PUTTING OUT FIRES: NORTHERN LIGHTS ENERGY

9-L10-4-002
SEPTEMBER 2010

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INTRODUCTION

On February 4, 2010, workers at the Northern Lights Energy (NLE) refinery in Sarnia, Ontario, performed an emergency shutdown of one of the main processing units. The temperatures in the Sarnia area dipped below negative 40 Celsius that weekend, unusually cold for the region. "It was cold, and we worked hard to keep the units running," recalled Kim Sloan, a nineteen-year employee who worked the evening shift. At negative forty-one degrees, Sunday was the coldest February 4th on record for the Sarnia area. NLE workers remember the day for the mechanical problems caused by the freezing conditions. In contrast, NLE management saw the shutdown of the processing unit as a dangerous escalation in the ongoing conflict over their increasing use of subcontractors at the Sarnia plant.

NLE has big plans for the Sarnia operations. The company has developed new technologies that will allow it to integrate biomass energy production with traditional petrochemical refining processes. The expansion will represent a significant capital investment on the part of the company. The integrated operations will position NLE as a global leader in renewable energy production with the security of proven profitability from its traditional petrochemical operations.

Nevertheless, plans to expand operations in Sarnia and re-brand NLE as the global leader in Green Energy production appear to be running off the rails. In addition to the problems with the union, environmental and community groups have begun targeting Northern Lights Energy, trying to paint the company as environmentally reckless and a bad neighbour to Northern communities. To cap it all off, two days ago there was an incident at the Sarnia Refinery. The details are not clear yet, but a

small explosion severely daaged one of the units. Luckily, only two employees and five contractors suffered injuries, and those were minor. Quick action by the crew lead to perform an emergency shut-down of Refinery Tower B prevented a tragedy.

As Vice President of People, Carl Forster has to sort out what is going on and what needs to be done to get the business plan back on track in Sarnia. The company's CEO, Reg Pillerson, personally spoke with Forster about the importance of getting to the bottom of the problems.

"We will unveil our 3G Green Technology at our annual meeting next month," Mr. Pillerson explained. "Capital markets will respond strongly, and our share prices will double as we become the global leader in Green Energy. That won't happen if we have protesters outside our annual meeting claiming NLE is killing workers and baby seals."

This is a pivotal moment in the company's history, and Forster's analysis of the situation and plan to address the key problems will make the difference between success and failure.

NORTHERN LIGHTS ENERGY

Northern lights Energy built one of the first refineries along the St. Clair River in 1917. Louis Hartstein, along with a group of Toronto businessmen, bought the refinery in 1930. Northern Lights was one part of Hartstein's growing financial empire, which included a major stake in Amoco, a company his brother founded in 1922. Hartstein's son-in-law, Henry Rothenberg, ran the refinery. The Hartsteins' diverse business interests were consolidated under the umbrella of COPCO, the Canadian Oil Production Company. COPCO and its affiliated businesses were very successful, making the Hartsteins one of the richest families in Canada.

The company headquarters are in Toronto, but regional centres focused on extraction (Northern Alberta) and refining (Sarnia) employ the majority of NLE staff. NLE considers itself more than an oil and gas company and has invested heavily in research and development of green energy technologies.

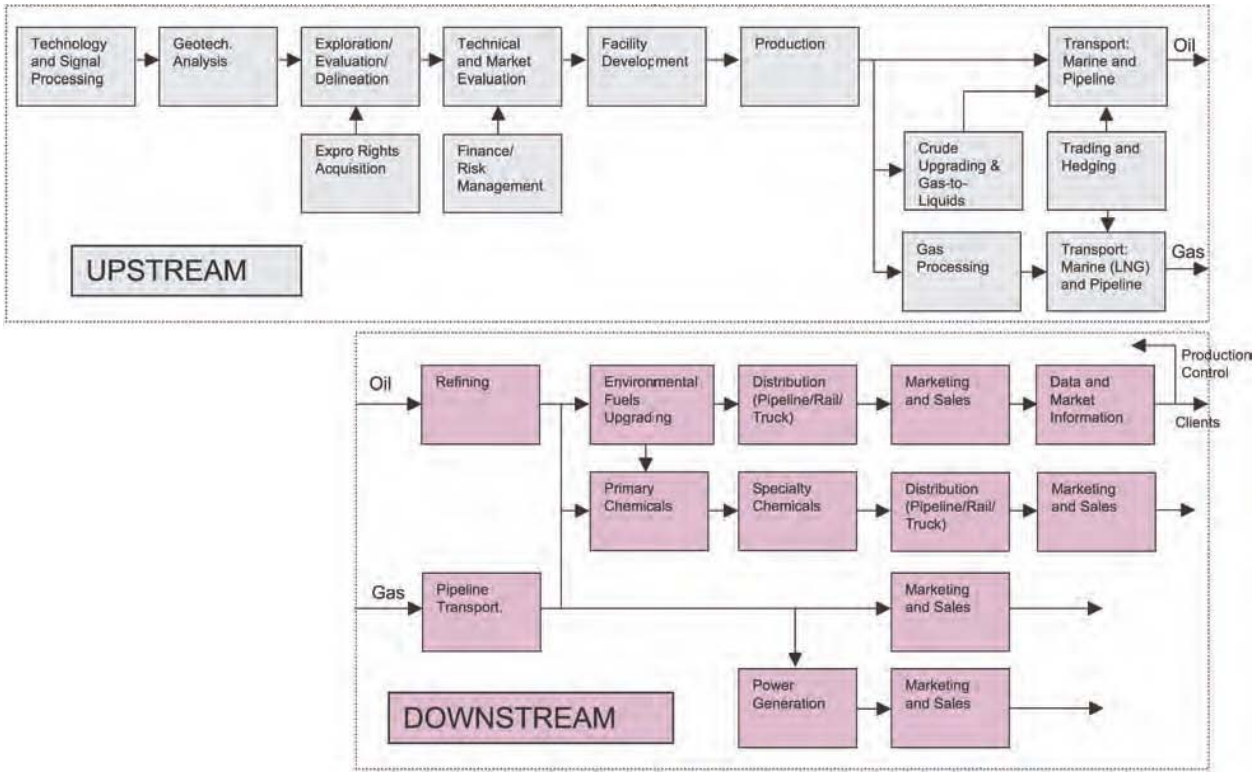
The company is publicly traded on the Toronto and New York Stock Exchanges, but the Hartstein family retains a controlling interest. Other major shareholders are mostly comprised of large institutional asset-management entities such as the Ontario Teachers' Pension Fund. The company has weathered the boom-and-bust swings of oil commodity prices by maintaining low debt-to-equity ratios and a long-term growth strategy. NLE has not been tempted to enter the highly leveraged buying bonanzas during boom times and thus has maintained stability and independence in an industry dominated by the "super major" integrated oil and gas companies like ExxonMobil and BP.

