to us for re-melting. So, when a door isn't a perfect square, so all your tapers, those tapers. Now, they try to nest things as best they can, but they don't go fanatical. You say, well, if someone was really trying to be good, that little taper, or let's just have fun, and say, where they stamped the window out, they maybe could make a toaster out of that. Well, it's not the same grade, it's not the same, and they don't make money on trying to be so efficient. They want to make a million doors as quickly as they can. So, it's pat, stamp, stamp, stamp down the assembly line, and they don't want to screw around with that little piece of steel. They want to get it out of the way.

So, all those window stampings and all the little punchings for where the door handles go in, I mean, think about how many times those little slugs get punched out. That all comes back to the steel industry. So, when everything gets made that gets made out of steel, there's always a certain amount of scrap that gets sent back to us, and that's called prompt industrial scrap. That's a whole industry. Every time a bridge gets torn down, or every time a building gets torn down, highways get remodeled, or I hate to say it, an accident occurs and a car gets dented, so that fender or the whole car ends up getting demolished, we get those, guardrails and so forth, all of that comes back into the system. Or someone throws out a small child's push-buggy or something, all of that has steel in it. A washing machine, an old refrigerator, all of that gets recycled.

01-00:53:59
Burnett: Say, by the year 2000, they've mostly turned over even from the basic oxygen steel making, they've turned over mostly to the electric arc furnace? Is that pretty much right?

01-00:54:10
Teets: When you say "they..."

01-00:54:12
Burnett: Meaning steelmakers.

01-00:54:14
Teets: Well, no. I mean, there's a whole group of mini-mills. I was in Cleveland, as I was saying, with the electro-galvanizing industry, with LSE, until '97, towards the end of '97. Then, I got recruited to Nucor, to go and be the engineering manager on the first-in-the-world thin-slab casting machine for flat-rolled. Just a year earlier, Nucor was basically commissioning and starting to start up really the first real mini-mill, big structural mill. That was a joint venture with a Japanese company called Yamato Kogyo, so they build Nucor Yamato, down in Blytheville, Arkansas. So, that was a tremendous advent of electric arc furnace technology involved with beam blank casting, near-net-shaped casting, which makes—we lovingly call them dog bones because it looks like a biscuit. So, it's really close to the shape of a beam, but when the big steel guys would make a wide-flange beam, they'd start with a slab, or a big, big bloom, and just roll it. It might take forty times, running it back and forth through a rolling mill process, whereas if you start with something that looks like a dog bone, it might take ten or twelve times.

That's efficiency. That's energy. That's labor. That's capital goods. That's such a reduction in all of those that therefore, the end sales price—and if you're making it out of scrap, recycled scrap rather than iron ore and coal and coke and all that highly labor-intensive, capital-intensive, energy-intensive goods and services—they blew all those guys out of the water. Nucor Yamato just destroyed the US Steels, the Bethlehem Steels, I mean, the icons of the steel industry in beams. Destroyed them on a cost basis. That was tragic from the number of people that got wiped out in the American steel industry in the beam business.

01-00:56:50
Burnett: How much cheaper was it?

01-00:56:52
Teets: Oh, I'm going to make this up, but I'm close. I didn't have anything to do with beams, but I will tell you that if US Steel and Bethlehem were selling beams for $800 a ton, Nucor could sell them for $500 a ton and still make good money—good money. It was like, bam!

01-00:57:15
Burnett: And $800 a ton for the big ones, they're not making money, or they're barely making money?

01-00:57:18
Teets: Yeah, barely making money, yeah. It didn't take a year to have these guys start folding.

01-00:57:32
Burnett: The kind of "Wikipedia narrative" about the steel industry and the fate of the steel industry is that there's this competition, this external competition from Japan and from European suppliers who had these new efficient processes, but

what you're describing is there are these hybrid new American companies, American-Japanese collaborations, that produce domestic competition.

01-00:57:58
Teets: Again, this was the first one because this was Nucor Yamato. This was a hybrid, and Nucor teamed up on a 51-49 percent ownership arrangement because they sort of weren't sure of themselves. They were good at bar mills by themselves, and they had quite a few of those, and there were other, I mean, Nucor wasn't the only one out there. Roanoke Electric was out there, Birmingham Steel was out there, there were others—Marion Steel. Others were out there, but they were all in bars, small bars, three inches and down, normally, four inches and down. This was going up to thirty-six inch I-beams, and starting with a big dog bone.

01-00:58:46
Burnett: The traditional domain of the major companies.

01-00:58:48
Teets: This was big steel, starting with a big slab and just rolling it out, and going back to the seven-mile steel mill mentality, and the 10,000 workers. Whereas Yamato did it with 600 workers. This is big-time, game-changing.

01-00:59:09
Burnett: Right, that's a real cost savings, as they describe.

01-00:59:12
Teets: Yeah. There weren't iron ore mines remote that supported it; there weren't coalmines remote that supported it; there weren't barge systems remote that supported it. It was those 600 workers, all at Blytheville. Yeah.

01-00:59:29
Burnett: I don't want to get out of your domain of expertise, but just out of curiosity, the companies that make the pig iron that you would use. You would purchase that later, as your process gets bigger. They presumably had the cost problems because to make pig iron, you need coal. You can't get away from the original source. They're not making pig iron from scrap, are they?

01-00:59:59
Teets: Well, some of the times, some of the pig iron that people buy—that we would even buy. Actually, it would come from our domestic competitors, the big steel guys, from their blast furnaces. They would have excess pig iron. So, if they needed cash, they'd sell to us. Now, that's one of those interesting scenarios where you know who your competition is, but which is the greater evil?

01-01:00:27
Burnett: Right, if you need your cash flow right now, right?

01-01:00:30
Teets: Exactly. So, therefore, we'd be a ready buyer because it was cheaper for us to buy from them. If they needed the cash, we were available. Now, if you're buying pig iron from Brazil, they didn't use coal. Again, this is one of these love-hate ones, where they would be cutting down the rainforests, making charcoal. They would use a different system. You had to worry about their labor. Again, I don't know that we bought from Brazil—we bought mostly from the Ukraine. They use coal and so forth, but the exchange rates, and whether they got their gas for free from Russia, which now is tough times.

01-01:01:17
Burnett: In jeopardy, yeah.

