Achieving Top Performance Under the Worst Conditions:

7 Lessons Learned from a Disaster

YOUR MISSION:

Improve supply lines and performance for one of the largest oil spill cleanup efforts in history.

And by the way, you have to quadruple output in a few weeks.

In April 2010, the eyes of the world turned to a little spot in the Gulf of Mexico. About 50 miles south of Louisiana, a semi-submersible offshore drilling unit became the focus of one of the biggest oil spills in history. After an explosion, the oil rig burned for two days, then sank in more than 5,000 feet of water. After that, the oil continued to gush into the open water for weeks; leaving an oil slick of more than 500 square miles that grew over into a 3,500 square mile disaster area that threatened both the ecology and the economy of a large section of the United States' southern coast.

After the well was capped and spring turned into summer, the oil rig operator and the people of the Gulf faced a cleanup of unprecedented proportions. To contain the spill and beat the turbulent weather likely to come in the fall, speed was essential. In the rush, resources were contracted immediately, assignments distributed on the spot, and work executed as fast as vendors could arrive on the scene.

But even speed and millions of dollars would not be sufficient. Describing the scope of the challenge in retrospect, a senior executive said, "We had to start a cleanup company from scratch and basically build a Fortune 500 company overnight." Another company executive recognized that the effort would not succeed unless it could double, triple, or even quadruple the output of suppliers in a matter of weeks.

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Senior executive

GREATER OUTPUT, LOWER COST

When the rig operator called on Mark Woeppel for help, the mission was clear: do whatever it takes to accelerate the production and distribution of supplies crucial to the containment and cleanup's success. Ultimately, the tactics not only met exceptional demands under extraordinary conditions, they significantly reduced costs at multiple points on the supply chain.

Many lessons can be drawn from the Gulf cleanup experience. This paper will reflect on seven of them. From the perspective of history, these seven principles merit recognition for their contribution to the recovery. But from the perspective of the contemporary manager, they deserve attention for what they can do **now**. Or, on an even more personal level: if this report reveals what these seven principles can do under the worst conditions imaginable, think of what they can do to improve performance for you right now.

We invite you to consider the possibilities.

