

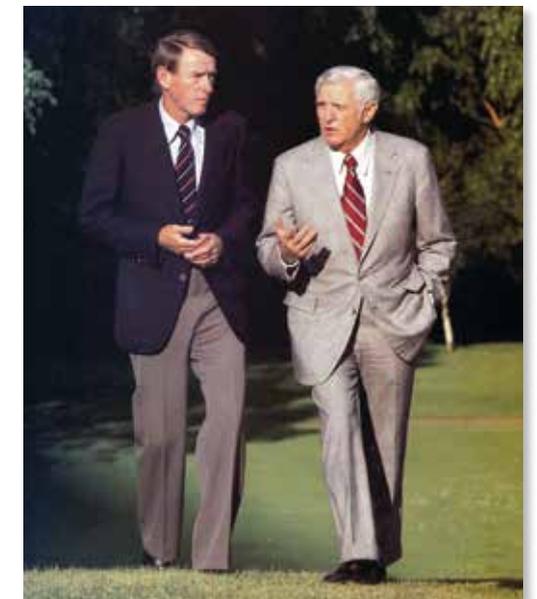
# Meeting the Hose Mandate

*“I didn’t think I’d live long enough to see this happen. Seriously.”*

Chairman, chief executive officer and president, Donald “Don” Washkewicz, reflecting on the first piece of hose produced by Parker Hannifin’s Hose Products Division’s nine-month-old plant in Manhattan, Kansas on December 31, 1979.

As 1975 began, Duane Collins was firmly in charge as general manager of the Hose Products Division and a focus on teamwork, formulated by Bud Aiman and Denny Sullivan, steered his direction. The predominant goal was to develop high-temperature hose, however, the country’s economic issues would add to the challenge of meeting this objective.

Parker Hannifin battled a highly inflationary economy that reached 10 percent the previous year and increased costs loomed over the company. With profitability slipping and suppliers’ prices steadily rising, “fair increases” became the operative term for the corporation—particularly the Fluid Connectors Group.<sup>1</sup>



Chairman Patrick “Pat” S. Parker (left) and President Allen “Bud” N. Aiman (circa. 1979).



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THE PARKER APPLIANCE CO.  
CLEVELAND, OHIO, U. S. A.  
LOS ANGELES, CALIF. U. S. A.

“Regarding the necessity of pricing orders at the time of shipment: The Connectors Group is receiving new orders at a rate which exceeds our capacity to produce, and this has been the case since August of 1973. Order backlog is 150 percent higher than it was a year ago,” wrote Parker Hannifin senior vice president Bud Aiman in a letter to distributors of its Fluid Connectors products. “Based upon the spiraling costs, there is simply no way we can ship this backlog at a fixed price. Take the case of brass products and high-pressure hose. If we shipped these products today, at the prices calculated on the costs three months ago, the resultant loss to our divisions would more than wipe out their earnings for the entire year.”<sup>2</sup>

Despite outward economic pressure, the Hose Products Division was determined to become a full line manufacturer of hose and fittings. To do this, efforts were concentrated on promoting thermoplastics technology being developed at both the established Kent plant and its newly built Ravenna facility.



Kent, Ohio



Duane Collins

*“For the first five years Pat Parker saw me, I always had a piece of hose in my hand,” Collins recalled. “I was always trying to show him the latest in technology and what we were doing [in order] to gain his support.”<sup>3</sup>*



Ravenna, Ohio

“The move the Division made to get that small little plastics company in Kent to start developing thermoplastics led to rubber hose,” explained John Zakaria, who served as the Hose Division’s controller at the time.

Capitalizing on the potential behind producing hose was evident as Parker committed nearly \$9.4 million, or 2.3 percent of sales, on the research and development of fluid power during fiscal 1975.<sup>4</sup> This investment instilled a commitment for Ravenna’s R & D team to develop Parker’s hose technology.