01-01:01:19
Teets: This is all changing, geotechnical, geopolitical turmoil, who knows? It's always interesting.

01-01:01:32
Burnett: That's true. Well, let's stop the tape now, and we'll pick up the interesting moments after that, too.

[Audio File 2]

02-00:00:09
Burnett: This is Paul Burnett, interviewing Dick Teets, for the mining project. This is October 12, 2014, in the Marriott City Center in Pittsburgh, Pennsylvania. We were talking about your early days at Nucor. Can you tell us a little bit about what was innovative about Nucor? Nucor was innovative before you got there. What's their claim to fame?

02-00:00:40
Teets: Well, Nucor was experimenting with thin-slab casting for many years before the attempt to commercialize it. So, they were on the cutting edge on a number of items. As I said earlier, they were also the first to really commercialize big beams, when Nucor and Yamato Kogyo teamed up to make Nucor-Yamato, which is down in Blytheville, Arkansas. That has become basically a 3-million-ton-a-year facility, making up to, I think, 44-inch jumbo beams. I mean, some of the biggest in the world, out of near-net-shape casts. So, very highly efficient, and the full range. I think there, they go all the way down to about fourteen-inch beams. They don't make the small ones there, but tremendously efficient, and that was just mind-boggling to the integrated-beam producers. That was starting up just about the time I joined Nucor.

I got recruited to be the engineering manager at Nucor Crawfordsville, and that was just an interesting opportunity for me. Again, I tried to be involved with technology at LTV, and then, that's why I joined Nucor, because it was

the first in the world, thin-slab. Now, they were trying to pioneer on their own the different technologies, and they had then decided to work with SMS out of Germany, Schloemann-Siemag, on their technology, and to commercialize it. They chose a site in Crawfordsville, Indiana, to build this facility. As I said, I was the engineering manager. With Nucor, everything was done with speed. I'll give you just a real quick little example of that. On my second day at the job, when I left LTV, they were in bankruptcy for the second time. For us to do a project, I said to you earlier that sometimes, we would just go so slow, we missed the markets. We could build a book this big on project spec and market studies and technology and quotes and take two years to do a project, three years, whatever.

So, here we are with Nucor, so I said on my first night in town to my new boss, Keith Busse, "Hey, can you show me the market study so I know why we're building this steel mill here?" He says, "Well, we didn't do one. Nucor didn't do one." I said, "What do you mean you didn't do one?" He says, "Ah, we're just building this thing, $200 million, and we'll sell it." I was shocked. Oh, God, why did I come with you guys? This is kind of too wild and crazy for me because I'm an engineer. I'm a little more organized than this. I said, okay, then they say, "Hey, you better get out there early in the morning because there are going to be picketers out there, that the operating engineers are going to picket the job sites. You get out there, Dick, early, about four a.m., and get a camera, a movie camera out of the drawer, and you get up close to the fence and videotape everyone, so in case there's any violence, that we can get an injunction against these guys." I'm thinking, oh, God, why did I leave my job in Cleveland? It was real calm. I didn't really mind it that bad.

So, that's on the first day of the job. Then, the second day of the job, I go into the construction trailer and I said to the construction manager, I said, "Hey, I got to ask you—what gives you the right to build a steel mill? How do you get that permission?" He says, "See that placard in the window, there? That's what gives you the right." So, I look at the placard and it says, "By the order of the fire marshal of Montgomery County, Indiana, Nucor Steel is allowed to build a steel mill at the intersection of 400 East and 400 South." I said, "You're telling me that the fire marshal of Montgomery County can give you the permission to build a steel mill?" He says, "Yup." I said, "Okay…" That didn't make sense to me, so I go back to my trailer, construction trailer, and I make a few phone calls. I look it up and I call IDEM, Indiana Department of Environment Management, I said, "Hey, I'm with this company called Nucor, I'm the engineering manager, going to build a steel mill, we're building a steel mill out here in Crawfordsville." They said, "Yeah, you want to build a steel mill?" "Yeah." They said, "Yeah, come down and meet us." I said, "Okay, when?" They said, "How about Thursday morning?" So, that was two more days. I said, "Okay, I'll be there, what time?" Ten o'clock, okay.

So, I go down there. They got a meeting room, huge meeting room, everybody from environmental quality, whether it be solid waste or hazardous waste,

water quality, air quality, you name it. There must have been twenty people, twenty-five people in there. So, I walk in and I said, "Hey, nice to meet you." I got my business cards, temporary, I just got them a couple of days earlier. We're building a steel mill. They said, "No, you *want* to build a steel mill." I said, "No, we're building a steel mill." They said, "No, you *want* a build a steel mill." I said, "No, I was pretty sure we're building a steel mill. This morning, we're putting steel up." "No, you can't!" "Oh, yeah? Well, we are." He said, "Well, you can't—you haven't even done a year's worth of preconstruction monitoring." I said, "Well, I'm just telling you, we're building a steel mill." They said, "Oh, that's bad." I said, "How bad?" They said, "Oh, real bad. You got to go see the EPA up in Chicago." I said, "Do I need an attorney?" "Oh, yeah, they're all attorneys up there." I said, "Who should I hire as the attorney?" They said, "We can't tell you that." I said, "Well, okay, then tell me, when you walk into the court, who don't you want to see at the other table?"

They told me this guy's name. I said, "Well, who does he work for?" This company. I said, "Where can I find him?" "Well, he's up the street, up by the monument." I said, "Okay, thanks." So, I left, I walked up the street, I walked in, and I said, "Hey, I need to talk to this guy." "Well, do you have an appointment?" "Nope," I said, "I'll just wait. Is he here today?" "Yeah." "I'll just wait until it takes…" So, I meet him finally, after about three hours of waiting, and he says, "Oh, yeah, you need me." So, he says, "I'll call the EPA." We had to go up to the EPA. They said, "Oh, you're in big trouble." I said, "Well..." So, we called home, I tell the boss, we call the CEO of Nucor. I said, "Hey, we're in trouble, here. We're building a steel mill and we don't have any permits—none of the permits." He says, "Well, you have some work cut out for you." I said, "Yeah, I guess we do." He says, "Well, all I'm going to do is tell you this—do not stop construction. No matter what." I said, "They said there's millions and millions of dollars in fines." He said, "I don't care. You just don't lose one day of construction. You pay whatever you have to pay. I'm telling you, there's so much money to be made in this industry with this technology, you just keep building. You do whatever you have to." This is like my second week on the job.

