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Laurentian AUTOMOTIVE technologies: MANAGING THE TERRAGO PLANT

Ken Mark wrote this case under the supervision of Professor Kenneth T. Goh solely to provide material for class discussion. The authors do not intend to illustrate either effective or ineffective handling of a managerial situation. The authors may have disguised certain names and other identifying information to protect confidentiality.

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“It has been two years since Laurentian invested in the Terrago plant and we’re still far away from making it profitable,” lamented Paul Beringer, the director of operations of Montreal-based Laurentian Automotive Technologies (Laurentian). He continued:

We’ve tried to bring in Canadian expertise, rely on local knowledge, refined our hiring processes, invested in training, and we’ve made progress in how we manage our staff. Yet, at the start of 2018 we still experience low productivity, high turnover, and a bigger than acceptable rate of defects.

In 2015, Laurentian had set up the new plant in Terrago after purchasing a plastics factory from a large U.S. industrial conglomerate that was leaving the Terrago region. Laurentian provided precision-cut carbon fibre parts for automobiles. Paul had wanted to develop a presence in this emerging market to be closer to its multinational automotive clients. He had been involved in the discussions to buy, refurbish, and re-launch the plant. In 2018, other than the Terrago plant, Laurentian had eight plants around the world: four in North America, one in Asia, and three in Europe. Terrago accounted for less than 5 per cent of total revenues in 2017, and Paul intended to put in place a turnaround to boost its sales and production.

On January 7, 2018, Paul began what would be his third visit to the Terrago plant but the first time he would meet James, the new plant manager, in person. He then spent three days meeting with James, conducting interviews with other plant managers, and reviewing data from the plant. By the evening of January 9, Paul was preparing for a briefing he would deliver the next morning about the future of the Terrago plant. He needed to decide what he should say.

**Laurentian Automotive Technologies**

Gary Laurence started Laurentian in Montreal in 1972 after working for Ford Motor Company (Ford) in Detroit. He had graduated from McGill University in the 1960s with a degree in chemical engineering and had worked for Ford’s materials division, travelling the world as part of its research and development team to discover, test, and implement new materials for the U.S. automaker. In 1972, he noticed that plastics were becoming a bigger part of a car’s components and saw an opportunity to start his own business.

His first invention was a plastics extrusion device that was able to feed melted plastic into moulds at a rate 30 per cent faster than the industry standard. By producing parts more quickly, he was able to decrease the price per part and still deliver high margins.

Laurentian continued its trend of delivering innovative solutions when it entered the carbon fibre parts market in 1990. The use of carbon fibre was rising due to its unique combination of low weight and high strength. Laurentian doubled in size for a five-year period in the 1990s by delivering carbon fibre parts to luxury and performance-oriented automobile manufacturers. As the firm grew, it took on more debt to continue its expansion, opening four large factories in Europe, Asia, and South America in 2005. By 2007, Laurentian had eight factories around the world. But the Great Recession of 2008 had a large impact on the firm as demand for high-end parts fell by 50 per cent. Due to a shortage of orders, Laurentian was unable to service its loans, forcing it to sell three of its eight factories to local competitors. The financial distress prompted Gary to put in US$3 million[[1]](#footnote-1) of new capital to keep the firm solvent.

The experience of having to live through difficult times had an impact on how Laurentian’s management team approached the firm’s strategy. Although in the past, the focus was on the top line and expansion, the new focus, starting in 2010, was on carefully building out capacity and a deliberate slowdown in capital investment, with the intent of carefully managing Laurentian’s financial reserves.

By 2013, the firm’s order book was full again, and employees who once had to endure rotating layoffs were back on the job full-time. In 2014, the firm regained momentum and orders to luxury automobile manufacturers were strong. In January 2015, Laurentian was able to return to Gary the $3 million bridge loan he had extended to the company.

Paul, the director of operations, saw that there was significant demand coming from emerging market automobile manufacturers. To service this demand, Laurentian had been shipping containers of parts from its factories in Europe and Canada. In an effort to reduce the lead time between production and delivery, and to save on shipping costs, Laurentian decided to open a factory in an emerging market.

