ENERGY FACILITY SITE EVALUATION COUNCIL

In the Matter of Application No. 96-1, OLYMPIC PIPE LINE COMPANY CROSS CASCADE PIPELINE PROJECT.	**NO.** **PREFILED TESTIMONY OF : THOMAS H. WISE** **ISSUE: PURPOSE AND NEED** **SPONSOR: COUNSEL FOR THE ENVIRONMENT**

Q. Please state your name and employment position.

A. My name is Thomas H. Wise. I am a Vice President of Purvin & Gertz. My business address is Suite 1025, 111 W. Ocean Boulevard, Long Beach, California.

Q. What is your educational and employment background?

A. I received a Bachelor of Science in Chemical Engineering from Queen's University at Kingston, Ontario, Canada in 1969. After graduation, I worked for Imperial Oil (the Canadian affiliate of Exxon) at the Sarnia, Ontario refinery as a process engineer in technical services and operations until 1973. From 1973 to 1981, I worked in consulting for Associated Engineering Services and an affiliate of MW Kellogg in Edmonton and Calgary, Alberta, Canada as a process engineer and process engineering manager on feasibility studies and process design projects for petroleum facilities, including refineries.

ATTORNEY GENERAL OF WASHINGTON
Ecology Division
PO Box 40117
Olympia, WA 98504-0117
FAX (360) 438-7743

Since 1981, I have worked for Purvin & Gertz, Inc. and an affiliated company as a consultant. I became a shareholder in 1982, a Senior Principal in 1987 and a Vice President in 1998. I worked in our Calgary office until 1996 when I transferred to our Long Beach office. At Purvin & Gertz, I have worked for many clients in the United States, Canada and elsewhere on a variety of petroleum matters related to refining, markets and pipelines. I have conducted and directed studies on supply and demand of crude oil and refined products, processing, transportation, project development, economics, pricing, competitor analysis, and strategic planning. I have provided expert testimony and evidence at pipeline hearings in Canada pertaining to petroleum markets in Canada and the United States.

Q. What topics is your direct testimony intended to cover?

A. My testimony is intended to cover the following topics: First, I will explain the type of services Purvin & Gertz provides.

Second, I will explain the type of projects I have worked on at Purvin & Gertz.

Third, I will discuss the need for the proposed pipeline by the Puget Sound refinery shippers.

Fourth, I will discuss the proposed project's potential impact on tanker truck traffic in Washington State.

Fifth, I will discuss the proposed project's potential impact on barge traffic in Washington/Oregon.

Sixth, I will discuss the eastern market for refined products in eastern Washington as well as Idaho and Oregon.

Seventh, I will discuss West Coast product market of Washington and Oregon, and the impact of supplies to eastern Washington/Idaho/Oregon.

Eighth, I will discuss the Rocky Mountain product market and the potential supplies to eastern Washington/Oregon.

ATTORNEY GENERAL OF WASHINGTON
Ecology Division
PO Box 40117
Olympia, WA 98504-0117
FAX (360) 438-7743

Ninth, I will compare the supply costs of products delivered to eastern Washington from the West Coast and from the Rocky Mountains, and show the impact of the proposed pipeline.

Tenth, I will compare netback prices from alternative markets in Montana and at Puget Sound to examine the significance of the eastern Washington market to the refiners.

Eleventh, I will review the refining capacity in the Pacific Northwest and the potential impact of the proposed pipeline on refinery expansion.

Finally, I will discuss the potential impact of the proposed pipeline on waterborne movements of crude and products in the Pacific Northwest.

Q. Could you explain the type of business which Purvin & Gertz conducts?

A. Purvin & Gertz is an international energy consulting firm with headquarters in Houston and offices in other energy business locations. It was established in 1947 and is owned by its employee consultants. The firm provides independent advice regarding petroleum to industry, government, legal and financial clients worldwide. Its services include market and transportation studies, price forecasting, economic analyses, business valuations, project development, process and technical evaluations, feasibility studies, industry practices, strategic planning and expert opinion.

