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REBUILDING OKLAHOMA CITY: Miracle on 74th Street

On May 8, a tornado ravaged a plant that builds GM's popular mid-sized SUVs. Just 7 weeks later, the plant reopened -- months sooner than anyone expected. Here's how GM got Oklahoma City running again.

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OKLAHOMA CITY - At General Motors' assembly plant here on Southeast 74th Street, Thursday is tornado warning day.

The safety department tests the alarm system like clockwork at 10 a.m. every Thursday and then again like clockwork at 10 every Thursday evening.

On Thursday, May 8, of this year, the warning blew at 5 p.m.

The sun was shining. The plant's second shift was an hour into its work. Across the road from the 25-year-old factory, about 35 people had gathered at UAW Local 1999's red brick union hall for a seminar on retirement benefits. Tyree Minner, Oklahoma City's plant manager, had stopped by the hall earlier that day to be part of a presentation. Then he got into his car for a three-hour drive to Dallas for his annual company-required physical.

At 6:15, Minner's cell phone rang in Dallas with the news: A tornado had just blown through his 3-million-square-foot factory. The west wall was gone. The recently modernized paint shop was a mess. Structural steel and the utility infrastructure were gnarled and displaced or missing altogether. Almost half the roof was gone, leaving welding machines and painting equipment exposed to torrential hail and rain. Critical air quality-control systems had been destroyed. Chunks of walls and roof dangled dangerously over the shop floor. The union hall was demolished. Shipping bay doors were blown in. And automobiles - newly minted GMC Envoys, unpainted Chevrolet TrailBlazer bodies, cars from the employee parking lot and vehicles from who-knew-where, some with their emergency lights still flashing, were battered and mangled together and heaped by the hundreds across the property.

Two months later, employees from the SUV factory still talk in amazement about the show of nature's force that Thursday afternoon. In just two minutes, the fast-moving storm crippled one of GM's most productive assembly plants and threw into jeopardy the automaker's schedule for ramping up production of TrailBlazers and Envoys and adding more models to feed GM's surging light-truck business.

Amazingly, no one was killed or seriously injured.

But just as startling is the speed with which GM repaired the plant and brought Oklahoma City back into production.

On June 30, workers stood by as vehicles went into production for the first time since the night of the storm. Just seven weeks had elapsed since the system crashed under the force of 200-mile-an-hour winds.

How GM and its suppliers rebuilt the plant is a story that manufacturing managers will be studying for many years to come. Rapidly obtaining new industrial equipment and tooling, expediting material deliveries, seeking fast-track regulatory decisions, mustering the necessary human resources and compacting the normal decision-making schedules inside and outside GM - the schedule rolled forward more smoothly than GM itself had anticipated.

To Minner - a tall, trim native of GM's birthplace, Flint, Mich. - the earliest reports of the challenge weren't encouraging.

"When the local emergency management people came here and looked at the disaster and saw the extent of the damage, they just asked us: How are you people ever going to put this place back together?"

"When we had time to sort it all out," he says, "it was clear to us that it would be September or October at the earliest before we would be back in operation - and frankly, that was optimistic. Some people came here and said maybe by the end of the year."

"But there was a general feeling that we couldn't let that happen," Minner says. "We had to get back up and running. We said we could do it by the end of June, and we just did what we had to do to make that happen."

Make it happen

As he rushed back home that Thursday with a Texas highway patrol escort, Minner, 46, already suspected that GM would have a compelling desire to make it happen. Too much was riding on the plant.

Over the past year, Oklahoma had become GM's sole source of mid-sized seven-passenger SUVs - a highly competitive market segment. It also makes the Ascender, a critical product for GM's struggling affiliate American Isuzu Motors Inc. Six months was simply too much time to lose. GM manufacturing chief Troy Clarke decreed that rebuilding Oklahoma City would be a drop-everything mission.

Under normal circumstances, GM's idea for an accelerated project would have been nothing more than wishful thinking. In the real world of industrial projects, rebuilding a factory is not much different from building a new one. Tooling and heavy equipment are not available on a shelf somewhere. Their manufacturers receive orders and put the orders through delivery schedules that can be weeks or months long. Even building contractors require weeks to obtain steel and other materials from suppliers and fabricators down the line. Contractors have to hire subcontractors, and subcontractors have to hire workers. And, after all that, there are only so many hours in a working day. Welders can work only so fast. Cement hardens only so fast.

