

# **Olympic Pipe Line Submission to the National Transportation Safety Board**

August 28, 2002

## **I. INTRODUCTION**

Olympic Pipe Line Company (“Olympic”) welcomes the opportunity to make this Submission to the National Transportation Safety Board (“Board” or “Safety Board”) as the Board prepares to adopt a Final Report concerning the rupture of Olympic’s pipeline in Bellingham, Washington on June 10, 1999. The purpose of this Submission is to summarize the post-incident efforts by Olympic and its new operator, BP Pipelines, North America, to remediate environmental harm from the incident, and to improve the safety and integrity on Olympic’s pipeline. Olympic has elected not to propose any recommendations for Board consideration. To the extent that Olympic endorses any proposed findings, those findings are set forth elsewhere, in comments and/or responses Olympic has submitted to the Board through the factual document preparation process.

As NTSB is aware, Equilon Pipeline Company LLC (“Equilon”) was a 37% owner and the managing operator of Olympic’s pipeline at the time of the incident. For approximately one year after the incident, Equilon stayed in that role. During that period, Olympic’s pipeline segment that ruptured remained closed due to orders from federal regulators. Effective July 1, 2000, Olympic replaced Equilon as operator of Olympic with BP Pipelines, North America<sup>1</sup> BP’s involvement with Olympic is entirely post-incident, and occurred coincident to BP’s acquisition of Atlantic Richfield Company (“ARCO”).<sup>2</sup>

Since becoming operator of Olympic, BP Pipelines has, among other things, conducted a complete review of Olympic’s operations; rehired selected Olympic employees as BP employees; implemented BP’s health, safety and environmental policies and procedures; established credibility with the public and federal regulators to permit Olympic’s repaired pipeline segment to restart; and worked to prepare Olympic for ISO 14001 certification. These post-incident efforts have come at substantial cost.<sup>3</sup>

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<sup>1</sup> Olympic has previously submitted to NTSB Staff under separate cover a detailed explanation of Olympic’s corporate and operational structure at the time of the incident.

<sup>2</sup> Through BP’s acquisition of ARCO, which was totally unrelated to the events on Olympic’s pipeline, BP became the owner of approximately 37% of Olympic’s shares in approximately April 2000. In approximately September 2000, BP determined to acquire the shares of Olympic’s third shareholder, GATX Terminals, Inc., thereby becoming the majority shareholder through ownership of over 62% of Olympic.

<sup>3</sup> Olympic’s financial situation at this time is extremely dire, leading its accountants to determine that its status as a going concern is questionable. Olympic’s ability to undertake all of the future planned safety projects will depend on, among other things, its ability to obtain approval for rate increases from the Washington Utilities & Transportation Commission and the Federal Energy Regulatory Commission.

## **II. POST-RUPTURE SAFETY, INTEGRITY AND ENVIRONMENTAL PROJECTS AND EXPENDITURES**

Since the rupture of Olympic's pipeline on June 10, 1999, Olympic has worked in close coordination with federal, state and local authorities to implement measures to ensure the physical and mechanical integrity of the pipeline; to enhance and improve the computer system's reliability through hardware and software upgrades; to strengthen operations controller training and supervision and upgrade the Control Center from which the pipeline is remotely operated; and to remediate and restore the environment in the immediate vicinity of the rupture. In addition, under the stewardship of its new operator, BP Pipelines, NA, Olympic has implemented BP's comprehensive, 13-step health safety and environmental program and has joined the rest of BP Pipelines as being certified pursuant to the ISO 14001 Standard applicable to Environmental Management Systems, the culmination of a rigorous audit process evaluating Olympic's environmental management systems.

By any objective standard, the projects undertaken by Olympic since the Bellingham incident have been sweeping in both scope and magnitude. The result of these efforts and of the new relationships Olympic has forged with regulators and local stakeholders is a pipeline that meets or exceeds all applicable regulations and performance standards and a management and workforce focused on ensuring that the factors contributing to the rupture do not and cannot recur.