02-00:07:31
Burnett: It's like the Wild West.

02-00:07:32
Teets: It was! So, we negotiated it, and I negotiated to a $2 million fine. I paid whatever, $2,000 a day fine for months, as we did all the permitting, and we did it all legally, then, but it was not the way it was ever done. It was mind-boggling, but we got it done. He just said, "I'm telling you, you just take care of business and make it right, but just do not stop." This is putting this technology to work, man. This is going to be amazing. So, we built that steel mill under all kinds of pressure, but it was go, go, go.

02-00:08:13
Burnett: It's not as if they were unaware of the EPA, which had been established almost two decades previously; it's that it didn't matter.

02-00:08:21
Teets: No, no, and it wasn't that they were callous—it was because every mini-mill that was built prior to this was so small, it fell under the guidelines. So, in their mind, this was another one. They didn't realize, no, this is a mini-mill—mini-mill in equipment, mini-mill in management philosophy, mini-mill in every sense of the word, except it was big.

02-00:08:41
Burnett: Output-wise, yeah.

02-00:08:42
Teets: Yeah, output. Therefore, multiply the output times the emissions per ton and it's big enough to fall above all the thresholds of requiring permits. That didn't register on anybody. So, it was like, you're in a new world, people. This whole thing is new. So, it was the first big mini-mill to be built. It was like, welcome to the new world. Now, you're in the big leagues. So, I'm the engineering manager and I'm the face of all this, in front of all these administrators and so forth. I said, "Oh, okay." So, I said, "I can't believe I'm here." I was engaged, at the time. I said to my girlfriend, "Oh, boy. I think I'm going to quit and go back to LTV." She gave me the best advice in the world. She says, "You're going to go back to a company that's in bankruptcy for the second time when all you did was talk about going to this company that's on the cutting edge of technology? They're so good to their employees, everything's so right, and you're going to leave?" She said, "Give it one more week." I gave it one more week and I was there for the rest of my career is in mini-mill and so forth. What a time!

So, we went like gangbusters. We got it built in, I don't know, less than two years—eighteen months or so. We ultimately built other equipment there, galvanizing lines and so forth, and did extremely well. Most people said to us—and we were getting literature from other integrated companies that kept saying, "They'll never work." And we could not get it started. We truly could not get it running, and we were working on a plan B about tearing the equipment out. We really did get to that point of frustration, of worry, that this was a grand mistake. So, I was working as the engineering manager on what do I do when we have to throw in the towel? But after about, I don't know, six or seven months of just failure, every day failures—and that really works on you—and you got all these employees and their families all counting on you, and you're trying to give them the pump-up, "hang in there, we're making progress!" Progress may have been so small, that's management 101 about how you keep morale up, and you don't have people quit and going back to farming or going back to the shoe store, or whatever. Oh, boy, that was a tough one. Ultimately, we prevailed and had some breakthroughs, and we had to look at things totally differently. You had no one else to call. It was the first

in the world. So, I could tell you what we did, but technically, it won't help you.

02-00:11:36
Burnett: Technically, it wouldn't make sense?

02-00:11:40
Teets: It was amazing. It was like, wow! Afterwards, you say, "Oh, should have thought of that—why didn't anyone, why didn't all the consultants we talked to, why didn't all the operators we talked to, why wouldn't anyone think of that?" Yet, it was just your trial and error, trial and error, trial and error, trial and error, and finally, stumbled upon it. With good thought, tried it, and said, "Hey, it works! Hey, it worked! Wow, it worked!" Then, all of a sudden, it was like, get out of the way. These guys worked so darn hard and things started coming together, and we really made a ton of progress. We kept expanding the place, and it was great.

02-00:12:22
Burnett: I know it might be difficult to talk about the technical aspects of it, but these were incremental technical changes in the way that you would do something, a procedure?

02-00:12:33
Teets: Again, this was thin slab-casting, which was the first in the world, and it had only been done in a large-scale laboratory. So, to cast this molten metal, solidify it, and in a laboratory, it would run out, let's say, ninety feet, and that was all they had space for. The lab was only that big, and then they ran into a highway, let's say. So, now we were trying to make a cast continuously, all the way into rolling mill that was hundreds of feet away, and to make production. You had to then cast at a higher speed to get surface quality that was sellable. A slab—it's called a thin slab—so there's a lubricant. The casting molds are copper, basically copper, and they're water-cooled from the outside. I mean, inside the molds, but they're copper-faced and you're pouring liquid steel into these copper-jacketed molds. It's solidifying as it goes through, so as it comes out the bottom, it's solid. A skin of solid steel, but still liquid in the center. As it goes down through these containment rolls, it solidifies from the outside in, so that by the time it bends at the very bottom, it's a solid slab of steel. Now, in big steel, they do from eight inches to fourteen inches thick by yea wide [was showing 48 to 60 inches with hands]. So, they have that technology, and they're casting, maybe, I don't know, say, forty inches a minute, thirty inches a minute, very slow, very slow.

02-00:14:14
Burnett: Right, and these are almost like ingots, right?

02-00:14:16
Teets: Yes, exactly. Not ingots, but for a layman, that's an okay term. For us, we're only casting two inches thick by the same width, almost. So, we have to cast a lot faster to get some volume through there, and so it doesn't get stuck in

there. What everyone uses—big steel and everyone—they use a glass powder that you put in. It's called mold powder, and you put it on the top, and it melts on top of this liquid metal and as it goes down through, I'm not going to go through all the mechanics but it's drawn down between the copper and the steel to keep it from sticking together. It lubricates it, and it's drawn down. By the time it comes out the bottom, it has turned into a powder, and basically, flicks away and it goes out, but it lubricates it. It basically has a shape. It might be a ball, might be like a little tiny head of a pin ball, but it can also be like a snowflake or all kinds. It has a shape—you make them that way; it's man-made. So, we were using the integrated steel's slab mold powders and trying all kinds of them for different chemistries. Turns out, we needed to use a billet caster. A billet is usually a square or a rectangle. It's a four by four or five by five, four by six, for making small bars. A billet casts much faster.