### FINESSING FREON

An important part of the country’s hose business in the mid 1970s was providing capabilities for automotive Freon systems. Aeroquip was gaining market share due to the development of its AQP high-temperature hose constructed with elastomeric materials—a breakthrough resulting from testing thousands of compounds.<sup>5</sup>

“Aeroquip had some amazing products and it was my job to dissect our competitors’ hoses and really understand what they had,” said Parker Hannifin’s chairman, president, and chief executive officer Don Washkewicz, who served as the Ravenna plant’s R & D manager, where he received seven patents for new product designs and developed several proprietary manufacturing processes. “At the same time we were developing hydraulic hoses for the Hose Products Division, we were also developing rubber hose for the Automotive Connectors Division. We had the P54 and P34 nylon hose, which was the liquid side of the automotive Freon system. But, there was a hot side of that system that required rubber hose.”<sup>6</sup>



John Zakaria

In addition to producing a superior substitution to Aeroquip’s AQP hose, Washkewicz and his team deciphered the characteristics behind the General Motors (GM) Hypalon® hose, which was known for being flexible, retaining Freon, and preventing moisture ingress. GM’s product had good Freon traits, but this particular hose was very thick and heavy—two details that were counterproductive to a car’s needs. To help mobilize the R & D team’s efforts to produce a competitive product, Tom Bergeron was persuaded to leave Electric Hose and Rubber Company in McCook, Nebraska to serve as manufacturing manager for the Ravenna plant in October 1977.



Don Washkewicz in his role as R & D Manager at the Hose Products Division’s Ravenna, Ohio plant in 1979.

## The “A Team”



Members of what became known as the “A Team” included (from left to right) Wayne Gross, lab manager, Barb Markov, R & D lab secretary, John Greco, R & D engineer, Harold Belofsky (second from the end) and Don Washkewicz (on the end).

“Duane Collins and Denny Sullivan hired me specifically to put them in the hose business,” said Bergeron, whose career with Parker Hannifin spanned 28 years, including general manager of the Automotive Connectors Division. “When I moved to Ravenna, it was losing money hand over fist. But, I couldn’t believe the talent they had there.”<sup>7</sup>

On Bergeron’s prompting, Isaac Shilad soon joined Washkewicz and his teammates Jack Tooill and Harold Belofsky. Shilad had worked with Bergeron at Electric Hose and Rubber in the late 1960s before serving as the chief chemist at Aeroquip. His vast experience in recipe composition and rubber processing methods would prove pivotal for the Hose Products Division.



Isaac Shilad

“We made a lot of new compounds and hose designs,” recalled Shilad who served as the technical manager in Ravenna. “Don had an idea about a curing system for rubber hose, but both Harold [Belofsky] and Jack [Tooill] had issues with the process. We tried compounding everything so the new process would work. It was a big change compared to the conventional way of making hose.”<sup>8</sup>

The R & D team met monthly with Fluid Connectors Group executives Denny Sullivan and Duane Collins, along with representatives of the Automotive Connectors Group, to discuss the direction of new products and manufacturing processes. While time was of the essence, the focus was on two key details: develop a less expensive way to process hose and eliminate the toxic process typically used for its production.

“We looked at wrapping, salt baths, radiation curing, hot air curing, X-ray curing, microwave curing—everything you can imagine,” said Washkewicz. “At the same time, we were looking at rubber compounds.”

According to Washkewicz, it was a eureka moment that led to a Parker Hannifin trade secret manufacturing process that gave the company its edge. “I was trying to come up with a better way to process hose, and it came to me while I was lying on my family room floor with my kids,” he said. “Our manufacturing process for hose is now state of the art.”

As a result of the team’s effort, a new hybrid automotive liquid Freon line hose called Parflex® 80 was created. Designed with a thermoplastic liner and a special rubber cover, this new hose kept Freon in more effectively than GM’s Hypalon hose, while also keeping moisture out of the system. The new hose was also lighter in weight, smaller, and lower in cost to produce.



Harold Belofsky

“By the late 1970s, we had pretty much reproduced all of the hoses we were buying from other manufacturers and also developed some unique products we had innovated ourselves,” Washkewicz recalled.

*“This shows you the scope of what we did with this small team,” said Washkewicz. “I always looked at my team as the ‘A team’—we didn’t have a lot of people, but everyone was a SEAL.”<sup>9</sup>*



Jack Tooill

## MOVING TO MANHATTAN

With confidence increased, the Hose Products Division's R & D team was poised to make its next move. To gain a national competitive edge as a hose supplier, the Division began looking at different locations around the United States to build its first official hose plant.

To do this, Bergeron brought in Denny DelBane to lead hose manufacturing. An 11-year veteran of Aeroquip, DelBane was also responsible for finding the perfect location to build the Hose Products Division's new home for hose.

