

Mr. Frank Hopf  
Vice President/Manager  
Equilon Pipeline Company LLC  
Olympic Pipeline Company  
2319 Lind Avenue S.W.  
Renton, WA 98057

Re: CPF No. 59505-h

Dear Mr. Hopf:

Enclosed is an amendment to the June 18, 1999 Corrective Action Order issued by the Associate Administrator for Pipeline Safety in the above-referenced case. The Amendment makes changes appropriate to the current status of the investigation into the failure of June 10, 1999. These include modifications in some information, the addition of specificity to some corrective measures, and some new requirements. Service is being made by certified mail and telecopy. Your receipt of the enclosed document constitutes service of that document under 49 C.F.R. § 190.5. The terms and conditions of this amendment are effective upon receipt.

Sincerely,

Gwendolyn M. Hill  
Pipeline Compliance Registry  
Office of Pipeline Safety

Enclosure (49 C.F.R. § 190.233)  
cc: Barbara Hickl (By Fax 713-241-9070)

VIA CERTIFIED MAIL (RETURN RECEIPT REQUESTED) AND FAX

DEPARTMENT OF TRANSPORTATION  
RESEARCH AND SPECIAL PROGRAMS ADMINISTRATION  
WASHINGTON, DC 20590

In the Matter of  
Equilon Pipeline Company,  
Respondent.

CPF No. 59505-h

**AMENDMENT TO CORRECTIVE ACTION ORDER**

On June 18, 1999, the Associate Administrator issued a Corrective Action Order (Order) making preliminary findings of fact, and finding that the continued operation by Equilon Pipeline Company (Respondent) of the Ferndale to Allen and Allen to Renton 16-inch segments of the Olympic Pipeline would be hazardous to life, property, and the environment without the implementation of corrective measures. The Order required that corrective measures be taken prior to the return to service of the Ferndale to Allen segment. It also required immediate reduction in pressure and other steps with regard to the 16-inch Allen to Renton segment. This Amendment supplements and revises certain information provided in the Order based upon information gained in the course of the investigation. It also adds additional specific requirements to the Order.

**Addition and correction of information**

! The Order indicated that the accident occurred at approximately 4:43 pm PST. Although the precise time of failure is not critical to this Order, this time stated in the Order may be incorrect. Respondent states in its Accident Report, DOT Form 7000-1, filed on July 7, 1999, that the pipeline failure occurred at 3:30 pm PST. The National Transportation Safety Board has not made a finding concerning the specific time of the failure.

! The Order indicated that Olympic Pipeline is owned by Equilon. In fact, Olympic Pipeline is owned by Equilon, ARCO, and GATX. Equilon is the operator of the Olympic Pipeline.

! The Order provided an incomplete description of the lines operated by Olympic Pipeline. The Order addresses the 16-inch line that originates at refineries near Ferndale, specifically at Cherry Point, in northern Washington, and transports petroleum products to Renton, Washington. The Ferndale to Allen segment is approximately 37 miles long and remains out of service. The Allen to Renton segment is approximately 76 miles. There is a 20-inch parallel pipeline to the 16-inch Allen to Renton segment. This 20-inch line is fed at Allen by a short 16-inch segment from the Anacortes refinery. The third pipeline from Renton, Washington to Portland, Oregon, is a 14-inch line approximately 152 miles long. There are numerous delivery points on Olympic's pipelines

including the Seattle-Tacoma and Portland airports.

The Ferndale to Allen segment also includes the Bayview Products Terminal. The Bayview terminal is located two miles northeast of the Allen pump station, and all products transported on this segment pass through the Bayview terminal. This terminal consists of six storage tanks.

! When the Order was issued, the failure site had not been excavated. The failed pipe has now been excavated, and the rupture occurred almost at the top of the pipe. The rupture was measured at 28 feet long and 7 inches wide, and is in a 'fish-mouth' configuration. There are gouges in the pipe wall in this area that may have contributed to the failure.

! The Order indicated that Olympic had arranged for alternative forms of transportation while the Ferndale to Allen pipeline segment is out of service. In fact, Equilon has informed OPS that the refineries that supply the products to the various markets, not Olympic, have arranged for alternative forms of transportation while the Ferndale to Allen segment is out of service.

### **Determination of Necessity for Amendment of Corrective Action Order and Right to Hearing**

Section 60112 of Title 49, United States Code, provides for the issuance of a corrective action order, after reasonable notice and the opportunity for a hearing, requiring corrective action, which may include the suspended or restricted use of a pipeline facility, physical inspection, testing, repair, replacement, or other action as appropriate. The basis for making the determination that a pipeline facility is hazardous, requiring corrective action, is set forth both in the above referenced statute and 49 C.F.R. §190.233, a copy of which is enclosed.

Section 60112, and the regulations promulgated thereunder, provide for the issuance of a corrective action order without prior opportunity for notice and hearing upon a finding that failure to issue the order expeditiously will result in likely serious harm to life, property or the environment. In such cases, an opportunity for a hearing will be provided as soon as practicable after the issuance of the order.