Robert Hartstein, the Chairman of the Board, is not involved in the day-to-day operations of the firm. Nevertheless, his influence has been instrumental in developing NLE's strategic focus on green technologies. Unlike most of the

research and development going into renewable-energy platforms such as wind and solar, NLE's focus has been on technologies to improve efficiencies in existing fossil fuel energy-conversion processes and reducing greenhouse gas emissions. NLE is not counting on consumers to change their patterns of energy usage. Instead, NLE will supply Green Energy Products fully compatible with existing energy infrastructures.

NLE BUSINESS SEGMENTS

NLE's operations can be broadly broken into upstream and downstream operations, as shown in the figure below. Upstream operations primarily involve exploration and production activities. Northern Lights Energy has exploration activities in five countries and owns 11 million acres of undeveloped land, mostly in Canada's Far North. NLE's estimated resource base includes 12 billion oil-equivalent barrels with 6 billion in proven reserves. NLE's replacement of oil reserves through new discoveries has outpaced the decline of reserves through production over the past several years. Northern Lights Energy has 5,000 productive wells on 120 fields in five countries. The key to NLE's future, though, lies in its operations in the tar sands of northern Alberta.



NLE produces roughly 1.2 million oil-equivalent barrels per day. Approximately four fifths of NLE's oil production is in North America. Refining and retail operations comprise the company's downstream operations. Northern Lights Energy has ownership interests in two refineries in Canada, but it has plans to

significantly expand its refining operations, especially in Sarnia. Chemical manufacturing, a separate business segment in NLE's operations, is closely aligned with downstream refineries in North America.

NLE generates profits across all of its business segments, but the upstream operations generate a disproportional amount of profit for the firm. While upstream operations accounted for just 14 percent of the company's total revenue, NLE generated $1.7 billion in earnings, over two thirds of the company's total profit from tar sands oil production. Return on capital employed, a critical measure of profitability in the oil and gas industry, was 33 percent in 2009. Net income per oil-equivalent barrel was $10.81. The surge in the price of oil between 2005 and 2008 meant that this profit margin swelled but has moderated in the past year.

Ironically, Mr. Hartstein has a love-hate relationship with the company's most profitable business segment. While upstream activities provide a strong profit centre, the public perception of "dirty oil" from the tar sands runs counter to Mr. Hartstein's vision of the future. Downstream earnings increased to $500 million in 2009, up some 62 percent over a five-year period starting in 2004. Given the revenue volume of the downstream segment, a slight improvement in refining margins will provide a large jump in total profit. This is one reason why the Sarnia operations are a key part of NLE's strategic business plan.

GROWTH PLANS

NLE's general growth plan involves two general strategic principles. First, the company intends to continue the legacy of its recently departed CEO, Lester Redmond, under whose reign it achieved record profitability. The new CEO, NLE veteran Reg Pillerson, inherits a company that is flush with cash, following an extended period of high oil prices. Pillerson will follow in his predecessor's footsteps by pursuing a long-term strategy to re-invest capital in the businesses and manage cash flow conservatively by continuing high dividends and share buyback programs.

Second, Northern Lights Energy will embark on a bold plan to introduce new refining technologies known as 3G Biomass Energy. In the words of one analyst, NLE's "future is predicated on success in producing oil and gas out of the tar sands and refining it with green technologies for the US market."

Within the large Downstream segment, growth will be tied to the company's move towards a massive-scale increase in green technology refining capacity and its ability to execute small but steady operational improvements. The Downstream growth plan has three elements. First, NLE will seek to cut operational costs, through continued productivity improvement, facility modernization, and reduction of headcount by contracting out refining and maintenance jobs.. Second, the company will seek to improve the segment's inherently tight margins through capital investments in new technology and expanding refinery unit size; Downstream also seeks to re-engineer refineries towards integrated biomass feedstock. Third, the company will try to exploit its ability to produce diverse energy products, including electricity through 3G technologies.

Targeting so-called third-generation biofuel technologies, Northern Lights Energy has developed a cost-effective mechanism for transforming waste biomass ranging from sawdust to zebra mussels into a complex carbon feedstock. Unlike ethanol, which has been criticized for increasing food prices and having a larger greenhouse gas footprint than fossil fules, 3G Biomass technology provides sustainable inputs that can be integrated with current refinery processes. As a result, fuel and electrical energy generated through 3G Biomass technologies can use existing energy distribution and consumption infrastructures.

SARNIA: CANADA'S BIOINDUSTRIAL CENTRE

Today, the towers of petrochemical plants dominate the landscape along the St. Clair River, shown in the maps in Appendix 1. The area just south of Sarnia has one of the largest concentrations of oil and chemical manufacturing plants in Canada. At night, the industrial area glows from electric lights that outline the towers and gas flares that burn high into the sky.

The combination creates a surreal atmosphere, resembling holiday lights strung up in the fires of Dante's inferno, complete with the acrid smell of sulphur. This scene greets thousands of workers as they drive along Highway 402 on their way to jobs at companies like Shell Canada, Suncor, BP Canada, Nova Chemicals Canada, and Northern Lights Energy. Twenty-four hours a day, seven days a week, workers at the refineries process hundreds of thousands of barrels of crude oil into gasoline and dozens of other fuel and petrochemical products. Most of the refinery workers belong to the union, the Oil, Chemical and Atomic Workers of Canada.

Suncor Energy Products built the largest ethanol facility in Canada, producing over 200 million litres of fuel-grade ethanol per year in Sarnia. Bluewater Power, the largest electrical utility in the region, is generating electricity from landfill gases. The plant currently produces nearly 1.6-megawatts, with construction under way for a second facility that will add production capacity for another 4.5 megawatts. Sarnia's industrial companies are turning to green technologies, and NLE plans to become a global leader in this area.

OIL-REFINING PROCESSES

Making gasoline is a hot, dirty, and dangerous job. Turning crude oil into finished products involves a complex process of "cracking" heavy oil compounds into lighter fuels using heat and chemical catalysts. This process is shown in the diagram in Appendix 2.

"I am pretty proud to work for Northern Lights," explains Danny Duncan. "I started working as an outside checker and worked my way up to lead man on a unit." Checkers monitor the thousands of gauges, pumps and valves that control the flow of products through the refining process. Learning both the mechanics of the flow process and the chemical characteristics of high-quality fuel products can take years. Duncan became one of the first visible-minority employees to lead a crew on the fluid catalytic cracking unit. "I was kind of a trailblazer," says

Duncan. As a lead, often called the stillman, Duncan was responsible for the overall performance of the unit during the shift.