As discussed in greater detail below, Olympic's rupture-related projects generally fall into four categories: compulsory projects; environmental restoration and remediation projects; additional safety and improvement projects; and projects undertaken to fully integrate Olympic into BP Pipelines.

### **A. Compulsory Projects**

#### **1. Office of Pipeline Safety**

The Office of Pipeline Safety ("OPS") issued a Corrective Action Order ("CAO") to Equilon, as the operator of Olympic, on June 18, 1999, which was subsequently amended on two occasions. The CAO, as amended, mandated that Olympic address to the satisfaction of OPS various aspects of the pipeline and its operation as a prerequisite to OPS granting Olympic permission to restart the portion of the pipeline that ruptured. OPS granted Olympic permission to restart Olympic's 16" line between Ferndale, Washington and Allen Station on February 8, 2001, about seven months after BP replaced Equilon as operator. The line segment between Allen Station and Renton, Washington, which Olympic voluntarily shut down following the rupture, was restarted on June 3, 2001 with the concurrence of OPS. The most significant requirements of the CAO are discussed below.

#### *Valve Effectiveness Study*

Valves play a critical part in the operation of a liquid petroleum pipeline. Valves regulate and direct the flow of product within a pipeline; block the flow altogether; and isolate a portion of the line that may have ruptured or may contain product that could be released into the environment. The CAO required Olympic to conduct a block and check valve effectiveness study to ensure that the valves on Olympic's 16" line between Ferndale and Renton were operating properly and were situated in the optimal locations to minimize potential releases.<sup>4</sup> Olympic conducted the study and implemented its recommendations, which included installation of 10 new check valves; 5 new motor-operated valves; and the conversion of 7 hand-operated valves to remotely-operated valves.

### *SCADA System Review*

The CAO also required Olympic to conduct a comprehensive review of its "SCADA" system. SCADA stands for Supervisory Control and Data Acquisition and is the software that gathers data from remote locations and allows the operations controllers in Olympic's Control Center to monitor and operate the pipeline. Olympic's SCADA system reports data from thousands of data points and updates itself in six-second intervals. Information gathered includes, but is not limited to: status information (whether a valve is open or closed); analog information (temperature, pressure, flow rate, etc.); and meter readings (batch volume and tank readings).

As discussed in detail in the Safety Board's "Specialist's Computer Study -- SCADA Control System," Olympic's SCADA system bogged down and became essentially non-responsive shortly before the rupture. As required, Olympic, through its operator, conducted a review of its SCADA system to diagnose the cause of the failure experienced on June 10, 1999 and to determine what measures were necessary to ensure that the problem would not recur. The review resulted in various recommendations for SCADA system software and hardware upgrades, enhancements and improvements, which Olympic promptly implemented.

### *Internal Line Inspections and Related Excavations and Repairs*

The CAO directed Olympic to formulate an acceptable internal inspection and repair program the goal of which was to detect anomalies, including those related to corrosion and third-party damage, in the pipeline wall. Olympic and OPS ultimately adopted unusually stringent excavation and repair criteria and Olympic immediately embarked upon a comprehensive, system-wide battery of internal line inspections with a variety of inspection tools ("smart pigs") to detect various types of anomalies and potential vulnerabilities and, subsequently, to effect the necessary excavations and repairs. The internal inspection tools and their capabilities include: high resolution magnetic flux leakage (MFL) used to detect metal loss, deformation used to detect

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<sup>4</sup> Although not required by the CAO, in conjunction with the effectiveness study conducted on the 16" line, Olympic conducted similar effectiveness studies on its other lines, including its 20" between Allen Station and Renton, its 14" line between Renton and Portland, Oregon, and all of its lateral lines.

abnormal curvature or dents, and Transverse Field Inspection (TFI) used to detect longitudinal seam abnormalities.