Taking into consideration the facts alleged in the Order as well as the above factual amendments, I continue to find that the operation of this pipeline without corrective measures would be hazardous to life, property and the environment. Additionally, after considering the circumstances surrounding this failure, including the numerous possible factors, the proximity of the pipeline to populated areas and environmentally sensitive areas, and the continued uncertainties as to cause of the failure, I find that the failure to expeditiously issue this Amendment would result in likely serious harm to life, property, and the environment.

Accordingly, this Amendment mandating needed immediate corrective action is issued without prior notice and opportunity for a hearing. The terms and conditions of this Amendment are effective upon receipt.

Within 10 days of receipt of this Amendment, the Respondent may request a hearing, to be held as soon as practicable, by notifying the Associate Administrator for Pipeline Safety in writing, delivered personally, by mail or by telecopy at (202) 366-4566. Any hearing will be held in Lakewood, Colorado or Washington, D.C. on a date that is mutually convenient to OPS and the Respondent. A hearing requested on this Amendment may be consolidated with the hearing that Respondent has already requested on the Order.

After receiving and analyzing additional data in the course of this investigation, OPS may identify other longer term measures that need to be taken. Respondent will be notified of any additional measures required and further amendment of the Order will be considered. To the extent consistent with safety, Respondent will be afforded notice and an opportunity for a hearing prior to the imposition of any additional corrective measures.

### **Discussion of amendments**

#### *Technical*

! There is a misspelled word in Item 5 e of the Order which is corrected for clarity.

! The address provided for the Director, Western Region, contained an incorrect zip code. This is corrected by a revision of Item 6 of the Order.

#### *Operating pressure*

! At the time the Order was issued, there was no knowledge of the pressure at which the pipeline failed on June 10, 1999 and the pressure reductions ordered were based on the lowest operating pressure normally experienced. Based on further investigation, this may not be sufficiently restrictive. Items 7 and 9 are revised to require the reduced operating pressure to be based on the lower of surge pressure at the point of failure and the normal operating pressure. This applies both prospectively to the Ferndale to Allen segment (which is required to be out of service) and currently to the Allen to Renton segment (which is out of service at the option of the operator.)

#### *Control of the system*

! Item 2 of the Order directs Respondent to “Review the Supervisory Control and Data Acquisition (SCADA) system to determine the cause of the deficiencies that occurred on June 10, 1999, and correct [those] deficiencies.” Item 5 requires Respondent to incorporate a comprehensive review of SCADA within the plan to be submitted for review. How the SCADA system actually performed at the time of the failure is still not fully known. However, analysis of certain data following the accident indicates that abnormalities in the operation of the SCADA system may have inhibited the system controllers from adequately monitoring and controlling the pipeline system. Given the uncertainties of the operation of the SCADA, it is critical that the

corrective measures taken under this Order be monitored to ensure that they continue to be adequate. Accordingly, a prospective monitoring and reporting requirement is being added as new item 12.

! Although Items 2 and 5 of the Order directs Respondent to correct deficiencies control of the pipeline through the SCADA system, neither specifically addresses possible controller error or the adequacy of controller training. In the course of the investigation, OPS has discovered that controllers may have employed inappropriate procedures in shutting down the pipeline and in attempting to return to normal operations following abnormal operation cycles. OPS has also discovered that controllers responsible for maintaining hardware and software in the SCADA system may not have received training that addressed maintenance of SCADA systems. Item 13 addresses this.

#### *Design issues*

! Although Item 5 requires a plan for corrective measures addressing factors that may have been contributed to the failure, the Order did not specifically include the need for a review of the design of the Olympic pipeline system. In the course of the investigation, OPS has discovered that a higher than anticipated pressure on the Ferndale to Allen segment may have been resulted from the operation of one or more of the relief valves. At this time, it is not clear whether the valve malfunctioned, was improperly sized, or incorrectly installed. Item 14 addresses this with a requirement for a surge analysis and valve examination.

#### *Internal inspection*

! Item 5 of the Order directed Respondent to develop a plan which would include the use of internal inspection tool surveys and remedial action to the extent needed to address factors in the failure. As stated above, there are gouges in the pipe wall near the top of the pipe that may have contributed to the failure of the line and internal inspection must be a part of the plan. Respondent has already indicated its intention to include this. Most damage caused by excavation occurs in the top half of the pipe. OPS believes it is reasonable to require Respondent to excavate any gouges in this area of the pipe for visual examination and remediation and includes this in Item 15.

! As already noted, Item 5 of the Order requires Respondent to conduct an internal inspection of the pipeline. Because of the proximity of refinery operations, it is possible that corrosive materials may have been introduced into the line. Item 16 would require Respondent to consider this possibility in conducting and evaluating the results of the internal inspection.