NLE's Sarnia refinery has four processing units equipped to handle 100,000 barrels of "sweet" crude per day. "Sweet" crude means that the oil feedstock has lower levels of sulphur and other non-hydrocarbon molecules. Crude oil that contains appreciable quantities of sulphur is called "sour". The sulphur level of the feedstock not only affects the price per barrel but also has important implications for the refinery's pollution-control requirements. "Sweet" crude costs more, but its lower sulphur content makes it less expensive to process. Pollution discharges, especially airborne sulphur compounds, are a major environmental concern for the company.

The goal of the refining process is to convert as much of the crude oil into high-value fuels as possible. NLE's Sarnia refinery is able to achieve a high conversion rate. In the past six months, NLE managers congratulated its workforce at Sarnia for setting twenty-two production records.

Still, competition in the petrochemical sector is intense, particularly given the intense competition in gasoline prices in the North American wholesale market. "We have to produce a gallon of gasoline for less than the cost of bottled water," explained NLE's Executive VP of Refining, Randy Smith.

Crude oil is composed of hydrocarbon compounds, molecules of hydrogen and carbon that vary in configuration and weight. Since the molecules have different weights, their physical and chemical properties vary, including the temperatures at which they vaporize, the boiling point. The refining process begins by heating the crude oil to 400 degrees Celsius to separate the various compounds. This process is known as fractional distillation (see Appendix 3). The vaporized oil is sent into a distillation tower that allows the various components to be extracted at different levels of the tower unit. The fractions are typically combined into the higher-value mixtures.

To increase the conversion yield of crude oil into higher-value products, chemical processing is also used. Breaking large hydrocarbon molecules into smaller ones generates higher-value products, a process often referred to as "cracking". Molecular breakdowns can be accomplished by either thermal or catalytic cracking procedures. The use of catalytic agents such as zeolite or aluminum hydrosilicate improves cracking efficiencies. Sometimes smaller molecules need to be combined into larger hydrocarbon chains; this process is called catalytic reforming. Alkylation is a chemical refining process that alters the molecular structure of the hydrocarbon molecules.

Modern refineries no longer have hundreds of workers adjusting valves and monitoring gauges on the various units. Refineries are now operated from a control room (as shown in Appendix 4), where workers monitor pressure, heat, and other vital statistics on multiple computer screens. Despite the use of advanced technologies in modern refining operations, physical maintenance of the units is critical. Computer monitors can alert operators to dangerous pressure build-ups, but crews of workers still need to have "eyes on the ground" during every shift.

Anticipating problems and spotting potential production malfunctions in the highly complex process of refining petrochemical products can take years of experience to master. NLE brought two new 3G Technology refining units on line a year ago. The units combine biomass inputs with crude oil in a pre-distillation reforming tower. The combined feedstock is then transferred into the existing flow process. There have been a constant string of minor problems over the past year.

The Executive VP of Refining Operations, Randall Smith, has led a team of engineers to work on these problems. His team works very well together, and Smith takes a very hands-on approach to correcting the problems. His team's relationship with NLE employees and contractors is generally very professional, but frustrations have flared up from time to time, especially whenever a new crew of inexperienced contractors is dispatched to work on the units.

The Company plans to bring two more 3G refining units on line in the next four years. Over this period, they will also upgrade the four existing units to handle increased volumes of product flow-through. By 2015 the company plans to process the equivalent of 250,000 barrels of crude oil a day. Once the four 3G Green Technology pre-distillation reforming units are fully operational, only half of the input feedstock will be crude oil.

The company has experienced its share of mistakes and poor business decisions. NLE invested $21 million into a new desulphurization unit before deciding the unit would not be cost-effective and scrapping it. One of the executives was charged with losing millions of dollars on "sloppy" purchases of crude oil. Managers have estimated the Sarnia plant's labour costs to be 20 percent higher than their competitors.

THE UNION

In 1939, the Oil & Chemical Workers of Canada (OCWC) organized NLE's Sarnia refinery amidst the bitter strike against Imperial Oil. Unable to halt production at Imperial's refinery in Sarnia, the union sent out striking workers throughout the region to promote a boycott of the company's products. The union learned that Imperial was shipping its products under the name of other refineries, NLE being one of them.

When a tanker ship pulled up to NLE's dock on the St. Clair Ship Channel, a union soundtruck blared the boycott message to the ship's crew, while union pickets formed in front of NLE's gates. The ship's crew, members of the Canadian Maritime Union, left the tanker stranded at the dock. Meanwhile, although the workers at the refinery were not yet in the OCWC, the pickets succeeded in shutting down the plant until NLE agreed not to handle any more of Imperial Oil's products. Shortly after this incident, NLE employees voted overwhelmingly for the union.

Members of the Oil & Chemical Workers of Canada Local 1939 had successfully avoided the type of concessionary bargaining that was so pervasive among

industrial unions in the previous twenty-five years, including the growth of subcontracting and job flexibility that occurred in most of the oil industry. The local union committee saw no reason to accept any concessions while the company was making big profits and looking to expand operations in Sarnia. Company managers felt increasingly frustrated, having faced unresponsive union representatives.

Talks have continued with the union about the increased use of subcontractors and other changes needed to make the new operations more flexible, but no progress has been made. Tensions in the plant between regular employees and the contractors are growing, heightening management's sense that the situation is spinning out of control.

EXECUTIVES, MANAGERS, AND WORKERS

NLE is a relatively flat organization, without layers of managers and supervisors between the CEO and front-line staff. (Appendix 5 provides a partial organization chart.) Despite the relatively flat organizational structure, functional silos may still be a problem. HR functions are treated separately from operational matters. The monitoring of contractors is handled by the VP of Global Partnerships. Organizationally, the Sarnia Refinery is managed by Darryl Cormier, the general maintenance manager.

Executive VP of Refining Operations, Randall Smith

Randall Smith is a global expert in the art of turning crude oil into high-value petrochemical products. His expertise has been sought by governments in China, Russia, Singapore, and the Middle East. "I love facing an engineering problem, getting my team working together, and getting things fixed," he explains.

Smith used to provide day-to-day management of the Sarnia operations, but global demand for his expertise and a focus on bringing 3G Technology into operation now has his leadership skills focused elsewhere. While his expertise in the field and no-nonsense business approach to operations have earned him respect from nearly all the regular NLE employees, there is little respect between Smith and the rotating crews of contract workers.

He once kept working at a mechanical problem for 36 hours straight until the unit was back on line. He does not have the same kind of patience in dealing with interpersonal problems. If the team is working together to fix a problem, his leadership excels. If there are no mechanical problems and employment relations are causing operational breakdowns, Smith has little patience.