"Don [Washkewicz] and I decided we had to have some parameters as to where we would build the plant," explained Denny. "There had to be some things in the community that were important to the people first. Ultimately, that's how we found Manhattan, Kansas."<sup>10</sup>

As the home of Kansas State University, Manhattan was a hub for college talent—a factor that Parker Hannifin knew would be important for the growth of its Hose Products Division. To prepare for the future, ground was broken on March 29, 1979 for construction of a 64,000 square-foot manufacturing plant. Upon completion, the plant was anticipated to double its physical size and employ up to 150 people within the first two years.<sup>11</sup>

"I set up a mandate for our team that we would have our first production of rubber hose in Manhattan by the end of the 1970s," said Washkewicz.<sup>12</sup>

While the new rubber manufacturing process was successful in Ravenna, the team was unsure if the method would work on a larger scale. With just nine months to meet the mandate, the team worked furiously to "lay the first piece of hose off the line" before the New Year began. Those in Manhattan recalled:

*"Denny and I practically made hose by hand trying to make the first piece."*<sup>13</sup>

Isaac Shilad

*"It was a little scary because we had developed a new process that had never been done before as far as we knew."*<sup>14</sup>

Tom Bergeron

*"We had started building the plant in March and completed it in November. We decided we would do everything we could do to make the first piece of hose before the end of the calendar year."*<sup>15</sup>

Denny DelBane



The Manhattan, Kansas plant would be the site of the first piece of hose produced by Parker Hannifin's Hose Products Division on December 31, 1979.



The first piece of hose produced by the Hose Division—a 100R5 hose—remains encased at the Manhattan, Kansas facility.

Despite the seemingly impossible time constraints, the first piece of hose was run at the Manhattan plant on December 31, 1979.

"I knew we would become the industry leader once we started that plant in Manhattan," said Duane Collins, who served as vice president of operations for the Fluid Connectors Group that year. "We had the best process for making hose in the world, and at the time we were the largest hose customer in the world. The handwriting was on the wall that we were going to be the world leaders."<sup>16</sup>

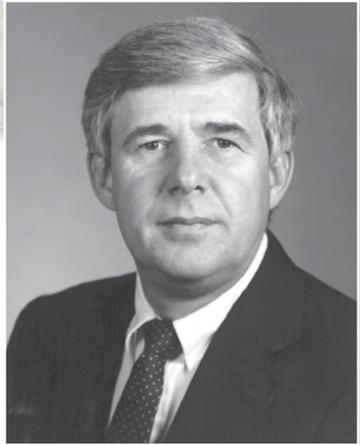


## BUILDING ON PROGRESS AT HOME

As the Manhattan plant continued to perfect its hose production, the Hose Products Division's efforts in Wickliffe were growing under the leadership of Syd Kershaw as general manager. With a push for "complete system coverage" for the transportation industry, the Division marketed products designed and engineered for a wide variety of heavy-duty truck applications.<sup>17</sup>

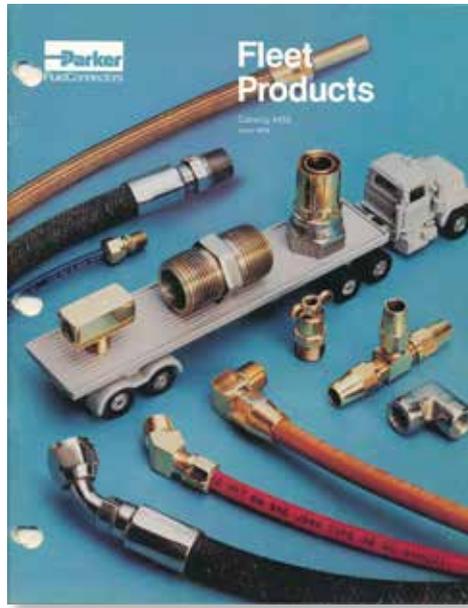


Wickliffe, Ohio



Syd Kershaw

In 1978, Parker Hannifin reported its industrial business segment outpaced modest but steady growth in U.S. durable goods production. The corporation's net income for the year increased 18 percent, from \$33.6 million to \$39.6 million,<sup>18</sup> and growth was evident with 12 acquisitions occurring during 1978 and 1979—including the purchase of Andrews, Inc., in South Brunswick, New Jersey.<sup>19</sup> Andrews brought cam lock lever couplings into the Hose Products Division's offerings, making Parker the broadest supplier of large diameter hose fittings in the world.



In the late 1970s, three plants and many distributor service centers made Parker's Hose Products Division well prepared to service its customers total hose, hose fittings, tubing, and brass tube fittings requirements.