Conducting internal line inspections is a laborious, time-consuming and expensive process. Initially, scheduling and running internal inspection tools through a pipeline is itself a significant undertaking. When the tool run has been completed and all necessary data has been successfully generated and recorded by the inspection device, it can literally take months for an outside vendor to interpret the data gathered during the internal inspection. Considerable time is then needed to correlate the data to identify physical locations on the pipeline and, subsequently, to obtain the appropriate permits to schedule and perform excavations to facilitate the necessary repairs. Depending on the location of a specific site, the permitting process alone may take as long as eighteen months. Once permitting has cleared and other factors such as construction windows near fish bearing streams (“fish windows”) are included, a repair can be scheduled. In some cases, low priority anomaly repairs have taken in excess of two years to complete due to the extensive permitting requirements in Washington State.

#### *Operations Controller Training*

OPS required Olympic to develop and implement an enhanced operations controller training program, which was to include classroom training and use of a pipeline simulator, to ensure that controllers were adequately trained in recognizing and responding to abnormal conditions and in predicting the probable consequences of facility malfunctions and/or failures. To comply with the CAO, Olympic has implemented semiannual, 12-hour controller training sessions and has installed a pipeline simulator in its Control Room for use by and instruction of controllers. Olympic has also reworked its curriculum for new controllers and requires them to submit to a “check off” procedure after they have completed their intensive six to nine month course of on-the-job training, which involves an oral examination scored by experienced controllers and Control Room supervisors. Finally, Olympic now requires controllers to participate in annual refresher training focusing on review of company procedure manuals. Olympic is well positioned to comply with the Operator Qualification that was promulgated by the Office of Pipeline Safety.

#### *Hydrostatic Pressure Testing*

The CAO required Olympic to conduct hydrostatic pressure testing of the 38-mile long Ferndale to Allen segment of the pipeline, the segment of the pipeline most directly involved in the rupture to ensure the integrity of the segment. Hydrostatic pressure testing was also required of any segment along the entire length of the Olympic system that was constructed of pre-1970 ERW pipe manufactured by Lone Star, a type of pipe determined to be susceptible to long seam defects. Olympic conducted the required testing of the Ferndale to Allen segment and has scheduled the testing of the remaining Lone Star pipe on the rest of the system. Upon conclusion of the testing and after analysis of the results, Olympic agreed to run a TFI internal inspection tool throughout the length of the pipeline and voluntarily undertook to hydrotest the next section of the pipeline, from Allen to Renton.

### *Ferndale to Renton Design Review*

The CAO also called for Olympic to perform a design review of the Ferndale to Renton segment of the pipeline, a distance of approximately 114 miles, and to correct any deficiencies identified during the review. The objective of the design review was to assess the design of the Ferndale to Renton segment against applicable technical codes and standards, as well as against industry standards and to make certain that the safety devices along the segment were designed properly and would operate as designed. The review was completed and its recommendations satisfactorily implemented

An important component of the design review was a review of the design of the Bayview Products Terminal performed by MARMAC Engineering. The Bayview Terminal is located just upstream of Olympic's Allen pump station and consists of five 100,000 barrel storage tanks and a 10,000 barrel transmix tank. Safety Board investigators have investigated whether the Terminal operated properly on the day of the rupture. Currently, and until the mechanical integrity of the Bayview facility is assured, the Bayview Terminal has been bypassed entirely in the day-to-day operation of the pipeline.

Because the piping outside the Bayview Terminal was normally operated at higher pressures than the piping inside the terminal, a system of valves was utilized by the Terminal's designer, Jacobs Engineering, to provide the Terminal overpressure protection. The CAO required an evaluation of the Terminal's design to determine whether changes were necessary to improve its operation. MARMAC's review focused on Bayview's pipeline operating controls, surge relief and safety devices. MARMAC made a number of recommendations to improve the design of Bayview, including the installation of an additional relief valve and other safety features upstream of Bayview, and revision of the set points on various existing control and relief valves. Corresponding changes were made to all Bayview Terminal drawings and to Olympic's Operating Maintenance and Procedures Manual.