Q. In general, how did you develop the testimony you are presenting to the Council?

A. Under my direction, consultants and staff at Purvin & Gertz used data developed from public sources and private communications with some industry participants, combined with our previous knowledge and experience and in-house proprietary models, to analyse the petroleum markets in the Pacific Northwest and the Rocky Mountain region and supply options for eastern Washington. I also reviewed relevant portions of the Application, the draft EIS and Olympic's prefiled testimony.

ATTORNEY GENERAL OF WASHINGTON
Ecology Division
PO Box 40117
Olympia, WA 98504-0117
FAX (360) 438-7743

Q. What other projects have you worked on at Purvin & Gertz that are related to your testimony in this matter?

A. In recent years, I have worked for Express Pipeline as an independent witness to establish the need for a crude oil pipeline to supply Canadian crude to the Rocky Mountain states. This included an analysis of the market for refined products in this region.

For confidential clients, I have worked on matters related to crude supply and pricing for Washington and California, refinery production and economics in these states and the Rocky Mountains, supply, demand, pricing and transportation for refined products in the southwest, Pacific Northwest and Rocky Mountain markets.

Q. Is the proposed Cross Cascade pipeline needed because of a petroleum shortage problem in eastern Washington?

A. No. The proposed pipeline is not a proposal to satisfy a petroleum shortage in central and eastern Washington. Even the draft EIS issued by EFSEC and the Forest Service acknowledges that fact on page I-8. The proposal is not based on a petroleum shortage, but rather on Olympic Pipeline Company's (Olympic) determination that a sufficient volume of product now moves from western Washington to eastern Washington by barge and truck to justify the proposed pipeline. Draft EIS at I-5. The combined volume that is currently being delivered by truck and barge from the western Washington to eastern Washington is estimated at 52,000 barrels per day (B/D) in 1996. Olympic Application Table 9.1-1, page 9.1-2. Olympic expects to begin transporting 60,000 B/D on the new pipeline. For the near term, then, the application is based not on meeting a petroleum shortage but on replacing an existing supply system.

Regarding the future, Olympic also does not assert that there will be a petroleum shortage in eastern Washington. Rather, Olympic asserts that demand for petroleum products will grow in central and eastern Washington and that, without the new pipeline, all future growth would have to be transported by barge and truck. Prefiled Testimony of Frank Hopf, (Ex. FH-T) at pages 12

ATTORNEY GENERAL OF WASHINGTON
Ecology Division
PO Box 40117
Olympia, WA 98504-0117
FAX (360) 438-7743

and 13, and draft EIS at page S-4. Olympic indicates that all future growth will be supplied from the northwest Washington refineries and thus Olympic expects that the existing system of ocean tankers along the Washington coast and tanker trucks will need to grow to meet the increase in demand without the proposed pipeline. Application page 9.1-3. Again, Olympic is not basing its proposal on a petroleum shortage but on its assertion that the proposed pipeline will be superior to the petroleum product supply system that will develop without the proposed pipeline.

Q. If the pipeline is not being proposed to alleviate a potential petroleum shortage, who will likely be the primary benefactors of the new pipeline?

A. Olympic and the four Puget Sound refineries. All of the refineries in Washington State are listed in TAB A of Exhibit 1 to my testimony (Ex. THW-1). The four major refineries in Washington are in north Puget Sound and will be referred to as the "Puget Sound" refineries. They are ARCO, Equilon (formerly Texaco and now co-owned by Shell), Tosco, and Tesoro. The four Puget Sound refineries are all connected to Olympic and are likely the primary shippers on Olympic. Olympic's "primary mission is to carry product from these four refineries." DEIS, page S-1. Two of these refineries, ARCO and Equilon, along with GATX are owners of Olympic. Application page 1.1-1.