1 Make the invisible visible – Look for "the drum"

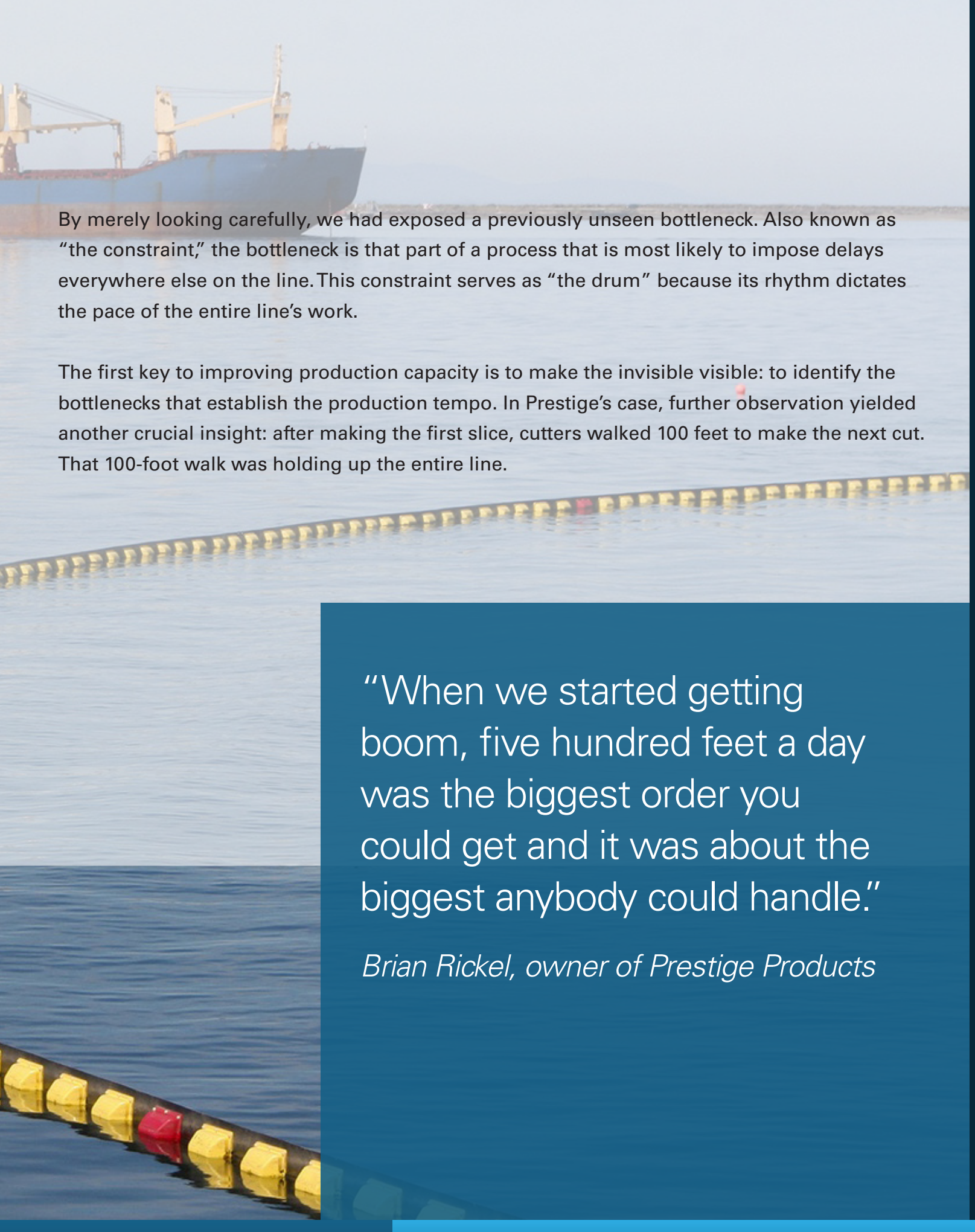
To succeed, the company needed more of just about everything: more people, more detergent, more decontamination suits, more boats and most of all, more boom, the strings of industrial polyethylene that encircled patches of oil and prevented them from spreading. The company contracted with Prestige Products, a Michigan-based firm proud of its ability to produce 5,000 feet of boom a day. "When we started getting boom," said Prestige owner Brian Rickel, "five hundred feet a day was the biggest order you could get and it was about the biggest anybody could handle." Unfortunately, even when Prestige more than doubled its capacity to 12,800 feet daily – boosting its staffing from five to seventy-five in the process – it still wasn't nearly enough to meet the cleanup effort demand.

When we arrived at Prestige, their first task was not to analyze, recommend or apply anything – instead, it seemed as if they were doing "nothing," just standing around the factory floor.

But what looked like nothing contributed everything to improving production. Through careful observation – by watching and even listening – the consultants noticed something very interesting. After a flurry of activity constructing boom, assembly line workers would gather to chat and joke around. But they were not goofing off: they paused because the cutters downstream could not absorb any more boom.

By merely looking carefully, we had exposed a previously unseen bottleneck. Also known as "the constraint," the bottleneck is that part of a process that is most likely to impose delays everywhere else on the line. This constraint serves as "the drum" because its rhythm dictates the pace of the entire line's work.

The first key to improving production capacity is to make the invisible visible: to identify the bottlenecks that establish the production tempo. In Prestige's case, further observation yielded another crucial insight: after making the first slice, cutters walked 100 feet to make the next cut. That 100-foot walk was holding up the entire line.



"When we started getting boom, five hundred feet a day was the biggest order you could get and it was about the biggest anybody could handle."

Brian Rickel, owner of Prestige Products

2 Rebalance resources to maximize flow

When production fails to meet expectations, the temptation is to add more people, money and machines. However, this often drives up expenses without necessarily resolving the underlying problem, or increasing capacity. Instead, making the smart move often means rebalancing the resources managers already have. Rather than add more, the key is to find ways to make more effective use of the available resources.

For Prestige and its boom line, the first step was to move more staff into the bottleneck, the cutting process. When assemblers became idle, they were moved down the line to help the cutters. Within just two days of applying this reorganization, Prestige **increased boom production by 23 percent**, to 15,700 feet a day.

Rebalancing did not end with the cutters. After cutting, the 100-foot lengths of boom were fed through a welding machine that bonded the boom to its vinyl skirts. While the welder was an obvious constraint, it could not be modified without an expensive and time-consuming overhaul. But the manual process of folding and feeding vinyl into the welders could be improved easily. Again, by rebalancing staff to add otherwise idle workers to the welding machines, Prestige gained ground, lifting output to 21,000 feet a day.