Just 16 months before the tornado, the Oklahoma plant had received a new lease on life. To switch from cars to SUVs, in January 2002, GM had spent \$700 million on Oklahoma City. Retooling the paint shop alone had cost \$277 million. The plant had retrained 2,700 workers. The entire overhaul had caused GM to close down the operation for seven months.

It certainly would cost GM a premium to expedite the extensive repair work after the extensive damage caused by the May 8 tornado. But, conjectures Lou Troendle, project manager for the rebuilding job: "How much would it have cost GM to simply let the plant sit idle and not build any vehicles?"

Movers and shakers

Troendle was one of those whom GM told to drop everything. As a project manager for Washington Group, a Boise, Idaho, engineering and construction management firm, Troendle has been in GM's service for years. Among the GM plants he has helped build are Saturn in Spring Hill, Tenn.; the Grand River plant in Lansing, Mich.; and GM's production operations in Poland. It was Washington Group that had built Oklahoma City in 1978.

Troendle was on assignment in Lansing when the call came in for him to report immediately to Oklahoma City. GM also pulled Dave Skiven off the Lansing project and sent him to the tornado site. As executive director of GM's worldwide facilities group, Skiven has authority over a broad range of factory issues, such as construction, utility needs and engineering. By putting Skiven at the Oklahoma City site, where he would live for nearly a month in a nearby Embassy Suites hotel, GM was creating a team of heavy hitters who had the power to make instant decisions for the disaster recovery.

"A lot of the necessary people for this work report to me around the world," Skiven explains of the thinking. "If we had a meeting where it was decided we needed to put several people on a robotics issue or a paint issue, those people report directly to me. I could get on the phone and tell them to get on the next plane to Oklahoma City, and we'd have them here a few hours later."

Also sent to the site were Tom Prew, GM's purchasing manager for North American construction, and Steve Schotters, director of facilities for GM, with responsibility for planning and installing paint shops.

On-site decision-making was a critical breakthrough for GM.

Says Troendle: "I don't believe we had to call Detroit with a single question. Anything we needed to do, we had the power right here to get it done. We didn't have to wait for anyone to get back to us with answers or approval. That saved an unimaginable amount of time."

Calling in chits

The project had to rely heavily on contractors, and vendors' willingness to do the unusual. So great were some of GM's needs that the recovery team had to summon special help to get the project rolling. For starters, in the first few days after the storm, sections of the three-story plant were too

dangerous for repair workers. There was no power because the power station had been swept away. There was no running water, but there was a lake of rainwater standing in the plant's lower level - and there were concerns about electrocution for anyone who dared enter it.

First things first

The project first needed a 90,000-pound crane and grapple - measuring about six stories high - to pull out the wreckage without putting workers dangerously close to the falling material. There are only a handful of cranes that size in use in the United States. The nearest available one was in Detroit, 1,000 miles away.

Transporting the crane should have taken weeks. Standard procedure calls for the crane to be disassembled and shipped in pieces. The pieces are so large that they can move down the interstates only at certain hours of the day, and each state they pass through must issue a permit before they can enter.

"We've been a good corporate citizen here for 30 years," Minner says. "It was time for us to ask for a little help."

He did. Minner telephoned Oklahoma Gov. Brad Henry at home on Sunday, May 11 - Mother's Day - with a request for high-level intervention. Henry immediately offered to expedite the permit process. In addition, he telephoned the governors of the states on the transportation route to seek the same agreement. By Sunday night, the necessary five-state agreement was in place. The crane was on site within days.

Steel presented an even larger potential problem. To fabricate all the necessary steel to rebuild Oklahoma City's west wall and roof would take at least six weeks. The team made a special appeal for help from a neighbor, the large national fabricator W&W Steel Inc., which is headquartered in Oklahoma City. Business is good these days for W&W. The company routinely supplies the construction of hotels, commercial buildings, airports and industrial complexes.

W&W agreed to expedite GM's orders for 320 tons of steel. To do so, the company essentially had to suspend business with existing customers, including one Las Vegas hotel that was already on a tight construction schedule. W&W unloaded all current orders from its plant, moved GM's orders into immediate production, delivered the steel to the GM site, with W&W executives helping with the shipments, and then reloaded its own plant. W&W President Rick Cooper returned early from a Saturday wedding to work through the night and sort out the details.

With GM managers from purchasing, logistics, construction and finance green-lighting the orders, W&W rushed the steel through its plant and delivered it to waiting subcontractors in just 10 days.

