

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 the Second Amendment to the June 18, 1999 Corrective Action Order issued by the Associate Administrator for Pipeline Safety in the above-referenced case. The Second Amendment makes changes appropriate to the continuing investigation into the failure of June 10, 1999, the failure at Renton on August 30, 1999, and the conduct of pressure testing done during the period September 17-18, 1999. The new corrective measures include reduction of operating pressures, pressure testing of portions of the pipeline, and required written criteria for evaluating internal inspection data based on fitness for service. 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

**SECOND AMENDMENT TO CORRECTIVE ACTION ORDER**

On June 18, 1999, the Associate Administrator issued a Corrective Action 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. On August 10, 1999, the Associate Administrator amended the order.

The Corrective Action Order, as amended, requires that corrective measures be taken prior to the return to service of the Ferndale to Allen 16-inch segment. It also reduces the operating pressure of that segment once it is returned to service as well as the operating pressure the 16-inch Allen to Renton segment. In addition, many of the corrective measures address operations on the remainder of the Olympic pipeline system because they concern the SCADA system and the controllers.

Since the August 10, 1999 amendment, several events have occurred and information has been discovered which indicate the need for further amendment including an extension of the findings with respect to the entire Olympic pipeline system.

**Additional preliminary findings**

The preliminary facts supporting the original finding of hazardous facility as modified by the August 10, 1999 amendment support the findings made in this amendment. The following are additional findings:

13. During the course of the investigation of the June 10, 1999 failure, investigators for the Office of Pipeline Safety became aware that a series of valves closures had occurred recently. By a letter dated August 19, 1999, the Regional Director, Western Region, OPS, requested specific information from Respondent on shutdowns of the 16-inch line that includes SCADA event logs. A review of the material received so far indicate that , since December 1998, 59 mainline valve closures not commanded by the operator have occurred on the 16-inch line just upstream of the

Bayview Terminal. It is possible that the unusually high number of closures could increase cyclic fatigue on the line.

14. By letter dated August 10, 1999, the Regional Director, Western Region, OPS, followed up on previous oral requests of its investigators for records. In particular, the letter requested specific information from Respondent about training records for the controllers and other personnel in the control center at the time of the June 10, 1999 failure. The most recent records that have been made available were 1994.

15. On August 26, 1999, OPS learned that a longitudinal seam failure had occurred during the original pressure testing in 1965 of the 14-inch Renton to Portland segment.

16. On August 30, 1999, a spill occurred at the Renton Station during a procedure in which transmix was being injected into the pipeline. The SCADA system indicated the high fluid level in the sump in the station, but the timing of the shutdown and the design of the containment did not prevent release of the product. Although the cause of the failure was mechanical, the reaction of the employees on duty and the timing of reporting of the failure to OPS and emergency responders raise concerns about pipeline operations and design. The failure resulted in contamination of the water table.

17. Early in September, the City of Bellingham and Olympic Pipe Line Company reached an agreement on a temporary license for the operation of the pipeline on the city property (City Agreement). The City Agreement includes several corrective actions with respect to the segment of the pipeline on city property. This segment is part of the Ferndale to Allen 16-inch section which is subject to the Corrective Action Order in this case. Among the actions required by the City Agreement are the performance of a pressure test of the segment at 90 % of the specified minimum yield strength (SMYS) and a management audit. For this segment, a test pressure at 90 % of SMYS is equivalent to a test pressure of approximately 133 % of maximum operating pressure (MOP). Federal regulations on pressure testing new pipelines require a test pressure of 125 % MOP.

18. On September 18, 1999, during the pressure testing being conducted under the City Agreement, a failure occurred at M.P. 17.3 when the initial pressurization of the test section reached 115 % of MOP for the Ferndale to Allen segment.. The line pipe that failed is 0.312-inch wall thickness, 5LX52 pipe constructed by the low frequency electric resistance weld process by Lone Star prior to 1970. The failure was a 78-inch long rupture in the longitudinal seam.

19. Initial information available is that most of the 16-inch Ferndale to Allen segment is constructed of identical pipe.

20. Initial information available is that parts of the 16-inch Allen to Renton segment and the 16-inch Anacortes to Allen segment are constructed of identical pipe. The remainder of these segments are constructed of pre-1970 ERW pipe which was manufactured by U.S. Steel or Kaiser

under different processes.

21. Initial information available indicates that the 20-inch Allen to Renton segment, which was constructed after 1970, does not contain any pre-1970-ERW pipe; the 14-inch Renton to Portland segment and the remainder of the segments in the system were constructed of pre-1970 ERW pipeline manufactured by U.S. Steel or Kaiser.