Well, huh, it's the speed of the steel is what we failed to recognize, not the geometry of the big, wide slab. We were using a slab mold powder. We needed to use a billet-type mold powder configuration chemistry mixture in the mold because of the speed of the cast, not necessarily the geometry of the cast. It took us a couple months for our guys—my partner, Mark Millett, and one of his metallurgists—to come up with that idea, just, I'll say, out of frustration of what else can we try? Well, why don't we try this? Huh! It worked.

02-00:16:47
Burnett: So this was initially produced in laboratory, so there was experimental research that this draws from? This was done at a university or an industrial lab?

02-00:16:57
Teets: At a company's laboratory in Germany, but again, because it was so short, they could never get up to a speed. So, they used a slab caster mold powder because it was done in slow motion, and therefore, there was never any thought about what else could be done.

02-00:17:12
Burnett: So this is the innovation in scaling up and getting the throughput?

02-00:17:17
Teets: Yeah, needing to commercialize it, right. So, that was the first commercial success. Again, everyone in the integrated world is saying, "This'll never work. These guys," we were all young, we were all thirty-three, thirty years old, twenty-nine years old, and they said, "Oh, these guys are too young. They're not even old enough to know why it won't work." So, we were just young cowboys out there in the country, working seven days a week for a year or two years, just putting our efforts at trying to build this steel mill around this technology.

02-00:17:55
Burnett: And it worked.

02-00:17:55
Teets: It worked, ultimately, yeah, it worked. Everyone says, "It won't work, it won't work, these guys just aren't smart enough to know why it won't work," and then ultimately, it worked.

02-00:18:03
Burnett: It's almost like the narrative of the start-ups in Silicon Valley, you know? Taking a new direction and the sort of older, Eastern companies, Bell Labs and those, they were kind of mired in the past or something. This was a new way of approaching things and thinking creatively about how to create something more or less completely new. The story is basically getting this tremendous throughput, right? That's what thin-lab casting does in comparison to the older ways of doing it.

02-00:18:42
Teets: Well, it's not the throughput—it's the low cost, again. Goes back just like to the beam guys. You're casting and we're doing it with 500 employees and here we are, like at our plant in Butler, we put out over 3 million tons a year with 600 employees. There was integrated plants out there that put out 2 million or 1.8 million tons and have 6,000 or 5,000 employees, plus all those other ancillary upstream facilities in the coalmines and so forth. You say, how can they even stay in business? Now, again, we don't make every product. Mini-mills still don't make exposed automotive's, skin steels, and there's some products that we don't make. They said we'd never make a flat-rolled product either, so the war's not over. It's still young. The steel industry's been around for 150 years and we've only been around for twenty.

02-00:19:48
Burnett: So, this is a great success once it's done, and this is roughly 1987 to 1990?

02-0019:54
Teets: Yeah, it took us until '90, and we had a cold mill we put in, and we were actually buying hot bands from our big steel competitors and then processing them while we were trying to get our hot side up and running and get the quality up to being able to make something out of it and so forth, yeah.

02-00:20:14
Burnett: So, can you talk then about the genesis? You've had this tremendous success. What leads you and your colleagues to start something new? Can you talk about the genesis of Steel Dynamics?

02-00:20:29
Teets: Yeah. Well, Nucor was going through a transformation. It was in a growth mode, and Keith Busse was the vice president and general manager of Crawfordsville. He hired me away from LTV. Mark Millett was the melt shop manager at Nucor Crawfordsville. He was a metallurgist, a young guy. When he came to Crawfordsville, he was probably in his late twenties and I was in

my early thirties, and so, again, and the other guys were about the same age. Why they said we weren't old enough to know anything. Keith was in competition to become president of Nucor, and myself and Mark were in competition for other plants as they were growing. Keith did not become president. He was, like, runner-up, and I was runner-up for the biggest project in Nucor. That was okay because my wife did not want to go where the plant was, and so, she was happy and I was happy with that. I thought, hey, this is fine because now I was the bridesmaid, so therefore, hey, I should be in pretty good stead with what's coming next.

Then, the plant where Mark had done his experimentation with thin slab casting in Darlington, South Carolina, which he really liked that part of the country, that plant managership came available. He thought for sure that he would have a good chance to go back there. Well, all of us—with myself, six plants came and six plants went, and I didn't get the call—it was all sort of because of the competition between Keith and the guy who did become the president. Again, I'm not saying that I deserved any of them more than the guys who got them, but it went from being a very transparent company. When I knew I was runner-up for the biggest project, I knew how the vote went, I knew who voted. They told us who voted for you and who didn't vote for you. It was that transparent. So, they said, "Hey, this is how many voted for each of you, and Dick has voted for you, but you lost." Then, after that, we never heard—all you heard was who the winner was. So, I said, "Hey, things have changed so much under the new president," that I said, "Keith, hey, I love you dearly, but I'm not going to retire here in Crawfordsville. My wife isn't really happy in Indiana, she'd like to go back to Pittsburgh. So, I'm going to give you six months' notice, but I'd like to stick around and get my profit-sharing. But if you're upset, I don't mind if you want to whack me. Go ahead, but I'm giving you a lot of notice so you have time to decide who'll take my job." Then, he says, "Hey, I'm not happy, either. I'm looking around, too, so don't say anything to anyone." I said, "Okay, it's our secret."

Like a month and a half or two months later, he says, "Hey, you wouldn't guess, but Millett, he's upset because he didn't get the Darlington job." I said, "Well, neither did I. That was another one. That was just one more that I didn't get, and nor did he." So, now they got three of us that were disappointed. Mark and I for not getting promoted, Keith for just ongoing reasons. So, we just started, then we interviewed with one or two companies as a team, and even though we got offered jobs, we said, "Well, those companies aren't as good as Nucor. Why would we leave a better company to go to a company that even if we wanted to improve it, probably wouldn't be as good as Nucor?" So, we're not that upset that we'd do that. So, we were just sitting around one night, having beers at a local restaurant in Indianapolis, and just said, "You know, we ought to just damn well do this for ourselves because we know what we're doing." It was like, "yeah, right…"—"No, yeah, we ought to just think about this." So, we did, and we put together a business plan and went out and got two individuals who had, in passing, maybe in jest,

but had the financial capabilities of coming up with, let's say, $10 or $15 million. They said, "If you really want to own your own steel companies, we could be the guys who could maybe do it with you." We said, "Well, that's not enough money, but let's keep talking."