**Buying and Refurbishing Terrago**

Paul and his team had been noticing that 30 per cent of new demand for carbon fibre parts was coming from emerging markets. When they found out that a large U.S. industrial conglomerate wanted to refocus on its domestic market, Paul moved quickly to propose a purchase of the Terrago plant, formerly a 200,000 square foot (18,500 square metre) plastics factory. The intent was to refurbish it and turn it into a carbon fibre design and production factory. The Terrago plant was meant to service local and regional automobile manufacturers, with little of its production capacity earmarked for Europe or the United States. The new plant was purchased on February 1, 2015.

At full capacity, the Terrago plant would employ approximately 300 production workers, supervisors, and engineers. The Laurentian team estimated that it would take two years to ramp up to full capacity, which meant that the factory was operating at a utilization rate of about 90 per cent. In general, Laurentian factories did not operate above 90 per cent because of the need to constantly re-design and modify production tools and processes to meet the demands of custom orders.

A team of 25 experienced engineers and production supervisors from Laurentian’s European and U.S. plants (see Exhibit 1) were tasked with hiring and training an initial workforce of 80 employees in Terrago (see Exhibit 2). The goal was for the expatriate team to remain in the country until local employees were sufficiently trained and could replace them. The 25 Laurentian engineers would work alongside the new employees as co-workers and mentors for three to six months. By the end of February 2015, 80 local Terrago employees were hired and the Laurentian team began training them. Most of the local employees were hired from foreign-owned automotive suppliers and had experience with lean manufacturing. All of them had the ability to work in English. The new production employees were trained one-on-one by Laurentian production employees over three months. The need to work closely with local employees came from Gary’s insistence that the local workforce was familiar with the complex manufacturing techniques needed to produce consistent, high-quality carbon fibre parts. Each component was customized for each car model, and a high level of skill was needed to make products that met customer specifications. When broken down into the various steps, about 50 per cent of the production process required some manual input—whether minor adjustments to the cutting machines or small tweaks to temperature settings—so that the final batch of produced parts met all specifications.

One-third of the initial pool of 80 employees were engineers, one-third were production workers, and the rest were hired as supervisors and managers. All 80 employees spent two weeks—20 employees at a time—rotating through work assignments in Laurentian’s Montreal factory. The all-expenses-paid “internship” period taught the new Terrago workers manufacturing and quality control techniques honed at Laurentian over three decades. An added benefit of bringing the 80 employees to Laurentian’s Montreal plant was that Gary and his management team could get to know the new managers and employees.

While the workers were being trained in Montreal, a strategy session was held involving the new Terrago management team, which consisted of the plant’s general manager, the sales manager, and representatives from engineering, production, materials/purchasing, quality control, and human resources. The primary focus for 2015 and 2016 was to ramp up sales and manufacturing in Terrago to ensure that the factory would be operating at 80 per cent capacity by the start of 2018.

**Terrago’s Transformation: 2015–16**

Laurentian invested another $2 million to buildout the Terrago plant to become a carbon fibre parts research, development, and production facility. The physical buildout was completed by April 2015, with most machines and fixtures coming from surplus equipment shipped in from Laurentian’s European plants.

A few local orders that were being filled by Laurentian’s Montreal plant were shifted to Terrago to kick-start local production. For the rest of 2015, the Terrago plant operated at no more than 20 per cent of total capacity. The Terrago managers worked with their contacts on the ground and in Montreal to develop the local programs and resolve issues.

In mid-2015, the local management team, working with the expatriate team, set out to develop business from the local automotive cluster and from regional auto plants. The pace of business development moved faster than expected, and by the start of 2016, the Terrago plant had an order book that would have accounted for 70 per cent of production, had all the orders materialized.

About 10 prospective customers requested production tests involving the delivery of about 100 parts per specification. A typical ongoing order could account for up to 5,000 parts per month, and Terrago’s facility was built to deliver roughly 100,000 parts per month. Terrago’s facility passed the production tests easily; however, production and quality challenges emerged after the orders were placed.

**Production and Quality Issues**

Terrago’s facility was large, and the layout had been set in anticipation of production capacity of at least 80,000 parts per month. The decision had been made to build high volume capacity from the start, rather than starting with a configuration for small orders and building up later. Although the facility could accept large orders, it had to first prove itself on small orders in the beginning. The spacious interior seemed to work against Terrago. Work-in-process parts were scattered around in various bins. As a result, productivity suffered and quality issues emerged. At the end of 2016, Gary noted that the Terrago ramp up was proceeding much less smoothly than he had expected.