22. RSPA concerns about electric resistance welded pipe manufactured prior to 1970 (pre-1970 ERW pipe) is discussed in preliminary finding 5 made on June 18, 1999. In addition, in rulemaking on pressure testing based on risk, RSPA has found the all pre-1970 ERW pipe is presumptively subject to longitudinal seam failures. 63 Fed. Reg. 59480 (November 4, 1998). That presumption can be overcome for the purposes of the rule by an engineering analysis that takes into account such factors as whether the process was high frequency or low frequency, quality control during the process, and fracture toughness. *Id.*

23. RSPA experience indicates that pre-1970 ERW pipe manufactured by Lone Star is actually, not merely presumptively, subject to longitudinal seam failures. RSPA does not have the same experience to point to with respect to pre-1970 ERW pipe manufactured by U.S. Steel or Kaiser.

24. Investigators for OPS have examined the logs of three previous internal inspections of parts of the Olympic pipeline system. Although analysis of this examination is still incomplete, initial indications are that not all anomalies that should have triggered additional investigation for possible corrective action were located, investigated and corrected in a timely way.

25. There are numerous water crossings and heavily populated areas in the vicinity of the pipeline. This includes the Portland, Oregon area.

### **Correction of information**

The Amendment to the Corrective Action Order issued August 10, 1999 provided inaccurate dimensions of the rupture that had occurred on June 10, 1999. The correct dimensions are 28 inches long and 7 inches wide.

### **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.

I continue to find that the operation of the 16-inch portions of the Olympic Pipeline without corrective measures would be hazardous to life, property and the environment. I note the continued concern about the operations and management of the pipeline, the existence of pre-1970 ERW pipe in the system, and the possibility that operational irregularities may have increased the chance that latent defects in pre-1970 ERW pipe could have grown. Accordingly, I extend the finding that corrective measures are needed to the remainder of the Olympic Pipeline system. 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 Second Amendment would result in likely serious harm to life, property, and the environment.

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

Within 10 days of receipt of this Second 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 original Corrective Action Order. No hearing was requested with respect to the August 10, 1999 amendment.

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**

#### *Operating pressure*

- To provide for a margin of safety when there is a question of the integrity of pre-1970 ERW pipe, OPS has uniformly required that an operator reduce operating pressure by 20 %. In this

case, the failure during pressure testing occurred during the initial pressurization of the line when the test pressure of the section reached 115 % of MOP. Thus a 20 % reduction would provide substantial margin of safety in this case.

- Ferndale to Allen and Allen to Renton 16-inch segments -- These segments which include the site of the test failure are already subject by Items 7 and 9 of the Corrective Action Order, as amended, to limitations more restrictive than 80 % of MOP. Thus there is no need to impose further pressure restrictions on these segments.
- Allen to Renton 20-inch segment, Renton to Portland 14-inch segment, and the remainder short segments in the system -- The 20-inch segment is currently being operated at less than 80 % of MOP. Following the test failure on the 16-inch segment, the Regional Director, Western Region, OPS, recommended that the operating pressure on the 14-inch line be reduced to 80 % of MOP. Respondent has indicated that it has voluntarily done so. The remainder of the lines are currently operated at less than 80 % of MOP. Item 19 of this amendment makes the reduced operating pressures of these lines mandatory until OPS approves the removal of the restrictions based upon a showing that the line can be operated safely at the normal pressures.
- Item 22 of this amendment provides that any pressure testing required by it may not be used to support a higher MOP in the future without the express approval of OPS.

#### *Pressure testing*

- Ferndale to Allen 16-inch segment -- The Ferndale to Allen segment on which the test failure occurred is constructed largely of pre-1970 ERW pipe manufactured by Lone Star. Pursuant to the City Agreement, parts of it are already being pressure tested to 90 % of SMYS. Item 20a. of this amendment requires pressure testing to 90 % of SMYS of the entire segment. Testing of those portions not constructed with Lone Star pipe will provide information to use in decisions on the need to pressure test the remainder of the Olympic Pipeline system and assurance that the 16-inch Ferndale to Allen segment may be operated safely.
- Allen to Renton 16-inch segment, Anacortes to Allen 16-inch segment, Allen to Renton 20-inch segment, Renton to Portland 14-inch segment, and the remainder of the short segments in the system -- Although most of these segments are constructed of pre-1970 ERW pipe, only portions are constructed of pipe manufactured by Lone Star. Item 20b. of this amendment requires pressure testing to 90 % of SMYS of those portions constructed with Lone Star pipe. Items 20c. and 21 requires that, if there are seam failures during testing of non-Lone Star pipe on the Ferndale to Allen segment, Respondent develop a plan for pressure testing the remainder of these lines based upon an analysis of the risks posed. The plan must meet the approval of OPS.