Then there was the issue of space. We found room for an additional production line that could be set up with existing equipment, increasing capacity to 31,000 feet a day. When yet another production line was modified, based on our recommendations, Prestige gained space for a further new line that brought output to 41,000 feet a day – tripling the capacity that had been available when we first arrived.

Prestige was not the only boom-maker to benefit from the rebalancing recommendations. At Abasco, based in Houston, Texas, consultants found the bottleneck within welder break times. By modifying the work schedules to provide welding coverage though coffee and lunch breaks, Abasco increased production by 20 percent.

At Abasco, as at Prestige, the answer was not about adding "more" – it was about making more effective use of what they had by rebalancing their resources.

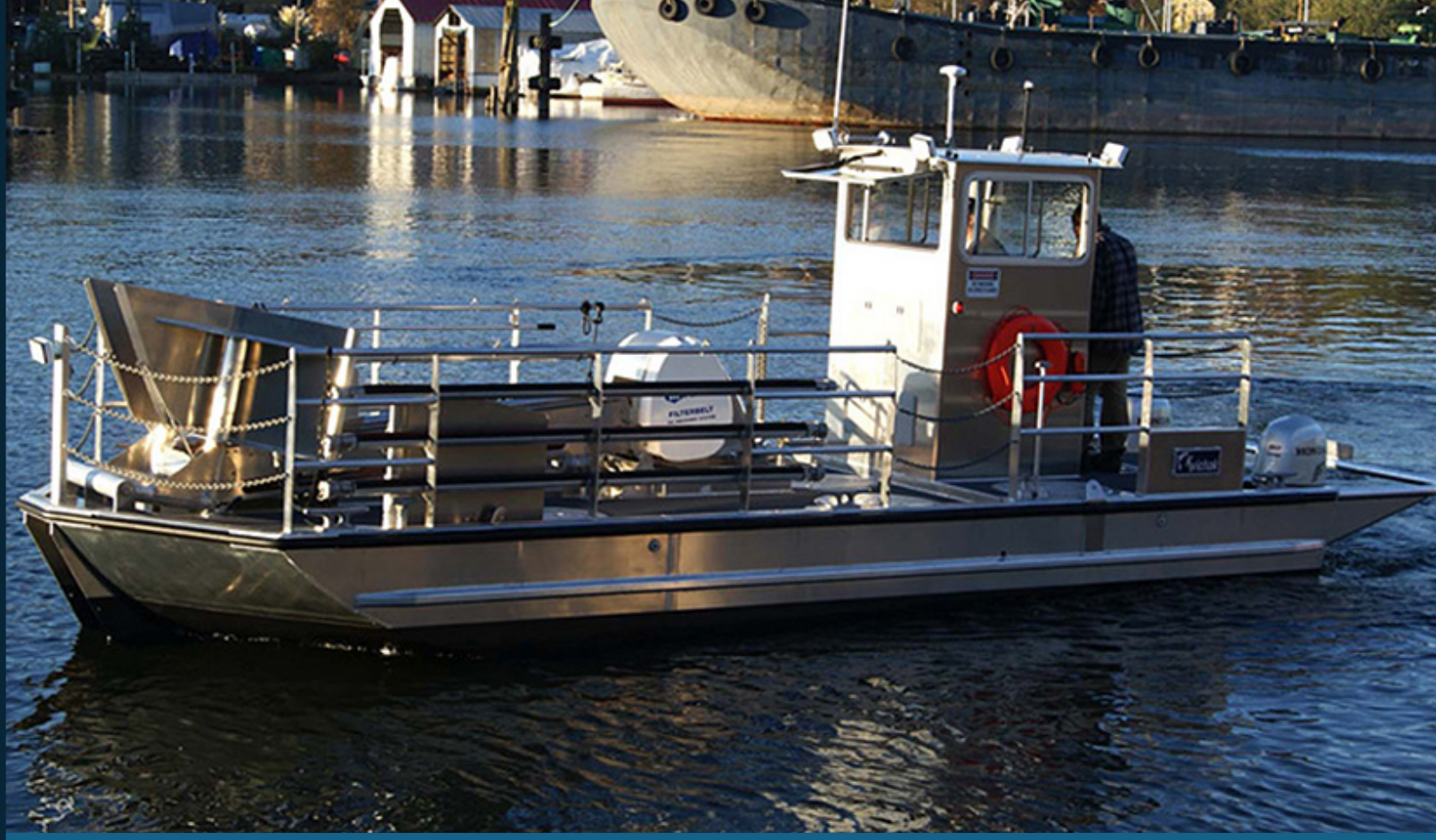
3 Focus on the constraint

In terms of demand, second to boom were boats – specifically, the oil skimmers that remove contaminants from the surface of the water. Kvichak Marine, a manufacturer of patrol boats, fishing vessels and rescue boats in its 50,000 square foot Seattle facility, was contracted to make as many skimmers as possible.