There were several issues in addition to the inefficient layout, including the challenge of working with older equipment that had been shipped over from Europe. Many key production machines were serviceable, but they were not optimal for the task at hand. Specifically, relying on surplus machines meant that Terrago’s production employees had to constantly adjust the settings of each machine so that it could produce parts to a certain specification. Putting in new machines would have cost another $4 million, but the decision had been made by Laurentian to start the Terrago plant without new machines. As Laurentian’s director of operations, Paul estimated that the additional work required to adjust the machines would reduce productivity by no more than 10 per cent.

Some customers reacted negatively to the compromised quality and delays, leading to three of the first 10 customers cancelling their contracts at the start of 2017. Terrago’s first local plant manager, Troy, decided to add another five engineers to work on a redesign of the plant in an attempt to provide more support to the team. All five new engineers would report directly to Troy. Before joining Laurentian in Terrago, Troy had worked for 10 years for Volvo in the United States, where he supervised a plant of 2,000 employees. At Volvo, Troy was vice-president of the engine assembly division, where he had grown accustomed to delegating tasks to his direct reports. Troy seemed intent on building a similar top-heavy structure at the Terrago plant, where he had 15 direct reports, up from seven when the plant was first commissioned. Troy lived about 65 kilometres away from the Terrago plant and was on site at least four days a week. On Fridays, he worked from his countryside residence.

He was known to be a strategic thinker and a visionary leader with a hands-off management style, delegating responsibilities to his direct reports and receiving updates every month. He was well liked by his team in Terrago and was given high marks by Laurentian for his business acumen and ability to develop strategic plans. Troy, however, did not have a technical background and had to rely on his engineers to diagnose and correct process or technology-related issues. The atmosphere in the plant was relaxed with little direction from Troy.

At the start of 2017, frustrated by the lack of progress in Terrago, Laurentian’s management team decided to give Troy one last chance to turn the business around. However, the losses continued to increase. In March 2017, after months of insisting that a turnaround plan was in place, Troy left Terrago for a new opportunity in the United States. Paul and his team searched for a new general manager for the next three months. During that time, the operations manager was promoted temporarily to interim general manager.

After interviewing 25 candidates, James was hired as the new general manager through a local placement agency. James was in his late 40s and lived in the Terrago area. He had attended a prestigious university near Terrago, graduated with a degree in engineering, and had spent two summers abroad in Boston taking classes in economics at Northeastern University. James had worked in the maintenance department for a prominent local automotive manufacturer. Most recently, he had been the plant manager for a stamping company. James spoke the local language of Terrago and had a working knowledge of English. While Troy had worn a business suit to his interviews, James had shown up dressed in a blue work shirt and slacks.

Paul and his team wanted to be selective for their next general manager hire. They believed that a more aggressive, take-charge leader who executed well was needed for the plant. Having been disappointed with the previous general manager—a corporate, business-trained individual—they were inclined to hire James. However, Paul wanted to check James’s progress closely. In addition to putting in place weekly conference calls, Paul knew that they had a trusted controller in Terrago—Susan—who could monitor the business for them. James was hired as plant manager on September 3, 2017 and began work the next day. However, Paul had not yet met James in person; his interviews were conducted via Skype to speed up the process.

Over the next three months, Terrago seemed to be turning around, recording higher productivity levels than were achieved before. In his first week on the job, James implemented several initiatives to improve quality and productivity. He launched a version of the Toyota Production System to instill continuous improvement in operations. He called for morning management meetings to occur daily. He insisted that each line work towards a goal of zero waste and zero customer complaints within three months. To monitor these two objectives, he posted details prominently on one of the factory walls and assigned a supervisor to track their progress using detailed metrics.

However, starting in December 2017, Paul noticed that delivery and quality issues were starting to emerge. Orders were delivered two or three days later than expected. Customer returns doubled to 3 per cent of sales. The issue, James reported to Paul, was due to the need to retrain workers because of the employee turnover rate, which was 15 per cent in 2016 but reached 35 per cent in 2017. James assured Paul that everything was being done to ensure that employees were trained and that the plant would return to growth in two months. James also mentioned that there was infighting among various departments in the company, and he was trying to coach them to work together.