Then, once they showed real seriousness, then we decided we couldn't stay as employees. It wouldn't be fair to Nucor for us to be working for something else and still stay at Nucor. So, then we decided to part ways. We still didn't have a company, we still didn't have financing, we had two guys who each gave us $1 million, and we put $1 million down on equipment that we already knew what we wanted to do. We were that confident. We had nothing else, but we took $1 million and we put it in the bank to start paying a temporary office and pay ourselves and our clerk. We hired a clerk, an accountant, and so forth, and then we took the other $1 million and put it on long-lead-time equipment for a rolling mill. I already knew what kind of rolling mill I wanted to buy to make better a product than what Nucor was making at either of the two rolling mills, one at Crawfordsville and one at Hickman. So, when I say "better," lighter, thinner, higher strength, a different product niche that we wanted to go after.

02-00:26:47
Burnett: What would these products be used for that the Nucor products couldn't be used for?

02-00:26:54
Teets: They couldn't make it because of the design. I wanted rolling mills that could develop higher torque and so forth, and customers were asking for the opportunity—because I wanted to substitute light gauge hot band for cold-rolled and save the customer, let's say, $35-40 a ton, and if I could do that, I thought we'd get rewarded with orders. Nobody, meaning even the integrated guys, could provide that product. So, that's why we decided to use that as a basis in our business plan.

02-00:27:36
Burnett: Did you have initial customers in mind? Were they local?

02-00:27:40
Teets: No. Just based on what we knew about the customers we were dealing with, and ones that we couldn't deal with. So, sometimes you learn more from the guys that won't do business with you than the ones that you do business with.

02-00:27:54
Burnett: Right. They'd say, "Wow, this would be great if it were cheaper."

02-00:27:56
Teets: Yeah, exactly, if it was cheaper or flatter or higher quality or whatever, and then that's what we designed our business plan around. So, then we went out, and ultimately raised $83 million of equity between those two original business partners, one being a scrap supplier, which was our raw materials,

one being our largest customer—and still our largest customer—and then the two others were Bain Capital and GE Capital, Bain being where Mitt Romney was a partner, and GE Capital, of course, at the time, was Jack Welch was running GE. But we had so many people turn us down. I mean, it was disheartening. There were days we just shook our head and said, "Why did we ever leave Nucor?" Again, it took us till June, because we left in September and it took us till the end of the year, really, to get our act together and get out on the road show and so forth. But then it took us till June thirtieth to get all the paperwork, everything signed. It took us about, I think we raised $83 million of equity, about $50-some million worth of subordinated debt, and then whatever, $300 million of senior debt, different tranches, and so forth. Everyone in the financial community said this was an amazingly fast deal because three guys with nothing else, except a story, to raise this kind of money that fast. Yet, to the three guys, it was excruciatingly slow! We had never experienced anything like it, but every day was painful because we didn't know if it was ever going to happen.

02-00:29:59
Burnett: I think what's extraordinary about it, it sounds like a story of, again, venture capital in the high-technology industry, but it's in the steel industry, which you associate with slow and staid. That was kind of your innovation in your brand, was to take the very latest and the very best and start small, and think of a particular niche and fight on the margin and work with $35-40 a ton off the going price. That's an extraordinary story. So, this is June of '93?

02-00:30:36
Teets: June of '94, because everyone was saying, "Oh, we have too much steel in our portfolio. Great story. Everyone had the same [response], "Oh, nice guys, good story, love to have you in our portfolio, but no." You know— "but no, but no," everyone. Oh, it was tragic.

02-00:30:54
Burnett: Did you ever get any word through any kind of grapevine about, the problem is why does someone say no, you almost never find out, but did you get a sense? Was it too new, was it too strange?

02-00:31:09
Teets: I can't tell you because we went around the world, we went everywhere. It was the road show to everywhere. But in the end, like all of our senior debt, we had banks from Japan and from France and from Germany and the United States, we had tremendous support in the equity because, again, that's much safer. Or not equity, I'm sorry, the senior debt, and subordinated debt, even, we had some Japanese banks and Austrian as well as US, and some financial houses.

02-00:31:48
Burnett: What's the difference between senior and subordinated debt?

02-00:31:54
Teets: They have a higher interest rate and actually then have stock whenever you make the payment, you finally pay them off, they end up getting some stock. So, they have a position.

02-00:32:09
Burnett: It's the loan-shark side.

02-00:32:10
Teets: Yeah, exactly, but after the senior debt gets paid off first, if there's bankruptcy, they're...

02-00:32:20
Burnett: In a privileged position, yeah.

02-00:32:24
Teets: Equity is last, but the subordinated is next to last, let's say. So, it was interesting.

02-00:32:34
Burnett: Although you're an expert in operations, and have to know a lot about money to do that, you were not necessarily an expert in finance. Did you get some outside consulting about whom to approach for this project? Like, how did you know to approach X bank or Bain? How did you know?

02-00:32:56
Teets: Well, we hired an investment banker to help us with our road show. Just like mini-mills, we hired maybe the lowest-cost guy, and also the one that would take the money at the end, that would only take expenses upfront and then that would take it upon completion and success because everyone else wanted to be paid up front, or a lot of it upfront.

02-00:33:11
Burnett: Take a chance on you, right.

02-00:33:21
Teets: We said, "We don't have any money. No one's going to give us money up front; we don't have the money." So, we had to wheel and deal a little bit, but that's just when you're working on a shoestring budget, that was us. We had to say, "Well, okay, let's maybe not pay ourselves as much," because we weren't making money. Again, we didn't do it to make money. We were just doing it to build a steel mill. It sounds kind of silly, but that's what it was.

02-00:33:55
Burnett: All of you experienced this blockage, right? You wanted to do stuff, and once you were blocked from the top position, you said, "I can't grow here, I can't do anything," and so you saw going out on your own as finally your way to say this is how I'm going to define what I do.