Q. How does Olympic define the term "shipper" ?

A. Olympic's definition of shipper is not clear from the Application, but the definition of "shipper" is included in the rules and regulations of the Tariff for the pipeline which it currently operates in Washington and is shown in Ex. THW-2. According to those documents a "Shipper" is a party who contracts with the "Carrier" (Olympic) for a minimum amount of product, and who has access to facilities that can deliver the minimum amount to the pipeline and receive the minimum amount from the pipeline. The delivery facilities to Olympic's pipeline are the four Puget Sound refineries. The receiving facilities connected to Olympic's pipeline are the

ATTORNEY GENERAL OF WASHINGTON
Ecology Division
PO Box 40117
Olympia, WA 98504-0117
FAX (360) 438-7743

terminals in the area from Seattle/Renton to Vancouver/Portland which are owned by these refiners and others. The proposed pipeline will have its own receiving terminal at Kittitas and will supply two other terminals at Pasco. Shippers who do not own either the refineries or the terminals must contract with the refineries and the terminals to have product put on the pipeline and to have space to store product when it is removed from Olympic's pipeline. The minimum amount a shipper can contract with Olympic to ship is 10,000 barrels. However, a shipper can subcontract a 10,000 barrel batch into four 2,500 barrel batches as long as the 10,000 barrels are all being shipped together.

Q. Have you reviewed the list of potential shippers provided in the Application?

A. Yes. A list of "potential users of Cross Cascade Pipeline Project" is given in the Application, page 1.1-6. The list includes "current" shippers who have shipped on Olympic's existing north-south line in the past and three "other qualified shippers who meet the requirements for shipping on the pipeline but have not shipped product." Neither Texaco or Equilon is included, but Texaco Refining and Marketing Inc. or Equilon should also be included as a current shipper. Application at page 1.1-5. The list of potential shippers is sorted in TAB B of Ex. THW-1.

Q. In your opinion, who would be the primary shippers on the proposed pipeline?

A. The four Puget Sound refineries. According to testimony by Frank Hopf, three of the connected refineries have signed Throughput and Deficiency Agreements to ship on the proposed Cross Cascade Pipeline. Ex. THW-3 at page 39. Therefore, at least one owner of Olympic and possibly two owners have committed to use the proposed line. Committed volumes represent a minimum of 34,000 B/D. No other shippers or potential shippers had signed agreements as of October 21,1998.

ATTORNEY GENERAL OF WASHINGTON
Ecology Division
PO Box 40117
Olympia, WA 98504-0117
FAX (360) 438-7743

Seven refiners which do not have fuel products refineries in Washington are listed as potential users because they allegedly have been shippers on the existing north-south pipeline operated by Olympic. They may or may not be active shippers on the existing north-south line and their interest in shipping on the proposed Cross Cascade line is not clear. For example, in a December 15 letter to EFSEC, Mr. E. J. Schlueter of Conoco stated that Conoco "does not consider itself a potential shipper on the Cross Cascade pipeline, nor is it a current shipper on Olympic as indicated in the draft EIS." Ex. THW-4 at Comment #9.

The list of "other shippers" includes a variety of organizations. These include: direct consumers such as Burlington Northern Santa Fe Railroad and United Airlines; wholesale marketers such as McCall Oil and Western Petroleum; an independent terminal operator, GATX (which owns part of Olympic); product traders such as EOTT and Northridge; and independent retailers such as Burns Brothers.

A review of the list provided by Olympic indicates that the large majority of the product shipped on the proposed pipeline will likely be shipped by the four Puget Sound refinery shippers, in our opinion. More than 55 percent is already committed by three of the refinery shippers whom Olympic says constitute a major portion of its throughput. Ex. THW-3 at page 43.

Q. If the proposed project will benefit Olympic and its primary shippers, the Puget Sound refineries, will it also benefit the central and eastern Washington consumers?

A. It is much less clear whether the proposed pipeline will benefit the consumers in central and eastern Washington. The proposal is based on lowering costs for Olympic's shippers, the Puget Sound refineries. The Application does not predict lower prices to the ultimate consumers. As the draft EIS acknowledges at page 2-34, the proposed pipeline will not have "any significant effect on per gallon fuel prices to the public." The draft EIS goes on to conclude at page 2-40 that, "competition drives gasoline prices more than transport costs." The proposed pipeline may

ATTORNEY GENERAL OF WASHINGTON
Ecology Division
PO Box 40117
Olympia, WA 98504-0117
FAX (360) 438-7743

lower the cost of shipping product to central and eastern Washington, but there is no guarantee those cost savings would be passed on to consumers.