General Maintenance Manager, Darryl Cormier

Facing corporate expectations to improve efficiencies and reduce costs, a new configuration of plant managers at the Sarnia refinery met in the fall of 2008 to assess the company's operational and human resource needs. Sarnia's maintenance manager, Darryl Cormier, took charge of cost-cutting strategies. Cormier's team of managers resent what they consider widespread abuses and waste engendered by

the union's restrictive work rules. Management find the full-crew clause in the collective agreement (excerpts from which may be seen in Appendix 6), which requires the company to maintain full-staffing levels at all times, particularly galling. "We have to call in someone on four hours of overtime whenever an employee has to leave his station for fifteen minutes to pick up paperwork from the clinic," complains Cormier.

For NLE's new maintenance manager, these frustrations have grown into general resentment towards union maintenance workers. "Contractors are doing a better job, more efficiently than our own people," claims Cormier. A native of Calgary, Cormier still dresses the part, in a tailor-made cowboy-style hard hat, when he is working in the yard.

Cormier has a background in mechanical engineering and worked every facet of the petrochemical production process: from the oil sands of Alberta to research and development laboratories in Calgary before starting at the Sarnia Refinery in 2008. His personality is larger than life, and he often does not hesitate to share what he thinks of an employee's work performance, especially when he stands in front of large groups.

Health and safety at the plant is part of Cormier's portfolio. There has been a steady increase in the number of reportable incidents and in the number of accidents resulting in lost-time injuries since he arrived in 2008, as shown in the table below.

	Reportable Incidents	Lost-Time Accidents
2005Q1	2	0
2005Q2	0	0
2005Q3	3	0
2005Q4	4	0
2006Q1	1	0
2006Q2	3	1
2006Q3	5	2
2006Q4	4	0
2007Q1	7	3
2007Q2	5	1
2007Q3	13	5
2007Q4	9	3
2008Q1	11	6
2008Q2	15	8
2008Q3	17	6
2008Q4	22	11
2009Q1	13	9
2009Q2	27	17
2009Q3	29	15
2009Q4	33	20
2010Q1	31	22
2010Q2	40	24

"If you want a guarantee of a safe job, don't work with gasoline," quips Cormier. "People who have studied complex systems know that failures will happen, no

matter how many precautions and fail-safe systems you put into place," he argues, "there are a million different valves that can fail, especially when you are dealing with superheated materials. Injuries happen, but we have not had a fatal accident at the Sarnia Refinery."

The vast majority of lost-time injuries are suffered by contractors. Since the contractors are not technically employees of NLE, the company has not faced any increased liability from its deteriorating safety record. This might change, as the union is beginning to pressure the Ministry of Labour to investigate the high rate of health and safety incidents at the Sarnia Refinery. Field agents from the Ministry are scheduled to perform an on-site inspection next week.

Manager of Human Resources, Jill Dwyer

Jill Dwyer recently replaced Chuck Powell as the local human resource manager. Dwyer is a soft-spoken but earnest manager with a long career working in human resources at unionized companies. "I enjoy helping employees work through problems," Dwyer reflected about her career in human resource management.

Despite widespread suspicion that Dwyer has been brought in to bust the union, the new manager has a track record of good labour relations. "I have never been involved with a lockout or strike before," explains Dwyer. Nevertheless, Dwyer replaced the union's traditional, trusted, and predictable partner in labour management relations. Dwyer has not yet been able to establish a good rapport with the union's Bargaining Committee. She walked into a situation of rapidly deteriorating trust. Right before she arrived, the Maintenance Manager, Darryl Cormier, decided to significantly expand the use of contractors. That issue is going to arbitration, and several new grievances are scheduled for arbitration every week.

"I never get a chance to address an issue before it becomes a full-blown grievance and the union is demanding to take it to an arbitrator," Dwyer complained to Carl Forster on the phone the other day. "People would rather just throw a grievance form at you than sit down and work things out."

She is also concerned about how employee morale is affecting health and safety at the plant. "Our regular employees won't even talk to the contract workers. You can't run a complex operation like this when half of the people won't talk to the other half. Trust may not be a mechanical problem, but it is definitely an operational problem if an organization doesn't have any. It is hard to build trust without security."

The adoption of advanced technologies, especially the introduction of computerized control centres, reduced the workforce at the Sarnia Refinery. In 1980, there were 1,200 regular full-time workers. Today, Northern Lights Energy has only 232 regular employees. NLE has used contractors to perform periodic maintenance for the past five or six years, but a year ago, the management team decided to significantly increase the use of contractors, not just for periodic maintenance, but also for regular refining operations (see Appendix 7). With the expansion of operations and introduction of 3G Green Technology processes, there

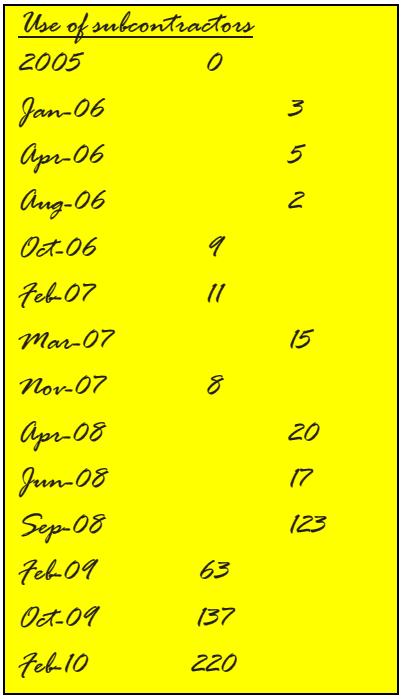
are now more contractors working at the plant than regular employees. In the past quarter, 255 contractors were working at the plant on any given day.

Union Bargaining Committee Chair, John Grant

Grant started at NLE in 1974 after serving in the Canadian Forces and working as a military guard at the nation's capital. "By working at Northern Lights, I have been able to send three kids to university and one daughter to medical school," Grant states proudly, "but NLE has never been a good place to work unless you were part of the good ol' boys network." Grant saw some of his fellow workers, often visible minorities, subjected to more severe discipline and denied promotions.

Because of this exclusion, Grant felt that NLE workers had more loyalty to each other than to the company. "The shift foreman asks me to call people in for extra shift work, because if I call them personally, they will come," he says. According to Grant, "the new managers feel threatened. They want control to run the refinery. They want us to shut up and watch the units."

The issue of contractors has been particularly frustrating for Grant. "I can understand that the Company may need to bring in a contractor crew for major overhauls and periodic maintenance," argues Grant, "The thing is, now we have contractors working alongside us every day doing the same job I do, but they don't have the qualifications and experience to run a unit. It takes years to learn the art of making gasoline. Just because you know how to play a computer game does not make you qualified to run a station of the control centre."



A copy of Grant's handwritten notes; he has been keeping track of the number of contractors working at the plant.