02-00:34:18
Teets: Exactly right. Again, I went to Duquesne here in Pittsburgh for my MBA, and it was a joint law degree because at one time, I wanted to be a patent lawyer. Even though I was working shifts here in the steel mills, I said, "Well, I'm going to do this until I get that, and then I'm going to find another route." But then, I got transferred to Cleveland and I had to make a choice and say, "Well, I'm not going to get my law degree—at least not here—and so, therefore, what am I going to do?" So, I had to just finish up one, and the MBA was the closest thing, or the degree that I was closest to finishing. So, I had to say, "Well, okay, well, I got to be able to commute back just for a little while, until I can finish that." So, there was different routes, you know? So, whenever anyone says, "Did you ever plan your career, did you ever have this path," when people say, "Well, tell me where you want to be in five years," I say, "Don't waste your time—you never know where you're going to be. When you're working underground in the coalmine and a piece of slate falls out of the sky, out of the roof, and you say, wow, you jump to the side, you don't know." Who knows where you're going to be, and what those little things are? Heck, I could have been a patent lawyer and having fun doing it, or I could be an unemployed coalminer. You never know. If I'd have gotten the promotion at Nucor, I wouldn't be here today. You'd be interviewing somebody else. You never know what's going to happen.

02-00:35:53
Burnett: Well, there seem to be two principles at work, if I can be so bold as to integrate your approach to life to how you run companies and do your work. On the one hand, you're a mechanical engineer and an operations manager, so you have to deal with incredible pressures to manage all these different variables. So, it's the ultimate in planning, right, and making the unpredictable predictable, I imagine. On the other hand, just tremendous flexibility. You have to be adaptable to what comes because there is this uncertainty, and you have to kind of be able to roll with it. Was there a conscious decision about structuring agility into the company, or is it just the fact that it was small, that you started with having to balance different things?

02-00:36:56
Teets: You mean with SDI?

02-00:36:57
Burnett: Yeah.

02-00:37:00
Teets: We started real small as the hot band only, but while we were under construction, then we had a German company come to us and say they thought with the fall of the Iron Curtain that they were going to try to capitalize on some technology, and maybe get to build mini-mills in the Eastern Bloc. They said, "Hey, we'd like to learn from you, and what can we learn? Can we invest in you and learn all we can, and if we could give you, pick a number," and we said, "Well, how about $50 million, let's say." "Can we learn from you?" We

said, “Okay, yeah, give us $50 million.” Well, we took that fifty and then went out and borrowed another $150 million, and we built a whole cold mill complex. Everyone says, “You can’t build a cold mill complex for $200 million.” I said, “Yeah, we can. We’ll do it for $175, is my budget.” They said, “You can’t do that.” Watch me. So, we did.

I got to real quickly revert back: I got the reputation within our company and outside of our company that as the builder of the mills. I mean, that’s why I went along with this, because I like building mills. I like building stuff, but I build it to a budget. A lot of people snicker that because I’m tight with the money. I mean, I built steel mills for less than anybody, and I can say that with a lot of pride. My parents came out of the Depression. They were older when I was born. My dad went to college, my mother didn’t, and after college, my dad, it was World War II and he went into the Navy and came out afterwards, and then they ended up working for a while and having kids. Didn’t have much, so if you don’t have it, you don’t miss it. You don’t know what you don’t have. We never worried about it. I always as a kid, when they say, “What’d you do for vacation,” I said, “Heck, we went to the Montreal Expo, but we went six years after it was closed, so we got a bargain.” But we didn’t know it was closed, so hey, this is kind of pretty neat. I was taught the value of a dime or a penny. I’m not afraid to pick up a penny. Hell, it might the penny that gets me what I need some day.

So, even in building a mill, you say, “Hey, I’m going to do it for this amount of money.” So, when you say you’re going to do it, you damn well better do it. So, when we said to our investors, “Hey, we’re going to spend this $25 million,” the investors didn’t believe us, so they made us hire an engineering company to watch us, and then they didn’t trust us because we hired them. Then, they hired another engineering company to watch the engineering company that we hired. You know what? We came in under budget and they were shocked. There’s other people who build steel mills that come in $400 million over their budgets, and they lose their ownership. Everyone’s shocked. Those stories are the ones you hear about. Ours, I’m very proud of.

So, when we built our mill, then you have these other people come along, and they give you money, and they say, “Hey, here.” Then, we had a Japanese steel company come along and say, “Hey, we’d like to give you some money.” So, we said, “Well, okay, you can give us $40 million,” so then we built our Iron Dynamics project. This is before we even started up. Then, we had our partner, on the hot side, our biggest customer yet, and he says, “Hey, when you build a cold mill, you’re building a cold mill now, you haven’t even started up and you’re building a cold mill and that’s going to take all your hot band, and that’s when I buy hot band. That’s not fair to me.” We said, “Well, jeez, well then, I guess we better double the hot side.” So, just as we were getting ready to start up, we said, “Well, we got to go out,” and so, then we got someone else to give us some more money, and we got some more money,

and we went out and borrowed another $100-some million. So, we doubled the size of our steel mill.

In very short order, we doubled the size of our projects, and the flexibility that you're asking about was within our business plan. Yet, we delivered. Every time we gave them a budget, gave anybody a budget, and this was all private money, but once we got started up, by the fourth month of our start up, we were profitable. We started up in January. By May, we were profitable, and by November, because of GE and Bain, we went public. We're listed on NASDAQ because this was an amazing story and they wanted us to go public so they could sell their shares. These are shares that these guys, on their $20 million investment, made $160 million after three years. That's venture capital.

02-00:41:48
Burnett: Right, by definition.

02-00:41:49
Teets: That's America. Now, they had to sell because those guys had to sell out anyway because of those funds that they invested in us. They have a five-year program that they can only be in anything for five years. So, they saw this as it was such a good story that it was time to sell. The market could have turned or something else could have turned, and then they might not have seen as good of a timing. Then, other funds within either GE or Bain came back in and invested in us, and some of them are still in us today, twenty years later, because they see a value in our company. But those initial funds, which are the risk funds, they're the ones who made us happen. They made us happen. Great stories, there.