When we arrived at Kvichak, the facility was running two production lines generating just two skimmers a week between them, not nearly enough to meet the need. A site visit rapidly exposed the bottleneck: welding. To ensure everyone's safety, much of the skimmer work came to halt when welders came on board and sent sparks flying – literally. These interruptions delayed completed construction by as much as two full days.

Seeing the bottleneck was one thing – resolving it was another. Our consultants came up with a bold plan that pulled as much of the welding as possible off the boat and onto a superstructure that, once welded, could be fitted in the skimmer with a crane. Instead of adding another production line, Kvichak could increase productivity by dedicating more floor space to welding.

The key idea behind this proposal: isolation. By removing welding – the bottleneck – from the production chain, welding and other skimmer work could be executed simultaneously, rather than in sequence, accelerating overall production.



Mark's team "came in and knocked down the major roadblock we were facing – the welding issues. But that isn't the main benefit. The best effect was inspiring our staff to think out of the box. When one roadblock comes down, pretty soon you face another. We learned how to knock them down ourselves."

Keith Whittemore, Kvichak general manager

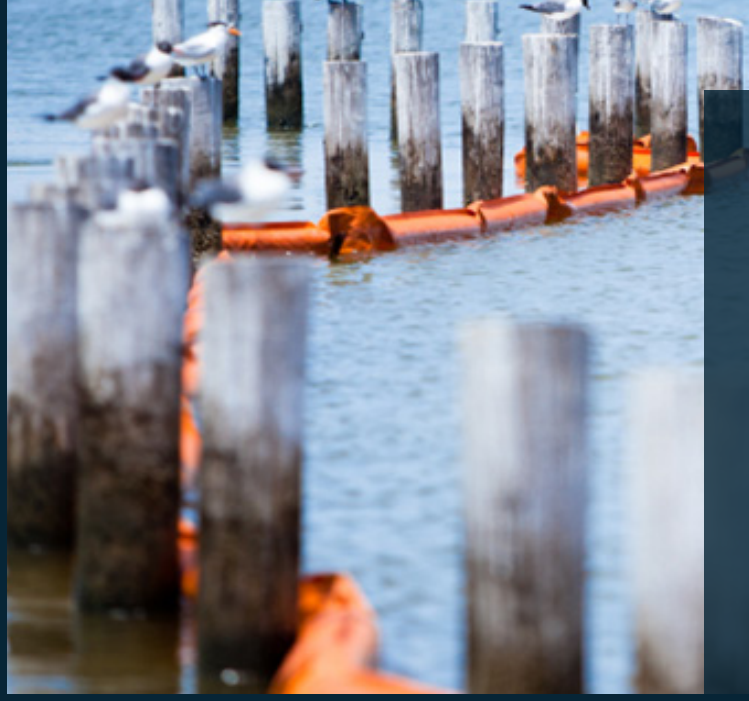
4 Challenge your assumptions

Our team produced sparks of a different kind when it encouraged Kvichak to reconsider some of its fundamental working assumptions. As a supplier for the Department of Defense, the company was accustomed to meeting that agency's rigorous specifications. For example, the skimmer's lifting lugs were designed to carry 250% of the boat's weight. To meet expectations for 20 years of use, each skimmer was coated with multiple layers of protective epoxy.

But we encouraged Kvichak to recognize that just as the purchasing requirements had changed, so too could the specifications. The company needed boats for a short period of intensive work, not 20 years of sustained use. By adjusting the specs, Kvichak delivered 30 skimmers in half the time it usually took to build 15, quadrupling its output rate.

At the opposite end of the cleanup's spectrum, the boats corralled into the cleanup work had to be cleaned themselves before they could be returned to their owners and restored to ordinary use. Of all the vessel decontamination work, the most laborious – and most dangerous – was the confined-space cleanout of interior tanks that had held skimmed oil. A minor spark could ignite a major explosion. Cleaners had to don diver's gear, complete with oxygen supplies, to work in the tanks; other workers had to monitor the oxygen every second the cleaners were inside.