Paul planned a visit to the Terrago plant in June of the next year. The trip was expected to be his last scheduled visit before another management layer—an operating office role—would be added between the plant managers and himself. He noted that the situation at Terrago had worsened in the previous three months, from October to December 2017, with losses for the plant trending towards 15 per cent per year, compared to 10 per cent in 2016. The number of customer complaints had increased to 25 incidents in December and returns had climbed to 5 per cent of sales.

Paul reviewed the list of employees at Terrago and found that only 10 per cent of workers who had been with the company since 2015 were still there. However, three of the five initial management hires were still with the plant. There were two issues on his mind. First, he wondered how to build credibility with James and the rest of the management team quickly to analyze the situation. Second, he wanted to know how best to gather the information he was seeking.

Paul rescheduled his trip to Terrago from June to January 2018 and set aside the first two days to meet with James and the senior managers. Prior to his visit, Paul was on the telephone with James at least three times a week, becoming frustrated with the situation. There were numerous production-related issues, but Paul and James were finding it difficult to narrow down the causes by phone.

**Paul’s Visit to Terrago**

On the morning of January 7, 2018, Paul’s visit at the Terrago plant started smoothly, with James greeting him in the lobby and walking with him to the boardroom for a catered breakfast. All managers were present at the hour-long breakfast. During breakfast, James spent most of the time giving a presentation to Paul, while the rest of the team ate in silence, looking up occasionally to read a PowerPoint slide that flashed across the boardroom screen. After the meal, while being escorted around the factory, Paul took the opportunity to check on the status reports and observe the line employees at work. He was not surprised to find the factory in top order—after all, the management team had enough time to prepare for his visit. However, he struggled to find any apparent issues with the way the line workers were working. Process definitions seemed to be followed, inventory seemed to be in the right place, and product was being finished at an acceptable rate. At first glance, he could see no glaring technical or operational issue.

In the afternoon, James brought Paul to one of Terrago’s training sessions, where new employees were being instructed on how to perform the assembly work that was required. Paul noticed that the instructors were relying on training manuals developed in Laurentian’s Montreal plan. The curriculum was being followed closely and there did not seem to be anything amiss. “Our turnover rate has risen to 40 per cent this quarter,” remarked James, as he walked Paul back to the staff dining room. “But don’t worry, we know that we will continue to hire the best talent, even if there is strong competition from neighbouring factories. We have this issue under control.”

It did seem odd to Paul, by the day’s end, that he had spent the entire day speaking with James. There had not been meetings with the other senior leaders. Before they left the factory for a pre-arranged dinner meeting at a local restaurant, James asked Paul to come into his office, and closed the door.

“Before we meet the rest of our team, I wanted to let you know that we’re in the middle of a transformation session here at Terrago,” said James. He continued:

When I joined the Terrago team, it was clear to me that whoever ran the Terrago plant had done the best he could but had left many gaps in the operations. There were many employees underperforming and some were not even qualified to be in their positions. I had to clean up the place immediately, to get everyone working as a single team before we lost control of the business.

The pace of work had to be quickened. Rules had to be followed. We had to become more disciplined and any issues had to be addressed immediately. In the past, I believe we were too relaxed in our approach to customer service. Now, I’m trying to instill in our employees the need to be customer-focused. This means that if the customer wants something done, we do everything in our power to meet that need. Even if we have to work overtime or if we have to change the way we do things. If we win that customer’s trust, he will be a customer for life.

Needless to say, I believe that the “old guard” in the factory does not really like being asked to do more. They have gotten comfortable with their routines. They do not want to be shaken up, disrupted. They do not want to change. I say this because you might hear some grumbling as you go about your interviews tomorrow. Just keep in mind that things are changing for the better and no change comes without some degree of pain. Now, shall we head off to dinner?

Paul tried to digest the information as he walked towards the flight of stairs to the car waiting in the driveway. He knew that Gary had been at Terrago meeting with James on at least two occasions and was concerned about declining productivity at the plant. Paul was pleased that James seemed to be taking the initiative to make the plant more efficient. He was curious what the others would say about the change effort.