### *Management Systems Improvements*

Finally, the CAO directed Olympic to implement any changes in its management systems relating to Title 49 CFR Part 195 that are recommended as part of a management systems audit to be conducted at Olympic pursuant to a requirement imposed by the City of Bellingham. Olympic and the City of Bellingham agreed to have Enbridge Technology Inc., a subsidiary of Enbridge Energy Company, Inc., perform the systems audit. Enbridge's audit is nearing completion.

## **B. City of Bellingham**

The rupture of Olympic's pipeline occurred within the city limits of the City of Bellingham on the grounds of the City's water treatment facility. In the immediate aftermath of the incident, the City insisted that Olympic undertake certain measures as a

condition of renewing the City's franchise agreement with Olympic. The undertakings required by the City became known collectively as the City of Bellingham "Pipeline Safety Immediate Action Plan." Several of the requirements in the Safety Action Plan overlap with the requirements of the CAO, however the projects identified below are unique to Olympic's efforts to comply with the City's Action Plan. With the exceptions noted below (completion of the Whatcom Creek re-bore and of the Enbridge audit), the requirements of the Safety Immediate Action Plan have all been met.

### *Hydrotesting*

Bellingham required Olympic to perform hydrostatic testing of the 10-mile length of pipeline running through the City. Olympic was required to test the pipeline at operating pressures at least 38% greater than normal operating pressure for a period of at least eight hours. The purpose of the testing was to revalidate the integrity of the pipeline located within the City.

### *SCADA*

The City directed Olympic to complete a diagnostic analysis of its SCADA system, which included subjecting the system's software to failure analysis and making any necessary modifications.

### *Surge Analysis*

Olympic was also required to conduct a surge analysis to test various factors that could affect pressures within the pipeline. The City insisted that if the analysis revealed or suggested that pressures could exceed 110% of maximum operating pressure, Olympic would be required to modify its equipment and/or its operation of the pipeline to ensure that surge pressures remained below 110% of maximum operating pressure. Scenarios simulated during the surge analysis included both a variety of normal and abnormal operating conditions, as well as a reconstruction of the events leading up to the rupture.

### *Valve Installation*

The City insisted that Olympic install three new check valves and a block valve in the vicinity of Bellingham and test all mainline valves from Ferndale to the Bayview Products Terminal. Olympic also had to submit a comprehensive analysis of mainline valve placement and operation for the section of the pipeline running through the City. An independent consultant was retained by the City to review the analysis and to determine: if changes were needed to the number and location of valves impacting the City; which valves should be remotely operated; and which should require a back-up method of closing.

### *Rupture Detection*

Olympic agreed to install an independent rupture detection system, which is a second leak detection system for large releases, that operates independently of its

primary, SCADA-based system. The additional detection system is intended to assure rupture detection capability in the event that operation of the SCADA system is interrupted.

#### *Management Systems Audit*

The City also required that Olympic fund a management systems audit conducted by an independent third party consultant, Enbridge Technology Inc. The audit, which is near completion, was designed to determine whether there are adequate management systems in place to ensure that the pipeline is maintained and operated safely and that any future design changes are adequately reviewed prior to implementation.

#### *Construction Projects*

The City mandated two significant construction projects -- the Whatcom Creek re-bore and replacement of the Valencia Street Bridge. The Whatcom Creek re-bore requires Olympic to bore a new path for the pipeline under Whatcom Creek, the waterway into which the gasoline released during the rupture spilled. This project is ongoing and is planned for completion in 2003. The Valencia Street Bridge was destroyed by the fire caused when the fumes given off by the released gasoline ignited. Olympic razed what remained of the bridge and built a new bridge in its place.

### **C. Environmental Restoration and Remediation**

As discussed in detail in NTSB's Environmental Response Factual Report, Olympic, under the direction of its operator, commenced mobilization of its environmental response efforts within 90 minutes of the rupture. An initial priority was to restrain released gasoline that might make its way down Whatcom Creek from emptying into Bellingham Bay and Puget Sound. Olympic arranged to have a boom deployed at the mouth of Whatcom Creek and for vacuum trucks to scour as much of the immediately surrounding area as possible.