Again, challenging assumptions proved fruitful: just how clean did these tanks really need to be? As it happened, many of the vessels being scrubbed would go back into service only to be filled with oil again – they just needed the old oil pumped out. The Coast Guard itself verified that only the surfaces that actually touched water needed to be completely oil free. In just a week of applying revised cleaning guidelines, the number of vessels cleaned doubled; in another couple of weeks, the rate tripled.



A BOOM FOR BOOM

Changing specifications helped produce more boom, too. At Supply Pro, we suggested that the company make 20-foot sections rather than 10, cutting the time spent on connections in half – and boosting capacity by eight percent.

5 Reconsider your rules on materials and suppliers

Like specifications, material sources and suppliers often remain in place through sheer inertia or force of habit. Sourcing decisions that once made sense within their original contexts can outlive their justifications, becoming hidden handicaps that inhibit productivity.

As the Gulf cleanup advanced, demand for boom continued to present challenges for boom suppliers. Supply Pro, a Texas-based maker of five-inch absorbent boom, suffered from the growing worldwide scarcity of polypropylene, a key boom component. We encouraged Supply Pro to reconsider its formula. By switching from polypropylene to cellulose, Supply Pro was able to get three times the amount of material at the same price, boosting output tenfold

Sometimes it pays to examine the links further down the chain – the suppliers to the suppliers. In Finland, Lamor, had assembled equipment for every major oil spill in the last two decades. When we visited Lamor, they found that the company had a policy of restricting its order from any one supplier to no more than half of that supplier's total output. For the company, that limitation was now a boon – Lamor had the untapped potential to dramatically increase its supplies, and its output, in flash.

6 Manage and align performance by applying uniform standards

The more contractors involved in a given project, the more opportunities there are for confusion. For the Gulf cleanup, there was the largest maritime fleet ever assembled – estimated at more than 10,000 vessels – from a crew of contractors who enjoyed an open checkbook as much as the open seas.

In the cleanup's haste, keeping detailed records of who were engaged in the effort were not the priority. Many boat models and serial numbers went undocumented. Equipment was rented, leased, used and returned without any kind of tracking process. The firm spent tens of millions of dollars each day on vessels and another tens of millions a day for the onshore facilities needed to support them. Once the well was capped and the oil skimmed, the team was confronted with a new challenge: decontaminating all the cleanup vessels, many of which they could not even find.

Our first task was to bring order to chaos through uniformity of standards, beginning with the fleet records. They assembled various databases from multiple sources into one body of information. More importantly, We organized the records into a defined stream of consistent automated process steps and decision gates.

This automation proved critical in the effort to decommission over 10,000 vessels. By applying a uniform tracking and decision-making process to the decommissioning and decontamination project, the company could envision the challenge as one coordinated effort rather than as a body of conflicting and haphazard tasks. According to Pinnacle Strategies Director of Operations, Kurt Golser, "We decided to view the whole operation as a massive factory with no roof over it and multiple work floors."

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Kurt Golser, director of operations for Pinnacle Strategies

DIRECTING THE DOCKS

Right away, our uniform documentation helped identify the leading decontamination bottleneck: dock space. We sent out teams to monitor dock usage and measure space, using a uniform standard for assessing space availability. Their efforts proved immediately relevant, exposing 50 percent more potential dock working area for decontamination. Within days, dock utilization rose to 80 percent, then 100 percent and higher with a subsequent increase in vessel completion.

7 Accelerate communications

In the decontamination phase of the cleanup, measuring and monitoring dock space was only the beginning. As space became available, competing teams crammed in their vessels. But without coordinated communications, precious working spaces were occupied by boats that required specialty crews and equipment; while work crews waited for these resources to arrive, boats that could have been cleaned idled elsewhere.

Tension rose as competing companies, with different means of communications, gathered for morning meetings where collaboration was undermined by distrust. We made consistent, standardized communications a priority, not just for facilitating the workflow, but for encouraging transparency based on quality information that benefitted all parties. With the addition of new communication templates, every company and employee started reporting in the same way at the same time.