The tariff for the proposed Cross Cascade pipeline is shown as $1.25 per barrel in TAB D of Ex. FH-T. We do not know if this is a firm figure for shippers since the tariffs will have to be filed with the Federal Energy Regulatory Commission (FERC) and Washington Utilities and Transportation Commission (WUTC) and accepted. Obviously, this tariff would impact on the delivered cost of Puget Sound product in eastern Washington. Throughput and Deficiency Agreements have been offered and signed by three shippers. Olympic has indicated that the signatory shippers receive a discount on the tariff based on the volume committed for the five year period based on a sliding scale. Ex. THW-3 at pages 95, 102 and 103.

Q. On page S-3 of the Application, Olympic asserts that the proposed pipeline will greatly reduce the need to ship fuel by barge and tanker truck. Will the proposed pipeline greatly reduce the need to ship fuel by tanker truck?

A. No. Tanker truck delivery to the customer site is the final transportation step necessary for most of the gasoline and diesel fuel. The impact of the proposed pipeline on trucking is difficult to predict except that it will likely decrease tanker truck traffic in some areas of Washington while it increases tanker truck traffic in other areas. It is unlikely, however, that the proposed pipeline would significantly reduce tanker truck deliveries in Washington State. Some of the highways for tanker truck deliveries are shown in TAB C of Ex. THW-1.

In most cases, the final delivery of refined products to customer sites (retail service stations, truck stops etc.) is by tanker truck. The volume now supplied from western Washington by tanker truck now moves directly to customer sites. If these supplies move by pipeline to the Kittitas terminal, tanker trucks will then deliver products from Kittitas to customer sites. To supply the same market, the volume of product and number of trucks will be the same, although

ATTORNEY GENERAL OF WASHINGTON
Ecology Division
PO Box 40117
Olympia, WA 98504-0117
FAX (360) 438-7743

some distances may be shorter. There will be less truck traffic around Seattle/Harbor Island and more around Kittitas.

There will also be more truck traffic from Pasco and new truck traffic into Umatilla and Clarkston. Olympic's proposal is based on replacing the river barge transportation. Tidewater Barge Lines Inc. now delivers product to Pasco, Clarkston, and Umatilla, Oregon. The lack of barge supplies to Umatilla would likely increase truck traffic out of Pasco. The lack of barge supplies to Clarkston will alter supply routes in southeastern Washington and northern Idaho. Those markets now supplied by tanker truck from Clarkston will have to be supplied by tanker trucks traveling further from Pasco and/or Spokane.

An analysis of miles traveled by tanker trucks has not been presented. It appears that the proposed pipeline would reduce the miles traveled from the West Coast to central Washington but these will be offset by miles traveled within central and eastern Washington.

Q. Without the proposed pipeline, would you expect trucking to increase?

A. TAB C of Ex. THW-1 shows total demand by region in eastern Washington for light products (gasoline, distillate and jet fuel) and some of the highway routes available to supply product from refineries and terminals. Total demand is discussed later. The demand by region is based on gasoline sales by county, as is shown in TAB D of Ex. THW-1, plus proportioned volumes of distillate. Jet fuel consumption is mainly around Spokane. Within the Washington northeast area around Spokane, consumption is around 28,000 B/D. In the southeast area around the tri-cities, consumption is around 13,000 B/D, and in the central area it is around 16,000 B/D. The eastern regions also supply northern Idaho (13,000 B/D) and Pasco supplies part of eastern Oregon.

According to the Application, at Table 9.1-1 on page 9.1-2, truck deliveries from western Washington are around 14,000 B/D. This indicates that most of the 16,000 B/D central area market is supplied from western Washington. It also indicates that most of the product currently

ATTORNEY GENERAL OF WASHINGTON
Ecology Division
PO Box 40117
Olympia, WA 98504-0117
FAX (360) 438-7743

being trucked from western Washington is delivered to central Washington and is not going all the way to eastern Washington. If the proposed pipeline is not built, there would continue to be trucking over Snoqualmie Pass and Stevens Pass, but it is unlikely that there would be any trucking from western Washington all the way to eastern Washington since barge and pipeline supplies are available. In the last few years, truck deliveries have increased faster than demand in central Washington, and since trucking apparently has captured most of the central Washington market, this growth in trucking is unlikely to be sustained. The trucking in eastern Washington would still originate in Pasco, Spokane, Moses Lake or Clarkston.