A Unified Command was established by the Environmental Protection Agency to manage and coordinate the incident response and to oversee Olympic's implementation of an emergency response plan for habitat restoration of the approximately 25-acre "burn zone." Olympic dispatched work crews with hazardous materials training to conduct manual stream bank and bed remediation operations. As the amount of released gasoline was reduced through these activities, Olympic formulated a short-term plan to begin restoring the habitats of Whatcom and nearby Hannah Creeks. Ultimately, over 9,500 cubic yards of contaminated soil was removed by excavator from the areas most directly impacted by the release, roughly 2000 yards from Hannah Creek and 7,500 yards from the rupture area at the Water Treatment Facility.

Olympic's emergency restoration and remediation efforts were both extensive and highly effective given the extent of the release. Remarkably, initial restoration of Hannah and Whatcom Creeks was completed in time for the August, 1999 salmon runs. Emergency source area remediation activities were completed in January 2000.

Remediation and restoration projects are ongoing and expected to continue with the cooperation and under the supervision of federal, state and local regulators.

#### **D. Safety and Improvement Projects**

Olympic has also undertaken a variety of additional projects since the rupture to enhance the safety and integrity of its pipeline. These projects include:

*Geotechnical Projects.* These projects have been or will be undertaken in consideration of the high level of geotechnical activity that takes place in the Pacific Northwest. Anticipating damage to the pipeline from geotechnical activity, as well as repairing and rerouting the pipeline in the aftermath of earthquakes, landslides, and surface erosion events that take place routinely due to the amount of precipitation in the area, is a constant challenge entailing significant expense.

*Secondary Containment Projects.* Secondary containment projects are projects that provide an extra margin of safety in the event of an accidental release of product at one or more of Olympic's pumping stations or delivery facilities. Olympic agreed with the Washington State Department of Ecology to undertake these construction projects at all relevant Olympic facilities and has also committed to make similar improvements at its Oregon facilities. In light of the number of affected facilities and the difficulties associated with construction projects involving a functioning gas pipeline, these projects are expected to be time-consuming and ongoing into the foreseeable future.

*Control System Improvements.* Since the rupture, Olympic has embarked on a project to standardize and upgrade the hardware and software deployed in pump stations, delivery facilities and other locations throughout its system, which together gather and transmit the data that operations controllers rely upon in operating the pipeline. Standardization of the components of these small, in-the-field computers is designed to ensure the reliability of the system. Olympic has also installed a satellite-based, back-up communications link to assure that the SCADA system remains operable in the event of interruption of land line phone service, over which the system normally operates. Continuing audits of the SCADA system are planned through 2006.

*Enhanced Controller Supervision and Control Center Improvements.* At the instigation of BP, Olympic has made several important investments in controller training and Control Center operations since the rupture. Starting in 2001 Olympic created four new Shift Leader positions in its Renton Control Center. At the time of the rupture, the Supervisor of Products Movement, who worked a regular eight-hour shift, oversaw the activities of all operations controllers. Shift Leaders are now responsible for overseeing the performance of the two operations controllers who are on duty in the Control Room at any given time. Olympic also created two new supervisory positions, Control Room Supervisor and Systems Supervisor. The Control Room Supervisor is responsible for overseeing both Shift Leaders and controllers. The Systems Supervisor is responsible for the Systems Staff, which oversees the SCADA system, data communications, and programmable logic controllers. Olympic also added an Administrative Assistant to the



Control Center staff, whose responsibility it is to handle various administrative tasks so that operations controllers can concentrate exclusively on operating the pipeline.

In addition to the foregoing, Olympic and BP has established an off-site disaster recovery SCADA host node at its Tacoma Station with an associated off-site controller console at the Olympic's administrative offices, which are located near the existing Control Center. The pipeline can be operated remotely via the disaster recovery node in the event of an emergency rendering Olympic's Renton, Washington Control Center inoperable.