### *Internal inspection*

- Respondent has already indicated its intention to use internal inspection tool surveys as part of its satisfaction of the requirements of Items 5, 15, and 16 of the Corrective Action Order, as amended. In reviewing the internal inspections previously done on the Olympic Pipeline system, OPS has questions about the accuracy and interpretation of, and response to, those inspections. Item 23 provides additional guidance on selecting the appropriate internal inspection tool and requires Respondent to complete remedial action within six months of completing the inspections. Item 23c. requires Respondent to develop written criteria for evaluating and responding to the data gathered in the inspections with an emphasis on fitness for service.

### *OPS Monitoring of the Management Audit*

- The City Agreement requires that Respondent's Olympic Pipeline participate in a management audit of the safety of the system conducted by a third party. The audit is designed to determine whether there are adequate management processes in place to ensure that the pipeline is designed, maintained, and operated safely. OPS will be invited to participate in the audit. Item 24 of this amendment requires that Respondent implement any corrective measures identified in the management audit that cover matters regulated in 49 C.F.R. Part 195 within six months of completion of the audit. It also requires that Respondent provide periodic progress reports to OPS to allow for adequate monitoring. This item also provides that Respondent can request a more specific statement of the requirements from OPS as the management audit nears completion.

### **Amendments**

Pursuant to 49 U.S.C. § 60112, I hereby amend the Order by adding the following additional sections which require corrective action with respect to the Olympic Pipeline system:

19. With respect to operating pressures,
  - a. Maintain normal operating pressures on the following segments not to exceed 80 % of the MOP previously established for each segment:
    - the 20-inch Allen to Renton segment,
    - the 14-inch Renton to Portland segment,
    - the 16-inch Anacortes to Allen segment, and
    - the various short delivery segments on the system.

If necessary, reduce current operating pressures to achieve this.

- b. A request for relief from pressure restriction with respect to one of the segments may be made prior to a decision to close this action based on completion

of the Corrective Action Order. The request may must be accompanied by a written showing that the segment can be operated safely at the normal pressures. It may be granted by the Regional Director. A denial may be appealed to the Associate Administrator.

20. Conduct hydrostatic pressure testing at a test pressure of 90 % of SMYS for a minimum period of eight hours as follows:

- a. Pressure test the Ferndale to Allen 16-inch segment of the system in its entirety;
- b. Pressure test any sections of the remainder of the Olympic Pipeline system that are constructed of pre-1970 ERW pipe manufactured by Lone Star;
- c. Pressure test any remaining sections of the Olympic Pipeline system if pressure testing is indicated by the evaluation and plan provided for in item 21.
- d. Metallurgically test any failure that occurs in a manner which will identify the cause of failure including possible cyclic fatigue.

21. If, during the pressure testing required by item 20 a., a failure occurs on line pipe which was not manufactured by Lone Star, evaluate the need to pressure test the remainder of the Olympic Pipeline system and plan any pressure testing that the evaluation indicates is advisable. The evaluation and plan are to be done as follows:

- a. The evaluation must take into account the failure mode, the characteristics of the pipe, the pressure at the time of failure, the existence of other alternative assurances of integrity, and other factors relevant to a decision of the risk of a similar failure. For example, if the failure occurred in a longitudinal seam, pressure testing of any segment containing pipe of the same manufacture as that which failed should be done. If the failure was not in the longitudinal seam, the failure mode as determined by metallurgical testing and internal inspections required under this order or voluntarily done should be considered.
- b. Submit the evaluation and the plan to the Regional Director for approval.

22. Notwithstanding the provisions of 49 C.F.R. § 195.406 regarding the establishment of MOP based upon pressure testing, a pressure test conducted pursuant to this Corrective Action Order may not be used to establish a higher MOP than that previously established for the segment absent written concurrence of the Associate Administrator, OPS.

23. In conducting internal inspections on the Olympic Pipeline system including those provided for in items 5, 15, and 16, do the following:



- a. Select internal inspection devices that can accurately detect metal loss, pipe deformation, and enable strain calculation to be conducted.
  
- b. Complete the analysis of internal inspection data and any remedial actions for anomalies that affect pipeline integrity within six months of completion of an internal inspection. The analysis shall include a comparison of metal loss with pipe deformation..
  
- c. Develop and follow written procedures for the conduct of internal inspections that includes fitness for service criteria for identifying, prioritizing, and correcting defects. These shall include criteria for deciding on direct pipeline examination, further integrity assessment, and corrective measures including repair, replacement, or operational restrictions. At a minimum, consider the criteria established in ASME B31-4 and ASME B31-G.

24. Within 6 months of completion of the management audit provided for in the City Agreement, implement any corrective measures that cover matters regulated in 49 C.F.R. Part 195 and report progress on the implementation to the Regional Director periodically, but no less frequently than every three months. As the management audit nears completion, Respondent may request that OPS specify which corrective actions are subject to this item.

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 Second Amendment are effective upon receipt.

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Richard B. Felder  
Associate Administrator  
For Pipeline Safety

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

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