While work proceeded around the clock, the morning briefing materials were almost always out of date by a half a day or more. We enforced a new rule requiring night shift leaders to complete briefing reports, based on real-time data, no earlier than thirty minutes before the meetings themselves. Meeting participants were then authorized to make meaningful project decisions on the spot.

"The effectiveness of the meetings and quality of information discussed in the briefings improved 10-fold," said Kurt Golser. "The template for communications had a significant impact. If you increase communications flow by 50 percent, you can easily increase throughput by 100 percent or more."

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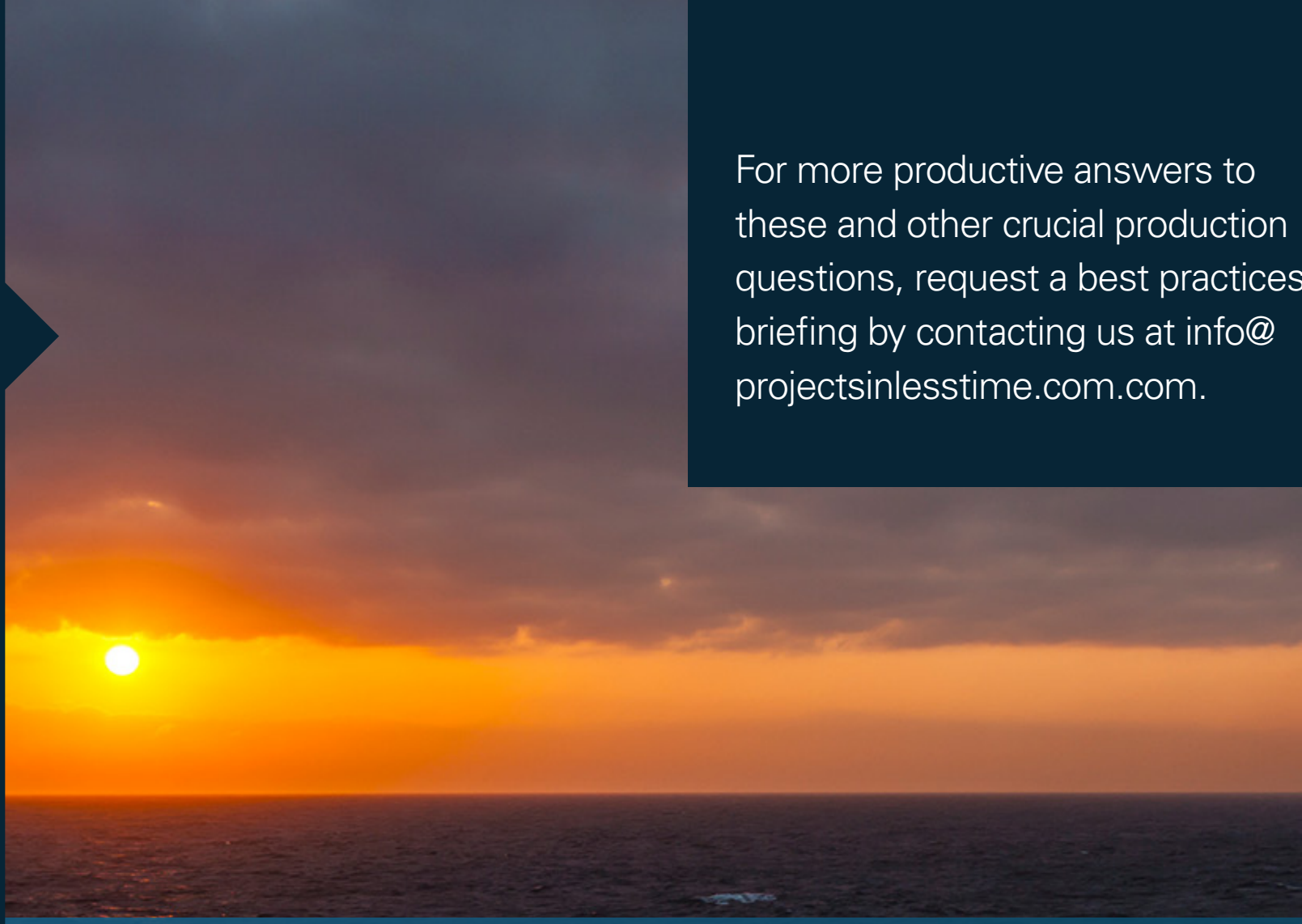
If this is what can be accomplished under the worst conditions, what is the best you can achieve right now?