#### *Bayview Products Terminal*

! The Order did not separately address the Bayview Products Terminal. In the course of the investigation, OPS has discovered that Respondent's operations and maintenance manual fails to

incorporate the Bayview terminal in some key areas such as delivery area surge relief valves and tank liquid alarms. Item 17 is added to the Order to assure that Respondent reviews its plans and corrects any omissions.

*Monitoring by OPS*

! In undertaking any testing, repairs, or construction with respect to the Ferndale to Renton segment, Respondent must follow the requirements of 49 C.F.R. Part 195, industry practice, and procedures required by 49 C.F.R. Part 195 to be established by Respondent for those activities. However, because of the failure, OPS needs to monitor closely those activities undertaken in preparing the pipeline for possible return to service. Accordingly, the Order is amended by adding Item 18 to aid in this monitoring.

**Amendments**

Pursuant to 49 U.S.C. § 60112, I hereby amend the Order and require Respondent to immediately take the following additional corrective actions with respect to its Olympic Pipeline.

*Item 5 e is amended to read as follows:*

5. \* \* \* \* \*

e. Internal inspection tool surveys and remedial action to assure the integrity of the pipeline. The type of internal inspection tool used shall be the best available technology appropriate for assessing the system based on the type of failure that occurred on June 10, 1999.

*Item 6 is amended to read as follows:*

6. Submit the written plan to the Director, Western Region, Office of Pipeline Safety, RSPA, 12600 West Colfax Avenue, Suite A-250, Lakewood, CO 80215-3736.

*Items 7 and 9 are amended to read as follows:*

7. Restrict the MOP of the Ferndale, Washington to Allen, Washington to 1056 psig which is 80 % of the normal operating pressure or 80 % of the surge pressure at the point of failure, whichever is lower. Equilon may request approval from the Associate Administrator, OPS, to increase its pressure based on a showing that the hazard has been abated. OPS' approval must be in writing.

\* \* \* \* \*

9. Restrict the MOP of this segment to 80 % of its normal operating pressure or 80 % of the surge pressure at the point of failure, whichever is lower. Equilon may request

approval from the Associate Administrator, OPS, to increase its pressure based on a showing that the hazards ha been abated. OPS' approval must be in writing.

*The following new sections are added to the Order:*

12. For a minimum period of one (1) year after the last change to the SCADA system undertaken because of Item 2 have been completed, monitor the operations of the SCADA system for anomalies in the operations including, but not limited to, all processing errors, computer slow downs, unintended defaults to the backup computer system, and communication failures. Report each anomaly in writing to the Director, Western Region, OPS within 2 weeks of its occurrence.

13. Within 3 months of issuance of the Amendment, do the following with respect to persons involved with controlling the operations of the pipeline through the SCADA system:

a. Develop and implement a training program for controllers specific to the SCADA system in use that includes responding to abnormal operations and starting up and shutting down any part of the pipeline system.

b. In addition to the training, review the qualifications of each controller to perform his or her duties and to recognize conditions that are likely to cause emergencies and be able to predict the consequences of facility malfunctions or failures such as those that occurred on June 10, 1999.

c. Provide specific, specialized, technical training to controller personnel responsible for maintenance and operation of the hardware and software components of the SCADA systems.

d. Review the qualifications of the personnel responsible for maintenance and operation of hardware and software components of the SCADA systems to assure that they can perform the functions needed.

e. In training provided under this item, include classroom and practical exercises and use of a pipeline simulator as appropriate.

14. Perform a design review of the Ferndale to Renton segment to ensure the station safety devices will shut the segment down within applicable parameters. This review will include at least the following:

a. A surge analysis using the worst case scenario, i.e. highest flow rates using drag reducing agent with the shortest possible valve closure times and the highest density product;

b. A test of the relief valves to determine that capacity is adequate and each valve operates reliably; and

c. A design review of the physical piping in the Bayview Products Terminal that includes the interaction of all station safety devices.

15. In conducting any internal inspection, including any required under this Order, excavate and visually examine any anomaly that could be associated with excavation damage which is identified in the top half of the pipe, and take appropriate remedial action with respect to each.

16. In conducting any internal inspection, including any required under this Order, consider the possibility of internal corrosion in conducting the inspection and in analyzing the results.

17. Review existing procedures for normal, abnormal, and emergency operations of the Ferndale to Allen segment and make any necessary changes to insure that they address operations at the Bayview Products Terminal.

18. Prior to undertaking any testing, repairs, or construction needed to prepare for the return of the pipeline to service or for a rerouting of the pipeline, notify the Director, Western Region, and submit plans for the testing or repairs or comprehensive construction specifications unless told by the Director that it is not necessary in a particular situation.

The terms of the June 18, 1999 Corrective Action Order, as modified by this Amendment, remain in effect.

Failure to comply with the Corrective Action Order, as amended, may result in the assessment of civil penalties of not more than \$25,000 per day and in referral to the Attorney General for appropriate relief in United States District Court. The terms and conditions of this Amendment are effective upon receipt.

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Richard B. Felder  
Associate Administrator  
For Pipeline Safety

Date Issued: \_\_\_\_\_

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