In Wickliffe, Kershaw was focused on ways to enhance the Hose Products Division's steady financial growth. Just as the R & D team was built from the outside, he sought out the best talent in hydraulics and hose fittings to guide the Division into the new decade. One of these new hires was Luis "Lou" Moreiras. An eight-year veteran of Weatherhead, Lou was first appointed as Mobile OEM product engineer for the Hose Products Division in 1976—a role that progressed to chief engineer in 1979.



Lou Moreiras

**"Back in those days, [the Hose Products Division] was run like a family business," recalled Lou. "Whatever it took to get it done, we did it."**<sup>20</sup>

The commitment in Wickliffe was evident on every level, according to Jack Myslenski, who began as a manufacturing trainee for the Division in 1973 after graduating from the Ohio University College of Engineering.

"We were working 10-hour shifts and eight hours on Saturdays," said Jack, whose 34-year career at Parker Hannifin included general manager of the Hose Products Division and executive vice president of sales, marketing, and operations support for the corporation. "As the industry changed there was a whole time period where all of the connectors' guys were buying the hose guys. We got into the industry pretty late."<sup>21</sup>

While late to the game, the team in Wickliffe was busy finding ways to outpace the competition. This included continued testing of the R & D efforts in Ravenna and the products being developed at the Manhattan plant, explained Joe Gass who worked in the Hose Products Division product development department in the late 1970s.

"Every production run coming out of Manhattan was tested in the lab until we built the confidence that all of the processes were up to snuff," said Gass, who worked under chief engineer Bill Currie in Wickliffe. "The lab ran 24 hours a day, seven days a week."<sup>22</sup>

As 1980 approached, the Hose Products Division was positioning itself for the challenges ahead. While Parker Hannifin was making observable moves in the production of its own hose, the team at Wickliffe was quietly developing advancements necessary to not only compete in the market, but become the leader.

Joe Gass began in the Hose Products Division's product development department in the late 1970s under the direction of chief engineer Bill Currie.



Jack Myslenski

As general manager, Kershaw knew the industry was shifting away from relying on reusable hose fittings and the Hose Products Division needed to be prepared. "I didn't look at it as a challenge," recalled Syd. "We were just doing things better and quicker and understanding the market's needs."<sup>23</sup>

To do this, a Division-wide effort resulted in the production of a hose crimp system that would make Parker-engineered permanent hose assemblies—anywhere, anytime—featuring couplings that "Put the Bite on the Braid."<sup>24</sup> Known as the Parkrimp™, this development would forever be synonymous with Parker Hannifin's Hose Products Division.



Chief engineer Bill Currie (left) accepts an award from Hose Products Division general manager Syd Kershaw.

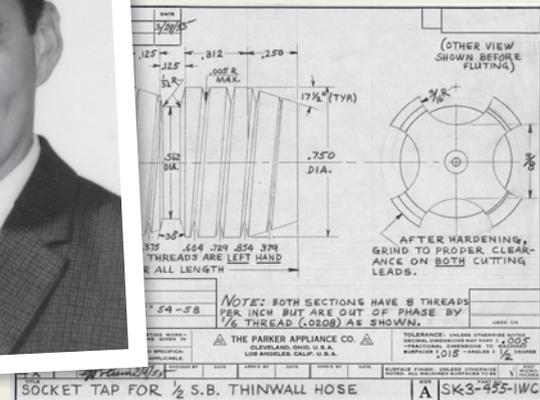
# William E. Currie

## ATOM BOMB BEGINNINGS INSTRUMENTAL FOR TODAY'S GLOBAL LEADER OF HYDRAULIC HOSE AND FITTINGS

There are many reasons why Parker Hannifin's Hose Products Division has been both a pioneer and leader in the hydraulic hose and fittings market. And one person is often credited as the reason Parker Hannifin entered the hose business to begin with.

William E. "Bill" Currie began his career with the Parker Appliance Company in 1951 as chief development engineer for the Fittings and Hose Division. Just five years after his arrival, Bill's "Coupling with Recess for End of Flexible Pipe" patent provided a valuable entry into the hydraulic hose market<sup>25</sup> by creating a conventional "skive-type" high-pressure hose coupling with two cost saving features. This patent was soon followed by Bill's improvement to the original design known as the No-Skive hose assembly.<sup>26</sup> This alternative to the skive-type reusable hose and fitting was an industry first and became the basis of the Hose Products Division's formation. While the No-Skive patent set the wheels in motion for Parker Hannifin's hose business, it's Bill's earlier achievements that reveal the full story of his contributions.

Bill Currie was a part of the country's collaboration to develop the atom bomb at the Oak Ridge, Tennessee plant.