The dinner was a formal affair, with requisite toasts from James to Paul and vice versa. Both men chatted about the weather, about business in Terrago in general, and about the prospects for the future. The other managers dined quietly, speaking only when prompted by James to offer an opinion or confirm a fact. Paul retired to his room tired but satisfied that the first day had gone well. However, he wanted to get a better understanding of the tensions in the office and resolved to interview the other managers the next day.

On January 8, Paul arrived at the office and, after a quick meeting with James, insisted that he walk the plant by himself to meet the other managers. James seemed slightly offended by this request but tried his best to hide his displeasure. Paul began to walk the aisles in the plant, intending to speak to the other managers in as informal a setting as possible. He wanted to speak to them one-on-one as they showed him around the plant.

His first meeting was with David, an engineering manager who was finishing a meeting. Paul asked to see the production records for the plant to see if he could identify any bottlenecks in the operation that were causing the quality issues. After going through a few months’ worth of records, Paul was puzzled. There did not seem to be any significant problems. Not one particular shift was underperforming, nor was there any evidence of mechanical issues with the machines. He turned to David to try to make sense of the root causes of the quality issues. After half an hour, Paul was no closer to understanding the problem. Then he decided to be more direct, and Paul and David had the following conversation:

Paul: So, we can see that the documentation, at least, suggests that our line workers are following the process definitions, the machines are working as they should, and there has not been an overwhelming surge in orders that has caused the production and quality issues.

David: That is correct.

Paul: Can you help me understand why customers are saying we have quality issues and why product is not being shipped on schedule?

David: Well, we are told we are not meeting the standards and we must work harder.

Paul: What do you mean by standards? Given the orders that are coming in and the plant capacity, you should be able to get things done easily.

David: Sometimes we have to catch up after our line workers receive feedback from management. It takes a while—an hour or so—to get the line back on track to produce product within specifications.

Paul: I don’t understand. Who is giving this feedback?

David: Mr. James.

Paul: So he gives feedback, we all do that. Why is it taking so long to get back to work?

David was silent for a moment as he considered whether to back down from this minor confrontation or continue responding to Paul’s questions. He looked down at his hands, clasped on the table, then began explaining:

Mr. Paul, I believe that you have come here for a reason and you want to find out why we are underperforming. I was thinking about your visit and was not sure whether it would be proper to bring up an issue we have. It’s complicated to explain.

“Well, do let me know,” said Paul. “We’ve already spent a day going through this, and I only have a day and a half left—and I’ve found nothing so far. Don’t worry, let’s put the courtesies aside. Please be frank with me.” David looked up, encouraged by Paul’s comments and continued:

Mr. James handles feedback in a different way you and I might expect. In January, when Sam, one of our specialist technicians, accidentally produced scrap parts for 5 minutes on machine number 1, Mr. James pulled him off the machine, shut down the entire line—all nine employees—and scolded Sam loudly in front of his team. This went on for 10 minutes straight and poor Sam just stood there, head bowed. You could hear Mr. James’s voice across the entire factory. Our employees were talking about that incident for days. This very public humiliation happens at least once a week. Everyone is scared about who is going to be next. No one is actually fired for this, though I must say that Mr. James insisted the cost for the 5 minutes of scrap—about US$200—would be taken from Sam’s pay. You may not know this, but Sam is supporting a family in a different country and he was not able to send money home that week. I hope you don’t take this as too much of a shock.

Paul was stunned. He was not aware that James was doing this. He was curious to find out whether these were isolated outbursts and whether they were triggered by something else that employee had done. “Tell me more,” Paul said. Sam continued:

Every Monday morning, Mr. James gives a speech at the start of the day. All the machines are shut down for an hour for his presentation. He talks about the need to have perfect quality in our products and the goal of zero waste. During this hour, it is usual for one of our senior leaders —usually Shannon, the sales manager or Trey, the secondary operations manager—to stand up and confess to an error they made during the last week and apologize to the line workers. This has an impact on morale, because there is nothing but bad news that is being broadcast. I can understand—to a point—that Mr. James wants productivity to improve, but he’s trying to humiliate us into improving. That has not worked that well, and Mr. James can see our turnover and defect rates rising, but he’s not changing his approach. Why don’t I take you to see the rest of our senior team? They are eager to speak with you as well.