Now, the flexibility, then, goes to the point of before we even had the cold mill completed, we'd already decided to build a structural mill. So, I went about finding a place to build a structural mill and went out about finding equipment and so forth. But in the pursuit of looking for equipment, going back to my story about Nucor and about how it must get done and must get done fast, I said, well, I know where a whole structural mill is; it's shut down. Bethlehem Steel used to be the icon of structural. So, I went to Bethlehem Steel and got an arrangement with the used equipment supplier to give me a tour, and Bethlehem had no more assets in the United States making structural, so they were willing to sell their whole facility down in Bethlehem, Pennsylvania. So, I got a tour of the place, looked it all over, said okay. Gave them a call, I said, "Hey, I'll tell you what, I'll buy the whole place," gave them a scope, "for X amount of dollars," so many millions of dollars. They laughed at me. They said, "No, that's way too low." I said, "Well, that's your choice, but that's my offer. I'll give you thirty days to make a decision." "Yeah, that's way too low." I said, "Okay, thirty days, call me in thirty days." I didn't hear from them.

Oh, about seventy days later from the time I gave them the offer, they called me up, saying, "Hey, is that offer still on the table?" "No." "Why not?" "Because I bought a brand-new steel mill," rolling mill, that was the scope that I was offering on. "Why would you do that?" I said, "Well, because I needed a rolling mill. I made you an offer." I was going to take theirs, and I had all their drawings, and I had two companies that were going to refurbish it and make it into like a new one. But because of the big housings and the castings and so forth, it could have saved me eight, nine months of time, so that they didn't have to get those made in foreign countries and big shops, casting shops, and have them machined and all that. I didn't want much of their stuff, but there were things I did want, to save me time. I said, "man, you could get me into business that much quicker." They said, "You really went and bought a new mill?" I said, "Yes. You couldn't come up with a decision. Nope, sorry."

So then, like two years later, I wanted to buy a big straightener, about $10 million straightener, for making railroad rail. Bethlehem has one, I went down in Monessen, down here near Pittsburgh. So, we get down there and take a look at it. I said, "Hey, I'll give you so many millions of dollars," and they said, "Oh, that's way too low." I said, "Okay, well, I'll give you thirty days to think about it. Give me a call." So, I don't know, sixty days later or so, they gave me a call and said, "Hey, that offer still on the table?" I said, "Nope, went and bought a new one." They said, "Why would you do that?" I said, "Because I gave you thirty days, I didn't hear from you in thirty days, I went and bought a new one." I said, "You know what? I know why you guys went bankrupt—you couldn't make a decision. You have so many people, your management structure is so big, there are so many layers, you can't come to a conclusion. I swear that's why you went bankrupt." That's the difference between a mini-mill, when you only have a couple of people, you can make decisions. Hey, you give me thirty days, I want to get back to you in five days, because time is money. Shockingly tragic.

So, we built a structural mill and doing great and we make railroad rail now, and Bethlehem doesn't. They did, but they don't, and they're not even in business anymore, and neither are many of the other companies that some I used to work for, and others that were icons aren't around either anymore. So, the landscape has changed amazingly.

02-00:46:40

Burnett: Well, off-camera, before we started, we talked a little bit about the fact that there were these large, vertically integrated enterprises that were a hallmark of American manufacturing that faced a decline. Whether it was the bureaucratic sclerosis or the competition from other countries, and there was a door that was open for agile, flexible companies, small companies, to take over pieces of the market. You talked about this retrenchment, that they were forced to sort of cleave off little bits of their enterprise that these smaller companies could then snap up. How does that story continue? As, you started with a

small, agile company, Steel Dynamics is now the fifth-largest steel company in the United States. It's still small compared to, I think, ArcelorMittal is the largest in the world, and it's ten times the output of Steel Dynamics, but one-tenth of ArcelorMittal is still a large company. You said something off-camera about how it's come full circle. Can you talk a little bit about organization and manufacturing in Steel Dynamics, and where it is now and where you'd like it to go in the future?

02-00:48:09
Teets: Sure. Well, we've come a long way from three people in 1993 to having built the flat-rolled mill in Butler and then the structural mill in Columbia City, and then we purchased basically a brand-new mill that wasn't operating well, that ran out of gas and out of its receivership, in Pittsboro, an SBQ mill, special bar quality. We've expanded it and now it's up to over 900,000 tons. And the other mills, Butler's over 3 million tons, the structural mill's over 2 million tons, and then we bought Roanoke Electric and Steel Company, and that also had Steel of West Virginia, which in aggregate is probably close to 1 million tons of steel capacity. Here in Pittsburgh, we bought three galvanizing lines, which they can coat together, all three of them, close to 1 million tons of capacity.

We grew from greenfield a downstream fabricating facility called New Millennium Building Systems, and we had two facilities of our own, and then when we bought Roanoke Electric, they had three facilities, and we expanded those. Only one of those remains because the other two crashed in 2008, the economy did, and it was overcapacity. We closed two of them, but we also bought a competitor who had about eight facilities, and we closed all but three. Now, we have a presence in Juarez, Mexico, Fallon, Nevada, Hope, Arkansas, so now we're geographically spread across the whole United States because we're also in Florida, Indiana, and Virginia. So, now we can carry national accounts and so forth. So, that's downstream. We also spent about $1.6 billion on upstream scrap-processing and collection services, with the purchase of OmniSource. I was trying to relate this to the old days in integrated mills, where they also owned coalmines and iron ore facilities and docks and shipping. They owned their own ship lines and they owned their own railroads, at least local railroads, or short lines and so forth. Then, downstream, they'd have their own service centers and their own fabricators and their own bridge builders.

Some of the names, they built the skyscrapers, the Empire State Building and they built the Golden Gate Bridge, and George Washington Bridge in New York, and so forth. So, as much as we as mini-mills do things very efficiently with low manpower, it doesn't preclude us from replicating some of the good things that come about by having your own control of some of the things that are either upstreamed or not. What we don't do is want to have 100 percent because the integrated mills, when they went out and bought coalmines or iron

ore, they wanted to have 100 percent of their needs covered. Well then, when they went into a recession or just a downturn, what do you do with those capacities? Then you lay people off, especially when they had union contracts with defined benefit programs or pensions and the like, where we're much more flexible. Even though we spent $1.6 billion on a scrap company, we still only get half of our scrap for our 11 million tons of scrap needs, we only get half of it from our own scrap company. The other half, we buy from their competitors. Then, they also, in their remote areas, they sell to all our competitors.