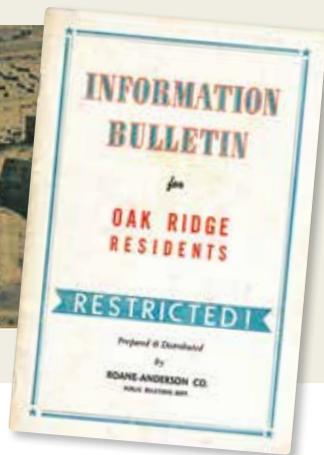
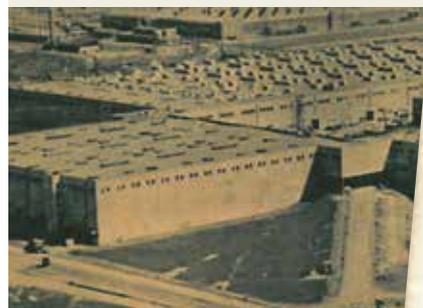
Engineer Bill Currie is known as the "Father" of the No-Skive™ hose assembly.

### EARLY YEARS LEAD TO ATOMIC ENERGY

Born October 13, 1921 on a dairy farm in East Brookfield, Massachusetts, Bill was the third and youngest son of Frances Hodgkins and Edgar Willis Currie. After completing high school at the age of 16 and graduating college in 1943, Bill's interest in firearms led to a position at the Remington Arms Company in Ilion, New York. From this role, he was offered a construction management job in a plant to be built by the specially formed "TNX" division of E.I. DuPont De Nemours, the owners of Remington<sup>27</sup>—yet, he had no idea his new employer was housing a secret city to develop the country's mightiest military tools and technology.

"The department manager prepared me with some general comments, beginning with the unbelievable statement, 'we are engaged here in splitting atoms on a production basis,'" Bill wrote.<sup>28</sup>

From the beginning of 1944 until June 1945, Bill worked alongside thousands of others at the Oak Ridge, Tennessee plant within a restricted military area spanning 60,000 acres. Known now as the Manhattan Project, the city of employees embarked on an all-out effort to research and develop the first atomic bombs under a blanket of tight security.



After the war came to a close in August of 1945, Bill remained with DuPont until beginning his position at the Parker Appliance Company six years later at the age of 30. It was here that he patented 16 inventions, which contributed to the Hose Products Division's overall success.

### ESTABLISHED TECHNOLOGY INITIATES FUTURE ACHIEVEMENTS

The significance of Bill's No-Skive technology became more apparent when the hydraulic hose market evolved from a reusable mindset to permanent fittings throughout the 1970s. To meet the needs of its customers and become a viable competitor, the Hose Products Division was charged to design the perfect hose crimper system.

While there were many crimper systems on the market, the majority were large, expensive units, which required complex steps to produce a hose assembly. It would be Bill's No-Skive technology that would aid in the Hose Products Division's development of a superior crimper system solution.

"Everyone in the Division knew it was an important project," said Kenneth "Ken" Korane, who worked alongside Bill in the lab as a product engineer in the early 1980s. "The No-Skive hose allowed the teeth to bend when crimping the hose, but they would still bite. Essentially, it was a compensating fitting<sup>29</sup>—it would compensate for the tolerance, whether the hose had high or low tolerances."<sup>30</sup>

Currie's brilliant mind developed integral pieces of technology for the Hose Products Division. Yet, he is also fondly remembered for his sense of humor.



1951



1988



While the No-Skive hose assembly offered an edge in developing a crimper system, the challenge was how Parker Hannifin could create its own signature hose assembly system that would stand alone.

"We had in mind what we wanted, but there were a number of other [crimpers] on the market with patents protecting that intellectual property," Ken recalled. "Bill was the guy we would go to for cutting-edge technology. He had seen and done it all."<sup>31</sup>



Ken Korane

As a result, the Hose Products Division's team would create the Parkrimp "No-Skive" hose assembly system—a development that would propel Parker Hannifin's name to the top of the hydraulic hose market. The Parkrimp offered an alternative to making custom, factory-quality hose assemblies fast with an exclusive through-the-cover coupling, which cuts through the outer cover and grips the wire reinforcement for maximum performance.

While his experience with the Manhattan Project was matchless, it was Bill's work at Parker Hannifin's Hose Products Division that stood out most among his many achievements, according to his wife of 64 years, Kathleen Currie.

"Developing the No-Skive was his proudest moment," she recalled. "He rarely talked about work, but he would show me the No Skive a lot—I didn't even realize its importance!"<sup>32</sup>