Grant suspects that the increased use of contractors has made the Sarnia Refinery a more dangerous place to work. "Every so often, I have the guys help me keep track of all the contractors working at the plant that day. We don't count the construction crews, the pipefitters, and other building trades workers. About a year ago, the company opened the flood gates. Now we have more contractors than regular employees. It's not about union jobs, it's a safety issue."

From the union's perspective, management's most threatening actions have been to shift all maintenance work to outside contractors, significantly downsizing the workforce and dismantling the seniority system. Faced with massive job loss in the oil-refining industry, the union has made protection of job security the number-one concern.

Industry deregulation in the 1980s led to a huge decline in the number of refineries in operation in North America. In the U.S., the number of refineries declined from 324 in 1981 to just 170 in the early 1990s. The rapid consolidation taking place in the industry resulted in massive membership losses for the union. OCWC President Robert McHenry articulated the union's sense of crisis over job security in his address to the policy convention in the fall of 2005: "Our members have suffered through wave after wave of massive refinery and plant closures, layoffs, and job eliminations. They've watched in anguish as thousands of their fellow workers lost their jobs, wondering if they would be next in having their economic security vanish. While laying people off, the companies have mouthed unending euphemisms like restructuring, reorganization, trimming the fat, becoming lean and mean – and more recently, downsizing, rightsizing, and reengineering – to sugar-coat the destruction of jobs they've engaged in."

The use of contract labour has led to major labour disputes in many industries. For petrochemical workers and their union, however, subcontracting is not just about the loss of jobs but also about deteriorating safety conditions in dangerous plants. Such a threat became painfully real for refinery workers in 1989 when the Phillips refinery in Pasadena, Texas, exploded. The accident killed 23 workers, including four contract workers, and injured 232 others. The force of the explosion sent debris as far as six miles away. The disaster sparked a US Congressional investigation into the health and safety effects of subcontracting in the petrochemical industry.

The inquiry did little to change the practice of subcontracting at petroleum refineries, nor did the disaster stem the drive to lower costs through contracting out maintenance work. Following the Phillips disaster, NLE, like many other refineries, invested in a new centralized control station. Not only did the new system result in significant mechanical improvements in the refining process, but the operators monitoring the units were now housed in a bunker-like control centre, away from the processing units. Should a catastrophic explosion occur, those workers would be protected.

Union Health and Safety Representative, Charlie Campbell

Charlie Campbell is a thirty-year veteran in the Company. Soft-spoken and not one to raise his voice, Charlie is highly respected by his co-workers and contractors alike. "Safety is everybody's concern," explains Charlie. "I can't keep the regular employees safe if I am not looking out for folks working as contractors."

Charlie does not blame the contractors. "They are just trying to do their job." The problem is with the high turnover and lack of experience. "The closest most of these folks have been to a refining operation is pumping gas at the station," he sighs.

Health and safety meetings have grown cold and unproductive. At the last meeting, management made a presentation about their need to cut millions of dollars in the plant's operations. The union showed a video on the policy points of the national union. The two parties were not speaking the same language, much less focusing on health and safety issues. "There just does not seem to be any dialogue," observes the plant HR manager. Dwyer has started sitting in on the joint health and safety committee meetings but has been reluctant to suggest a different approach to Cormier and his managers.

"From the get-go I could tell they [management] were trying to get us to drop our complaint to the Ministry," said Campbell. "They might have agreed to provide some safety equipment out in the yard, but they didn't want to talk about the qualifications of contractors. When a union does that it's bad faith, but when the company does it they call it hard bargaining."

CONFLICT FLARES

Two weeks ago, nearly two hundred union members, environmental activists, and community organizers rallied in front of the administrative offices and presented a petition in support of their grievances. "The office staff felt physically threatened," recalled Smith. NLE called the Ontario Provincial Police to handle the situation. Over the next two weeks, this siege mentality would grow as supervisors, security firms, and office-based personnel were sent into the refinery operations to keep an eye on workers. "The company put a person with us to baby-sit us everywhere we went," John Grant said. There were no arrests, but tensions flared when plant security personnel came out to videotape the protest.

Company Charges Sabotage

In the two months leading up to the latest incident, the company made repeated allegations that the union was involved in sabotage of the plant. For union workers, the charges that they would jeopardize their lives through sabotage were inconceivable. The union demanded to know the basis of the company allegations. Charlie Campbell told managers, "tell us who has been doin' this and I will help you run them out of the refinery." For Campbell and other union members, accusations of sabotage were akin to claiming that union members were suicide bombers.

Nevertheless, Cormier was convinced that the regular employees were trying to prevent contract workers from doing their jobs. "Over three hundred labels on various pieces of equipment, including pipes, pumps, towers, heat exchanges, and electrical switches, were obliterated using spray paint and other means. Without proper identification of this equipment, it would be difficult or impossible to respond to emergency situations or even perform basic plant functions."

Cormier and his operations supervisors catalogued what they claimed were over four hundred separate incidents of sabotage and property destruction. Among the more serious allegations were claims the union workers orchestrated intentional temperature drops and emergency shutdowns of the refinery's Fluid Catalytic Cracker (FCC) and Reformer units, like the action taken on February 4, 2010.

Distillation Operations Supervisor Dale Thorpe recently received his MSc in mechanical engineering and began working for Northern Lights Energy three months ago. He has ambitions to become NLE's VP of Extraction Operations before he is thirty. He is hard-working, and his ambitions are clear to everyone around him. While technically skilled in the mechanics of the new 3G Technology, Thorpe lacks people skills. He has been known to fire an entire crew of contractors and complain loudly and bitterly about "lazy" union workers. Thorpe has not been counselled about his behaviour, and he voices what Cormier's management team feels.

Thorpe was the supervisor in charge of the unit that exploded two nights ago. His report states that operator error and insubordination are to blame for the accident. "I instructed stillman Campbell not to perform an emergency shutdown of Tower B. Controlled pressure release and additional monitoring would have kept the process within acceptable parameters. Stillman Campbell abandoned his post and that's when the unit failed."

Exactly what happened is not clear to Carl Forster. Campbell has been placed on suspension pending investigation. Jill Dwyer has told Forster in confidence that she is not sure that Thorpe's version of events adds up.

Bobby McPhillips started working in the refinery industry in 1977 at Suncor. He began as an operator on the catalytic cracker unit. McPhillips described the job as hot and dirty: "I would heat the catalyst to 1,300 degrees and mix it with oil. The catalyst is recovered, and the oil vapours are sent into a tower where you draw off the gasoline and other products." Any number of problems in this process can result in significant discharges of pollution.