Paul spent the rest of the afternoon speaking separately with Trey, the secondary operations manager; Shannon, the sales manager; Mary, the human resources manager; and Susan, the controller. Each manager spoke about James’s authoritarian style and overly high expectations:

Trey: We’ve had our maintenance budget cut several times, yet Mr. James expects the plant to have the same level of cleanliness it had before the cuts. Our maintenance staff cannot keep up. Line workers are constantly being moved from team to team without me knowing about it, and hours have been cut as well. Part of the underperformance lies with engineering, which is holding back our maintenance work—our workers are often asked to work on projects on which they were not assigned. I tried to give some feedback to Mr. James—very politely—in December, but he lashed out at me in front of my employees. It was a very tough meeting. Near the end of the meeting, Mr. James picked up a tool and hurled it across the room. Last month, Mr. James split my department in half and asked a few of my employees to report directly to him. I only found out about this when a co-worker mentioned it.

Shannon: I don’t have much interaction with Mr. James because he seems to be focused on the operational aspects at the moment. My job is very customer focused and my team is usually called upon to diagnose customer issues. From the few times I’ve met with him, he seems quite direct but fair. There are times, however, that Mr. James is quite blunt with customers, and we have to manage that better. Maybe he should not be speaking to customers at all. My issue is with human resources and finance, as we aren’t able to manage our workload with only 70 per cent of the resources. If we want to hit our numbers, we need to have the correct allocation of funds for our department.

Mary: We’ve got people quitting in fear, and we’ve got to stop this now. Replacing experienced workers with new trainees costs us money and time. Our line worker colleagues are not the type to complain loudly. They’ll just quit, often without telling us beforehand. The biggest issue we hear about Mr. James is that he does not value a person’s opinion. He would prefer for them to follow his orders instead of hearing what the likely solution could be. When our employees blindly follow orders, the situation often gets worse.

Susan: I’m asked every day to meet with Mr. James to give him a status update on the plant’s performance. I don’t look forward to this meeting, as he’s very vocal and seems to get angry at any dip in financial performance. But I find it strange that when other departments report underperforming numbers, no one tries to question the data, no one offers any follow-up statement on how they’re trying to turn the situation around for the better. Mr. James just sits there and scowls, for the most part. There have been cases where he’s gotten up and walked out of our meeting—obviously in an angry mood—and has headed straight for the production line that was underperforming. Many line workers try to hide from him—around corners, in the bathroom, in the lunchroom, when he does his morning walks through the factory. It does not help, however, that Operations and Engineering try to override Mr. James’s decisions on plant issues. Mr. James has a lot of experience and the departments should be listening to what he has to say.

Shannon: We’ve had a few of our products shipped back to us on crates from the customer due to defects. But when we check the items, we notice that the defects are not accidental. Someone—maybe more than one person—in our own factory has been sabotaging our equipment before it goes out. I’ve tried to talk to human resources about this, but I’m told that the issue lies with operations instead.

It seemed clear that many of James’s senior team members had negative feedback about how the plant was being run and how they were being led. Paul listened intently but did not convey any emotions. He left the plant that second day exhausted from his meetings. The next day, he downloaded information and collected copies of production reports from Shannon and then met with James, who had returned from an appointment. After dinner on January 9, Paul’s third day in Terrago, just before the taxi dropped Paul off at his hotel, James remarked to Paul:

During any change initiative, there will be many supporters and detractors of the effort. The key is to maintain the course until the necessary results are realized. There will be many employees—line workers and senior managers—who will not be supportive, and we have to decide, in the near future, whether or not to keep them on. Rest assured that if we have to fire people who are underperforming, I have enough contacts in my network that we can fill those positions easily. Please keep that in mind as you review our performance.

Back at his hotel desk, Paul wanted to set aside two hours to write down what he had learned over the first three days of his visit and what issues he should be addressing in the next few days.

**Exhibit 1: Laurentian Automotive Technologies Organizational Chart**

President & CEO

(Gary)

General

Director of

Director of

Director of

Director of

Counsel

Operations

Sales & Marketing

Finance, CFO

Human Resources

(Olsen)

(Paul)

(Michael)

(John)

(Albert)

Note: CEO = chief executive officer; CFO = chief financial officer

Source: Company files.

**Exhibit 2: Terrago Plant Organizational Chart**



Source: Company files.

1. All currency amounts are in US$ unless otherwise specified. [↑](#footnote-ref-1)