Applying performance management principles accomplished extraordinary, measurable advantages under some of the worst conditions possible. In just six months, our team helped the company and its contractors more than double the supply of skimmers, boom and other critical resources. What's more, even as productivity increased, expenses dropped: by resolving bottlenecks, applying fresh thinking, and creating unified means of communicating and operating, our efforts saved more than $700 million.

By applying the principles of the Theory of Constraints and Lean Manufacturing, we paved a path for success under emergency conditions. Now imagine what you could achieve by applying these same principles to your operations today. Take a few moments to complete a brief self-assessment. If you cannot answer "yes" to all these questions, you may be missing crucial opportunities for improving productivity and reducing costs.

- Can you see all the bottlenecks in your value chain?
- Do you know which part of the chain sets the pace for your entire process?
- Can you find ways to rebalance resources for more output?
- Are you able to turn idle time into productive time – without adding new equipment or new staff?
- Can you isolate the constraints to accelerate the flow through the chain?
- Do you redirect resources to boost output at the constraint?
- Are the specifications or decision rules you made in the past relevant to your current operations?
- Can you see which rules can be modified to accelerate output?
- Do you have unseen opportunities to change materials and suppliers to your advantage?
- Can you align multiple processes, multiple contractors with one common standard?
- Do you have communications standards everyone uses and understands?
- Are your protocols facilitating accurate, real-time reporting?

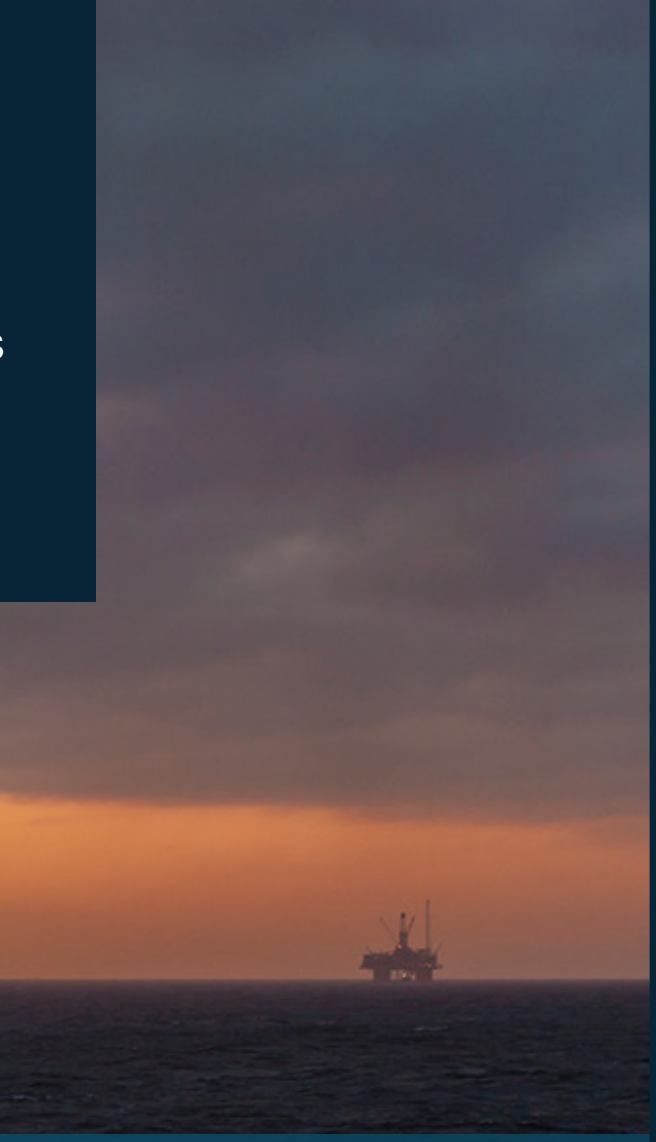


For more productive answers to these and other crucial production questions, request a best practices briefing by contacting us at info@projectsinlesstime.com.com.

THE VALUE OF THE THEORY OF CONSTRAINTS

"The Theory of Constraints is a scientific approach, but the implementation is a bit of an art. In the gulf cleanup effort, our implementation was a blending of approaches to getting the job done - from the supply chain to the boat cleaning. It required a demonstration of versatility and I'm thankful we had such an opportunity to showcase it."

Mark Woeppel



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