To get around the large refinery, McPhillips uses a bicycle. "The use of motorized equipment in the facility is too dangerous," he explains. "Hot engines, collisions, even just the spark plugs could cause a safety incident." Contractors regularly use crew trucks in the facility, which has become a major point of contention between the two groups of workers.

McPhillips has been working at NLE since 1990. Quick with a smile and a joke, he gets along with employees but does not give contractors the time of day. "They

are here to take my job," he complains. "Why should I help them? If they don't know where valve #C31S is on the cracker unit, they need to go look it up in the manual. I am not getting paid to train my replacements." This attitude is shared by many of his co-workers.

"Charlie saved our lives the other night," claims McPhillips. "Controlled de-pressurization may work in a textbook, but when you know the units like Charlie does, you know when there is problem." According to McPhillips' statement, Campbell had left the control room to personally warn the crew to move to a safety bunker. "I heard Charlie screaming to take cover. The contractors thought it was a joke at first, but when we saw it was Charlie, we all ran for the bunker." Moments later, the unit turned into a fireball. Charlie, McPhillips, and five contractors were injured.

As these tensions have built up inside the facility, pressures from environmental groups have been starting to mount outside the plant. A coalition of environmental and community groups have been agitating to get local authorities and Ministry of Environment officials to address pollution from Sarnia's "Petrochemical Alley". Linking up with groups targeting the tar sands and related Northern issues, the coalition has decided to focus its pressure on Northern Lights Energy.

ENVIRONMENTAL CONCERNS

Petrochemical manufacturing is inherently an environmentally hazardous industry. Oil refineries not only produce explosive distillates for retail markets, but the manufacturing process typically uses dangerous catalysts such as hydrofluoric acid and creates toxic by-products such as sulphur dioxide.

The major sources of pollution from distillation towers come from steam ejector units. When the process is running smoothly and efficiently, emissions from these steam ejectors are captured by blowdown units. "Fugitive" emissions sometimes happen when feedstock flow is miscalculated or pressure builds to the point where excess steam has to be released. In Fluid Catalytic Cracking units, particulate emissions are controlled by electrostatic recapture units.

Sam Abraham has headed the grassroots environmental group, the Lambton County Environmental League (LCEL), since 1988. Abraham has the easy-going style of a fisherman who would rather be out on a lake than attend a protest rally. Still, he has the unstoppable determination of an environmentalist in the heart of Sarnia's Petrochemical Alley. He began his social activism in community environmental justice issues, organizing to stop pollution from paper and pulp mills in Northern Ontario. While the LCEL focuses on industrial pollution problems, Abraham has never lost touch with his northern roots. In its mission to clean up NLE's pollution problem, the LCEL found a natural ally among the union workers who suspected that the increased use of contractors was resulting in increased fugitive emissions.

An early product of the union's relationship with the environmental organization was a research report on the recent increases in pollutant emissions from the

refinery. The report catalogued NLE's deteriorating environmental record. Abraham worked with plant employees on how to research information about the company's pollution violations.

Using NLE's own pollution disclosures to Environment Canada, the "Dirty Business" report showed that NLE had more operating hours in violation of the *Clean Air Act* Standards and released nearly three times more sulphur dioxide pollution with the use of contract labour.

Although environmental problems had existed before now, NLE employees suspected that the company's environmental record deteriorated with the introduction of inexperienced contract workers. "Employees in the facility have been telling us that NLE's pollution discharge has gotten much worse," explains Abraham, but the community groups needed proof. The investigation uncovered the following data on pollutant emissions.

	Sulfur Oxides (ppm)	Nitrogen Oxides (Tonnes)	Ammonia (Tonnes)
2005Q1	3	150	0
2005Q2	2	123	3
2005Q3	4	135	2
2005Q4	2	112	1
2006Q1	5	145	3
2006Q2	2	137	4
2006Q3	7	125	0
2006Q4	12	163	2
2007Q1	9	152	1
2007Q2	23	161	2
2007Q3	21	157	1
2007Q4	38	142	3
2008Q1	35	156	5
2008Q2	44	138	3
2008Q3	53	145	3
2008Q4	47	150	4
2009Q1	137	250	2
2009Q2	86	275	1
2009Q3	96	235	5
2009Q4	110	300	18
2010Q1	105	275	22
2010Q2	131	269	19

The table represents different measurements over the course of the past several years. NLE has an on-site monitor for SO_2 emissions. Quarterly averages in parts per million were estimated from the readings from the equipment. These readings

do not indicate the source, whether from stack emissions or fugitive emissions from valves and defective couplings.

Statistics for nitrogen oxides were identified through the National Pollutant Release Inventory Reports from Environment Canada. The group is suspicious that NLE is not reporting the full releases of these substances to the federal government. Finally, the environmental team working on this report found a peculiar report regarding the increase in ammonia emissions. Bobby McPhillips reports that the company started using contractors to run the Fluid Catalytic Cracker Unit about a year ago. The FCC is the stack source for most of the ammonia discharges.

While 3G Technology should decrease pollutant emissions, this technology has not been used in large-scale operations before. The technological advances are very exciting, but problems at the Sarnia Refinery have the potential to derail the roll-out of 3G Green Technology, not only for Northern Lights Energy but for the entire petrochemical industry. Carl Forster suspects that the source of the problems, including the recent accident, is not technical in nature. As VP of People it is his task to sort out the human dimension of problems at NLE's Sarnia Refinery Operations.