Finally, Olympic's assertion about tanker truck traffic is based on an assumption that all increases in demand for petroleum product in central and eastern Washington will be met by the Puget Sound refineries. It is unlikely that there will be no increase in product deliveries from any of the Montana refineries. Thus, some additional product would likely be trucked out of Spokane and Moses Lake. Accordingly, Olympic's predictions, which are set forth in Ex. FH-T at page 12, concerning growth in tanker truck deliveries are probably overstated.

Q. Do you agree with Olympic's assertion that the proposed pipeline will greatly reduce the need to ship fuel by barge?

A. I agree with part of Olympic's assertions about barge transportation, but not all of them. First, I agree that the proposed pipeline would reduce river barging of petroleum product between Portland and Pasco. As I stated above, however, I do not agree with Olympics' assertion that all future demand in central and eastern Washington will be met by the Puget Sound refineries. Accordingly, I do not agree with number of river barge trips set forth in Ex. FH-T at page 13, that Olympic asserts will be replaced by the proposed pipeline. For example, if additional product is shipped into eastern Washington on the Yellowstone Pipeline, the number of barge trips to Pasco will be less than Olympic is predicting.

ATTORNEY GENERAL OF WASHINGTON
Ecology Division
PO Box 40117
Olympia, WA 98504-0117
FAX (360) 438-7743

Second, I agree with Olympic that ocean barges from the Puget Sound refineries to Portland would be decreased by the proposed pipeline. Again, however, I would not agree with Olympic concerning the likely amount of potential decrease. The existing movements have not been stated, but some are for Residual Fuel Oil (RFO). RFO is high viscosity fuel oil for industrial use and marine bunkers and it cannot be carried by Olympic pipeline now or in the future. I do not expect ocean barging to increase at the rate predicted by the draft EIS at page 2-39, and thus I would not expect the proposed pipeline to replace as much ocean barge traffic as is indicated by Olympic. Moreover, the numbers for current barge transportation that are provided by Olympic do not segregate RFO from gasoline or distillate. If RFO is being sent by ocean barge, the proposed pipeline will not impact that portion of the ocean barge transportation at all, because Olympic does not transport RFO.

Q. Will the proposed pipeline reduce marine traffic within Puget Sound?

A. It is not clear how the proposed pipeline will decrease barge traffic within Puget Sound. The draft EIS at pages 2-38 and 2-39 discusses movements of products from the refineries at Anacortes and Ferndale to Harbor Island at Seattle. However, it does not provide total volumes and does not distinguish light products from Residual Fuel Oil (RFO). The draft EIS asserts at page 2-5 that the proposed pipeline will reduce the marine movement of product to Harbor Island for loading onto tanker trucks destined for eastern Washington. It is unclear how the proposed pipeline could have such an impact on marine shipments of petroleum product in Puget Sound, because the existing north-south pipeline is not at capacity north of Renton. Ex. THW-5, at page 3. If the existing Olympic line has spare capacity from the refineries to Harbor Island, the marine movements to Harbor Island are taking place for another reason and no changes can be expected due to the Cross Cascade pipeline.

Data published by the U.S. Army Corps of Engineers help explain why the proposed pipeline is likely to have little impact on marine traffic within Puget Sound. Ex. THW-

ATTORNEY GENERAL OF WASHINGTON
Ecology Division
PO Box 40117
Olympia, WA 98504-0117
FAX (360) 438-7743

1, TAB E. According to the data, gasoline receipts at Seattle are a maximum of 2,300 B/D. Shipments from Anacortes/Ferndale could be as low as 1,900 B/D depending on where the Tacoma shipments terminate. Jet fuel receipts are zero, while distillate is in the range of 800 B/D to 2,700 B/D. The largest volume of product being barged to Seattle is RFO (12,400 B/D to 15,600 B/D). As stated above, RFO is high viscosity fuel oil for industrial use and marine bunkers and it cannot be carried by Olympic pipeline now or in the future.