So, there's a good balance in there, and so, good times and bad, there's that flexibility that you referenced before. Downstream, in our fabricating division, I used to run that and I always encouraged them to buy from other steel companies because of logistical costs. Because we didn't build them in close proximity to the steel mills, it wasn't an outlet for us. They were built to make money in the right locations to serve markets. Sometimes, it's good to buy and they are in the right locations to use our steel, but sometimes, we make more money by selling to their competitors, and they make more money by buying from our competitors. So, it's a very dynamic situation, now. When the market goes bad for everything, then we may appreciate them as a supply to us or from us, and they might appreciate us, because then we can work on pricing. So, there's that give and take sometimes. So, the integrated world, when they had it, the largeness and the inflexibility that existed, they found no way out except to either close it down or spin it off. Sometimes, it was so large, they spun it off and it was again a complete company, industry by itself. I don't like to name names, but some of the service centers were so big, in some cases, that they actually went public and are traded in the stock exchange, that they were such a large entity. You'd say that's just amazing, that that was at one time a captive outlet for one of the steel companies. We do things in a much smaller, more flexible manner.

02-00:53:48

Burnett: You are also facing a global market.

02-00:53:54

Teets: We're constantly watching that. I'm currently the chair of the Steel Manufacturers Association, and probably the biggest threat today is unfairly traded imports of different products. Again, now, because the economy is poor just about everywhere, and in most cases, poorer everywhere. China is still an expanding economy, but it's expanding at less of an amount than it has been, and therefore, in that context, and they being, in many cases, a social machine, needing employment as a tool for that social stability, they then look to the export markets for a continuation of that stability. Therefore, we always have to be on guard for unfairly traded products being brought to our shores. Again, our industry can compete with anybody, if it's done fair and free. But one without the other is not acceptable.

02-00:55:09
Burnett: So, there is steel dumping?

02-00:55:10
Teets: Oh, all the time, every day, in all products, yeah. Yeah. Lots.

02-00:55:16
Burnett: How do you know it's steel dumping? Because you know it's just below cost of production?

02-00:55:20
Teets: Either below the cost of production or below the price that it's being sold for in their home country. So, if they're bringing it here just because they can't sell it in their home country, then it's dumping here also.

02-00:55:34
Burnett: And it's difficult to enforce, for obvious reasons, the same reasons they've had difficulty enforcing currency.

02-00:55:41
Teets: Yeah, exactly. Budget constraints and so forth, when you have so few inspectors. There's so many examples of one country gets hit with duties on, let's say, the classic one is, you know, steel hangers. Say no more steel hangers from—I won't even name the countries because I'm not here to bash them—without paying this duty. Well then, right away, steel hangers are coming from a third country. They don't even have any steel hanger manufacturers, but the same amount of hangers that used to come from this first country are now coming from this other country. You say, wait a second, they're just transshipping them, and now they're all coming in from here. So, they're still being made, they're still being dumped, it's just they're just circumventing the duty. You say, wait a second—now we got to go through the trade actions again and file dumping cases again? It's a game of cat and mouse. It's unbelievable. You can go on the Internet and hire services for transshipments of products, just to avoid duties. They advertise blatantly. Unbelievable.

02-00:57:00
Burnett: So, you achieve incredible cost advantages by organizing your manufacturing in a flexible manner in a way that's adaptable to change, but in a regulatory system, the regulatory system functions almost by being slow, by let's make sure we gather the evidence and let's hear both sides, and so on. All of that takes time, and people can take advantage of the difference between the rapid change in the dynamic market and the slow, sclerotic process of the legal system, whether it's the WTO or anything else.

02-00:57:38
Teets: Very much so, and tragically, in our system, we have to show injury. I mean, right now is a perfect case, where I have employees. I have three galvanizing lines that are not running full. We've had employees leave us because they weren't earning as much bonuses as they used to. So, I could have more

people working, but they've left us, but we're making money there because we're efficient. But I can't sell enough to bring back more employees—but I can't file cases against anyone because we're profitable. I should be able to, but there's so much cheap substitute steel here in this country that I can't add employees to work here. We are cheaper than anybody else in this country, and cheaper with quality product. Not cheap product—high quality product, day in and day out, safely made, and I can't hire more employees because there's too much cheap imports. But I can't prove injury.

02-00:58:52

Burnett: So, there's almost a parallel to the case of the rare-earth minerals, where now there's a real response to the industry because export markets have restricted the supply of rare earth oxides. So, the response is to sort of develop local capacity. It seems like there are similar, almost strategic dimensions to the steel industry. I mean, steel really becomes a massive industry in part because of its defense implications, right? Do you ever think about that? Or at your level—president of associations and so on—is there ever talk about the strategic implications of American steel manufacturing capacity?

02-00:59:44

Teets: Yeah, of course there is. We talk about it on a regular basis. You don't always get the hearing that you'd like when you talk about it, but many of us make components and parts for Hummers or missile components, and much of it is buy American, and so forth. You'd like to say, well, you know, we have to make a full complement—we have to make enough to be here. So, you can't be selective, Mr. Government. You say you want to help us and yet you don't, and yet you tell us, well, we have to be there to make these other things for you. You can step into our schedule at any time—they have the right to break into our schedule—and say, "We don't care what you're doing—make these for us." If we have the capability, they own the rolls. There are products that I know— we were asked to quote on some Minuteman missile component pieces, and the rules were you'll never own the rolls. They'll own them, and when they want them, they'll come in and tell you, make them now. You have so many hours in which to switch over. It was just a very rigid environment. You say, "Well, wait a second, but when we ask you for help on other things, where is that quid pro quo, you know? Help us out a little on some of this."

02-01:01:14

Burnett: Give and take, yeah.

02-01:01:18

Teets: What if we aren't here anymore? What are you going to do then? I know government is just slow and cumbersome and we recognize that. It's not because they want to be. I'd like to think not. [laughter]

02-01:01:37

Burnett: Right, just some benefit of the doubt. Well, I want to thank you for your time. It's getting late. I really appreciate your taking the time to talk to me about

this. I hope we can sit down another time at some point to talk about some of the other dimensions, but thank you so much for speaking with us. Enjoy the rest of the conference.

02-01:02:01
Teets: Paul, it was my pleasure. Thank you.

02-01:02:01
Burnett: Thanks.

[End of Interview]