*Additional Internal Line Inspections and Repairs.* Olympic not only conducted the internal line inspections required by the CAO, but continues to use a variety of inspection tools to identify different types of conditions. Currently, Olympic's anomaly repair criteria meet or exceed the federal standards outlined in 49 C.F.R. § 195.452, Pipeline Integrity Management in High Consequence Areas. Since concluding CAO-required internal line inspections, Olympic has and will expend substantial sums to continue to perform internal line inspections and to make all necessary repairs into the foreseeable future.

#### **E. Projects to Integrate Olympic into BP Pipelines**

Less susceptible to precise quantification, but significant nevertheless, are the expenditures BP has made to fully integrate Olympic into BP Pipelines. At the time of the rupture, the Olympic Pipe Line Company was comprised of approximately 65 Olympic employees who reported to and took day-to-day direction from managers assigned to Olympic, but employed by and ultimately accountable to executives of Equilon Pipeline located in Houston, a joint venture of Texaco and Shell. Immediately upon becoming operator of Olympic in July 2000, BP took steps to ensure that Olympic employees: fully understood and were committed to BP's operating philosophy and procedures; recognized that Olympic was a full-fledged member of the BP family; and shared BP's corporate goals of "no accidents, no harm to people and no damage to the environment."

At the same time as it installed its own management team at Olympic, BP let go all Olympic employees, rehiring *as BP employees* only those whose skill levels were found, after thorough evaluation, to be up to BP's standards. This "one team" approach has markedly improved employee morale and represented the logical first step in inculcating another BP philosophy, greater personal accountability. BP has also been very active in meeting with community leaders and concerned citizens up and down the pipeline's right-of-way and remaining generally accessible to the public and responsive to requests for information, complaints and criticism. Editorial Boards, including the Bellingham Herald, the newspaper read in the community where the rupture occurred, have been quick to complement BP and to note the changes they have perceived. For example:

[BP] officials continue to be impressive in their early operation of the Olympic pipeline. To date the pipeline's new managers appear to be

following through on every promise that they've made to the public.  
Their availability to the public and openness is refreshing to say the least.

Bellingham Herald editorial, August 14, 2000.

Finally, and far less publicly visible, BP has nearly completed the process of implementing at Olympic its comprehensive, 13-point program of health, safety and environment risk management applicable to BP business units world-wide. A pamphlet entitled "getting HSE right," which explains the elements and expectations of BP's HSE philosophy in detail, is attached to this Submission. A notable and important part of that philosophy is ISO 14001 certification, which BP Pipelines received in December 2001, and which Olympic, the newest addition to BP Pipelines, has been recommended for certification.

ISO 14001 is an international standard approved by the International Organization for Standards in 1996 and refers to a standard applicable to Environmental Management Systems ("EMS"). ISO 14001 certification requires not only that a company adopt and implement a realistic and meaningful EMS, but that the EMS is adequately supported and promoted and, most critically, measured and assessed by regular and continuing internal and external audits and evaluations. It is noteworthy that certification can only be obtained initially through an external audit by an independent third party registrar. With the exception of BP, no other pipeline company operating in North America is currently ISO 14001 certified. Having only recently become a part of BP Pipelines at the time BP obtained ISO 14001 certification, Olympic was originally exempted from demonstrating ISO 14001 compliance. At the end of June 2002, with the passage of sufficient time since the rupture to allow Olympic to integrate BP's leadership, Olympic was informed that it has been recommended to receive ISO 14001 certification.

#### **IV. CONCLUSION**

As the Safety Board begins to consider adopting its Final Report on the Bellingham incident, it is important that it appreciate the road that Olympic has traveled since the rupture. Today's Olympic Pipe Line Company is not the Olympic Pipe Line Company of June 10, 1999. Significant improvements and upgrades have been made to the Olympic system as a result of the multiple studies and analyses conducted to determine the cause of the rupture and as a consequence of the installation of BP Pipelines as Olympic's new operator. Moving forward, Olympic is committed and fully prepared to exemplify BP's corporate philosophy of "no accidents, no harm to people and no damage to the environment."