Finding the pieces

The next hurdle was obtaining the necessary replacement equipment to restart the paint plant. Of particular concern was a Chevy Tahoe-sized contraption known in manufacturing circles as "the abatement system." The highly engineered device sits on auto plant roofs like a sort of catalytic converter for the factory's paint fumes. Without one, the EPA does not let a factory manufacture automobiles - no matter how many governors call and plead. The standard order-to-delivery time for one: 20 weeks.

GM's urgent discussions with Eisenmann of Germany, the maker of the abatement system that had been devoured by the tornado, led to a surprising discovery. By sheer luck, Eisenmann had a previously ordered abatement system sitting in storage, unclaimed. Another major industrial customer, IBM, had ordered the system for a computer chip factory that it had intended to build. IBM postponed the project, leaving Eisenmann with one unnecessary abatement system.

"We were able to get it second-hand" Minner says.

In the search for other replacement pieces of destroyed processes, the team turned to GM projects elsewhere. Rather than wait weeks for vendors to begin manufacturing pipes, valves and gauges, Oklahoma City picked what it could from projects under way in Lordstown, Ohio, and Oshawa, Ontario, according to construction purchasing manager Prew.

A few years ago, such parts swapping probably would not have been possible at GM. Luckily for the Oklahoma City project, GM plants around the world are adopting standardized tooling and processes. Under the broad banner of its "Global Manufacturing System," GM plants now increasingly use similar tooling and procedures. That makes it easier to order equipment, Prew points out, and to exchange equipment in circumstances such as the Oklahoma catastrophe.

The right way?

While the recovery team looked for any way it could find to shorten the schedule, Troendle says, there was no attempt to cut corners on the construction work itself or on the safety of the more than 1,600 workers who participated in the rebuilding at one time.

"There was never any sense that we were going to do this any way but the right way," Troendle says.

"We knew from day one that everything we did here was going to have to face the same tough audits you normally expect. Maybe it didn't happen exactly when it was supposed to happen. But we knew every time sheet still had to be signed. Price quotes were going to be reviewed. Deliveries would still be tracked. We would have to go over contracts and warranty issues. A lot of money went through the books here in a very short period of time, but all the same, we still had to see that T's were crossed and I's dotted."

As the reconstruction fell into place, several participants recall having a similar thought. Troendle phrases the idea this way: "If we can do this project this fast, why can't we do all of our projects this fast?"

The question is more than academic. The auto industry in general is on a mad dash to move new vehicles to market. It's one thing to design and engineer a model faster - it's something else to construct an industrial plant rapidly that is capable of building it to specification.

Honda Motor Co. is pushing the envelope on rapid greenfield projects. It is nearing completion of a second plant in Lincoln, Ala., that will have gone from shovels in the dirt to trucks off the assembly line in just 17 months. Honda also has developed a way to reconfigure its existing assembly lines to take on new products in a matter of months.

GM's Skiven says: "We are definitely being closely watched by the rest of GM. We've raised a number of issues here that bear studying - like how long it should take to make decisions and how you order materials and how long their delivery takes.

"But," he says, "what we did here was still out of the ordinary. Could you expect people to perform all the time as they've done here? No. There's just a limit to how much you can ask of people. People burn out."

Working around the clock

The work ran round the clock. From a distance, viewed against the suburban Oklahoma City night sky, the glow from the reconstruction project resembled that of a big league sports stadium. Contractors brought in 300,000 watts of massive stadium lighting. Workers pulled 11.5-hour shifts, running 24 hours a day, seven days a week, with only one hour a day of maintenance and transition time.

Troendle says: "We put a lot of birthdays and anniversaries on hold. I traveled home (to Detroit) once during this project. You do what you have to do. Everybody involved did that."

Local vendors changed their business hours to accommodate the crush. Electrical supply shops, contractors and hardware companies that normally opened Monday through Friday and closed at 5 p.m. set up weekend hours and kept staff on the clock into the night. Local building suppliers gave out their home phone numbers and cell phone numbers to project participants.

Minner begs off the question of how much the recovery project will cost GM in the end, and invoices were still being paid late last week. The company's insurance covers much of the rebuilding as well as the cost of 20,000 units of lost production - minus the deductible. GM has blamed the plant shutdown in part for its dip in second-quarter profits, to \$901 million from \$1.3 billion in the year-ago quarter.

In early July, as the plant ramped back up, Troendle found himself marveling at the speed of the work.

"I don't think anyone was ever totally comfortable with the June 30 target date," he admits. "But no one ever stopped and said, 'This can't be done.' Every time we'd get to a critical point, we'd make it happen. And then we'd keep moving forward.

"Seeing it all take place in a matter of weeks, when I'm used to building plants that take a year or two years to build - it was something to see."