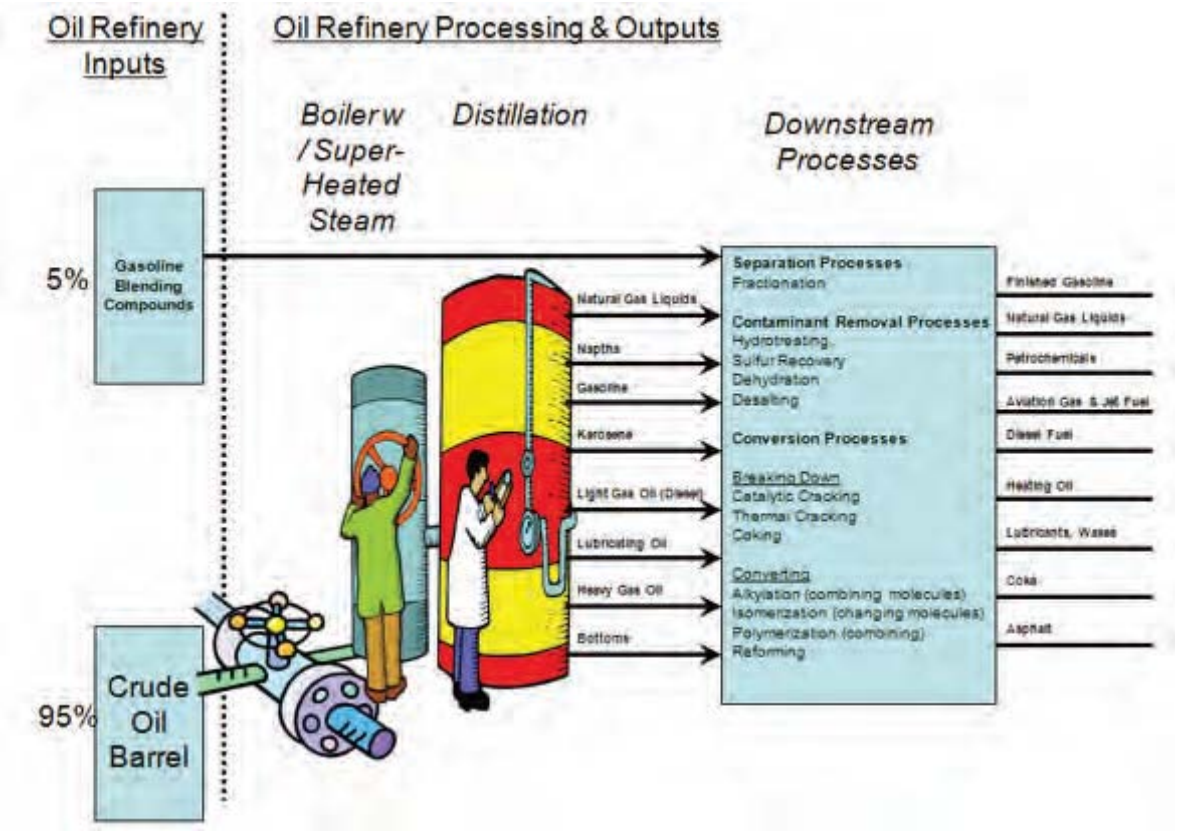
APPENDIX 1

NORTHERN LIGHTS ENERGY, SARNIA REFINERY COMPLEX

The refinery features water, rail and pipeline connections. Above, the map of Sarnia identifies the industrial district south of the city where NLE and other petrochemical plants are located. This detailed satellite image shows the refinery complex. Note the tanker docked at the facility and the extensive number of rail lines that access the facility. Not visible, but increasingly important is the Trans-Canada pipeline, which connects the Sarnia refinery to the tar sands of Northern Alberta.

APPENDIX 2

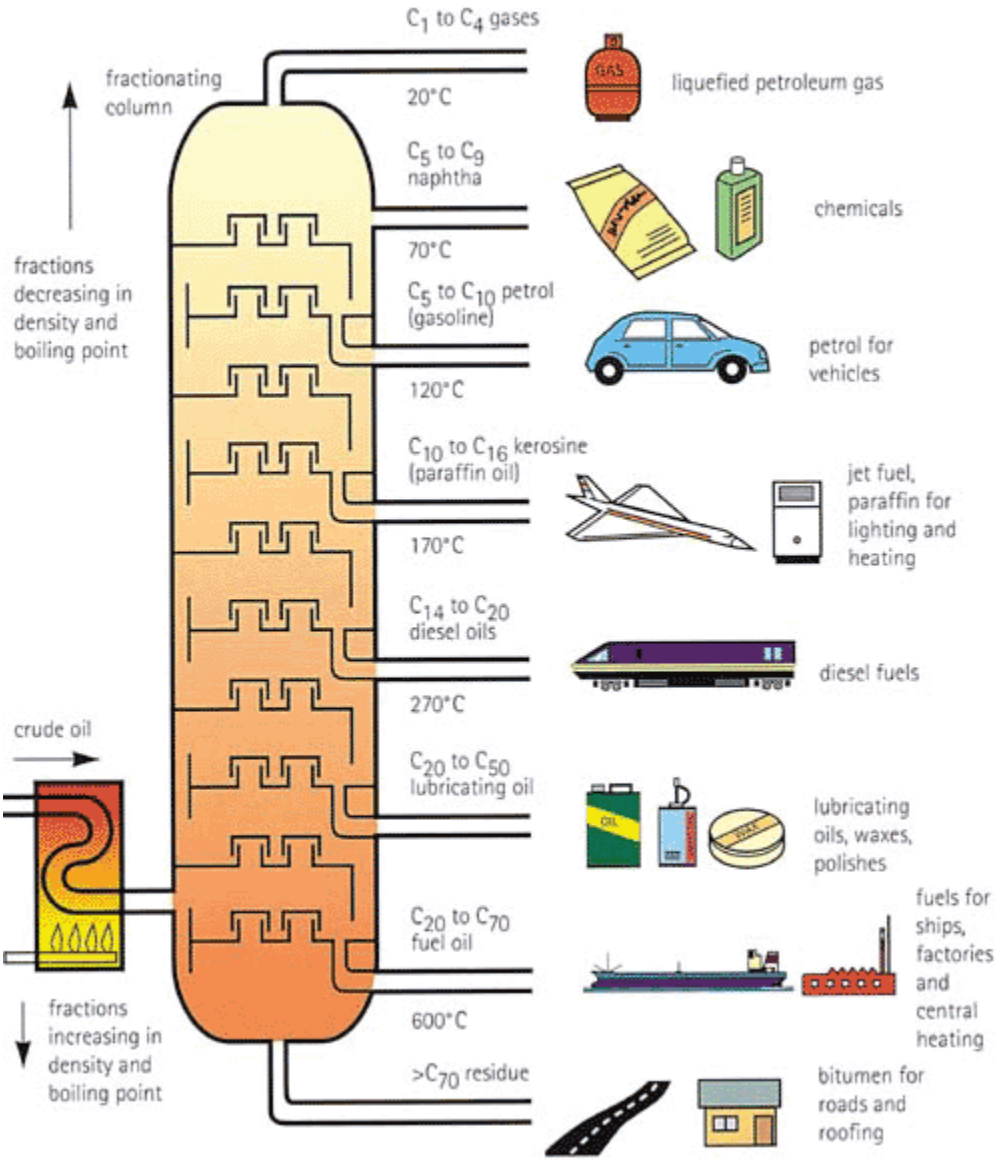
OIL-REFINING PROCESSES



3G Biomass can replace up to 80% of the crude oil currently used as an oil refinery input. 3G Green Technology helps improve the refining conversion process. This results in more high-value product and less costly and toxic waste materials.

APPENDIX 3

OUTPUTS OF FRACTIONATING PROCESS



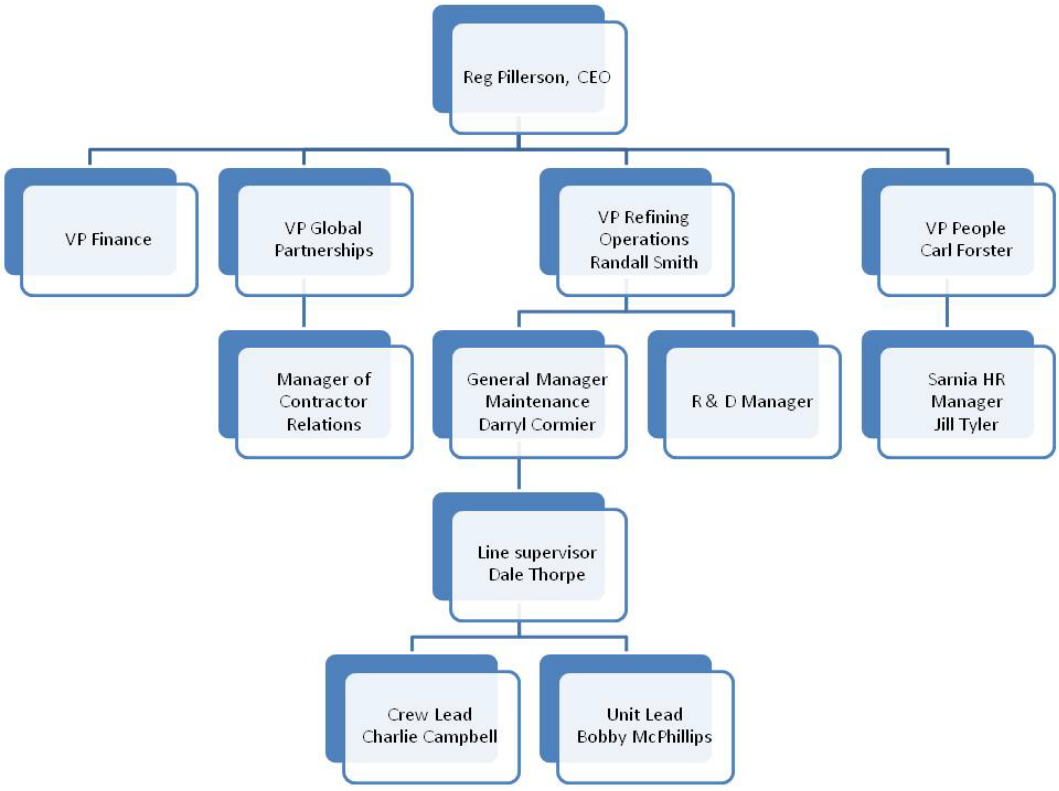
APPENDIX 4

REFINERY CONTROL ROOM

APPENDIX 5

NORTHERN LIGHTS ENERGY

PARTIAL ORGANIZATIONAL CHART



APPENDIX 6

AGREEMENT BETWEEN

NORTHERN LIGHTS ENERGY

AND

OIL, CHEMICAL AND ATOMIC WORKERS OF CANADA

SELECT ARTICLES FROM THE TABLE OF CONTENTS

PREAMBLE

Article 1 Recognition 2

Article 3 Management Rights.....3

Article 7 Grievance & arbitration 8

Article 8 Strikes and Lockouts.....9

Article 14 Safety.....14

PREAMBLE

The purpose of this agreement is to provide a means by which the parties can work together to support and communicate all matters of mutual interest to continuously improve the profitability of the Company and the security and wellbeing of its employees.

Article 1 Recognition

The Company hereby agrees to recognize the Union as the sole and exclusive bargaining agent of all employees of the Company employed in the Company's Refinery located in Sarnia, Ontario, excepting office, clerical, technical, supervisory, and plant p security employees.

Article 3 Management Rights

It is agreed that it is the function of the Company to manage the Refinery, to direct the working force, to hire new employees, to promote and demote employees, to discipline to suspend and discharge for just cause, to transfer and lay off employees, to observe Company rules, regulations and instructions.

It is also the function of the Company to decide the number and locations of its plants, products to manufactured, the methods and schedules of production, including means and processes of manufacturing, personnel requirements, use of contractors, shift schedules and vacation schedules and discuss in advance with the Union any proposed changes in shift schedules and vacation schedules prior to their implementation.

Article 7 Grievance and Arbitration

Any grievance which arises between the Company and the employees covered by this Agreement shall be handled as hereafter provided.

Step One: An employee may submit a grievance in writing, by submitting such grievance within nine (9) working days of the subject matter of the grievance coming to the attention of the employee, or a member of the Bargaining Committee, to the employee's Department Director. Any grievance so submitted should include reference to the particular provisions in the Agreement which have been allegedly violated and should be signed by the party or parties aggrieved. If the grievance is submitted by the employee, the employee may do so alone or with the employee's chosen member of the4 bargaining Committee as the employee's representative.

If the Department Director so requires, a meeting between persons designated by the Company and the employees designated by the Bargaining Committee, may be arranged at a time mutually agreed upon. In case of any doubt as to which Department Director is affected, the grievance shall be submitted to the Manager of HR, Sarnia refinery who shall forward it to the appropriate Director. The Department Director shall render a decision in writing to the person submitting the grievance within (9) working days of the submission of the grievance.

Step Two: If the decision rendered by the Department Director and/or reached at the meeting referred to above is not satisfactory to the employee or to the Bargaining committee, the employee or the Bargaining committee may submit the grievance in writing within nine(9) working days to the Manager HR, Sarnia Refinery who shall render a decision in writing within (9) working days. If the Manager HR, Sarnia Refinery requires a meeting between employees designated by the Company and by the Bargaining Committee, it may be arranged at a time mutually agreed upon.

Arbitration If the decision rendered in writing by the Manager HR, Sarnia Refinery referred to above is not satisfactory to the employee or the Bargaining committee, the employee or the Bargaining committee may submit the matter to arbitration in writing sixty (60) working days.

Article 14 Safety

It shall be the policy for the Company to make every reasonable effort to provide safe working conditions and to provide safe working practices. Inspection of all equipment throughout the plant or place of employment shall be made by the Plant Manager or other persons designated by the employer from time to time. Complaints or suggestions by workers employed on plant equipment regarding the safety of same shall be promptly investigated by the Company. The Joint Union-Management Health and Safety Committee may make written suggestions to the Plant Manager or designated company representative as to the elimination of hazards in order to prevent accidents. The Union agrees to encourage its members to work in a safe manner and to cooperate with the safety program.

No employee shall be required to perform services that seriously endanger physical safety other than the normal hazards and dangers of normal refinery operations. Refusal to do such abnormally dangerous work shall not warrant or justify discharge.

APPENDIX 7

LOADING THE FINAL PRODUCT

Contract employees now perform all of the loading and unloading procedures at the NLE Sarnia Refinery. Above, a contract employee prepares to load a tank truck with high-octane (and high-value) gasoline destined for the US market.