As noted, marine shipments to Portland should be reduced. However, the proposed pipeline may lead to increases in marine receipts of crude and marine exports of distillate and RFO. This is discussed later.

Q. What area is actually being referred to when Olympic uses the term "eastern Washington" in its discussion of need?

A. "Eastern Washington" is not defined clearly by Olympic. They consider a three state region which includes northern Idaho and eastern Oregon when analysing their market. Ex. THW-6 at 15. Northern Idaho and part of eastern Oregon are supplied, in part, by product that is shipped into eastern Washington. For this discussion, we have defined the "Eastern Washington Supply Area" to include the central Washington and eastern Washington counties east of the Cascade Mountains, as shown in TAB C of Ex. THW-1, plus northern Idaho and eastern Oregon, as shown in TAB F of Ex. THW-1. The demand for petroleum products by consumers within central and eastern Washington is only 57,000 B/D approximately. The total product demand for the overall eastern Washington "supply area" is around 91,000 B/D. The total demand figures for central and eastern Washington that are used by Olympic are "transport demand" based on supplying product that is shipped into eastern Washington and then delivered internally or shipped onward to northern Idaho and eastern Oregon.

ATTORNEY GENERAL OF WASHINGTON
Ecology Division
PO Box 40117
Olympia, WA 98504-0117
FAX (360) 438-7743

Q. Does the eastern Washington supply area include Boise, Idaho?

A. Until now, the eastern Washington supply area has not included Boise which is in southwest Idaho because Boise was supplied from Salt Lake City by pipeline. Ex. THW-1, TAB F. Chevron pipeline delivers products to Boise and beyond to eastern Washington at Pasco and Spokane. It also receives product at Pasco. However, Chevron has announced plans to reverse its existing pipeline segment between Boise and Pasco in the year 2000. Chevron expects to ship up to 20,000 B/D from Pasco into Boise after the reversal. This will increase the eastern Washington supply area to include Boise, Idaho and increase the demand by 20,000 B/D.

Q. How is the eastern Washington supply area supplied with petroleum product?

A. The eastern Washington supply area is supplied by barge from Portland (37,000 B/D), by pipelines from Petroleum Administration Defence District (PADD IV) (29,000 B/D), and by truck and rail from both west and east. A map of the Petroleum Administration Defence Districts in the United States is provided as TAB G of Ex. THW-1.

Over the last five years, pipeline deliveries from PADD IV fell by 13,000 B/D due, in part, to an interruption of a segment of the Yellowstone pipeline from Montana which increased truck/rail deliveries from Montana. Chevron pipeline volumes from Utah also fell due to high demand in Utah/Idaho and high costs, which lead to the planned reversal of this pipeline to Boise.

The interruption of the Yellowstone pipeline has been temporarily solved by rail transport. A permanent change for the Yellowstone line is being proposed to restore pipeline deliveries without the need for rail. Thus, the events of the past five years may not prove reliable for making an accurate forecast for future supplies into the eastern Washington supply area. Moreover, the planned reversal of the Chevron pipeline from Pasco to Boise could result in the displacement of Montana refinery product that currently moves to the Salt Lake City market and rerouting it to eastern Washington.

ATTORNEY GENERAL OF WASHINGTON
Ecology Division
PO Box 40117
Olympia, WA 98504-0117
FAX (360) 438-7743

Q. What is the general nature of the eastern Washington petroleum market?

A. TAB H of Ex. THW-1 shows demand for gasoline by county in eastern Washington compared with western Washington. Demand in eastern Washington is estimated at 23 percent of total Washington demand for gasoline and distillate. Jet fuel demand is estimated around 6,000 B/D for commercial and military use. Total demand for eastern Washington consumption has grown to around 57,000 B/D. Growth in the last five years is estimated at 5,000 B/D, or 1.9 percent per year. The demand for light products (gasoline, jet fuel and distillate) in all of Washington has grown at approximately 2.3 percent per year in the last five years to 285,000 B/D in 1997. Gasoline is the major product constituting about 59 percent of light product sales.

The major product sold in eastern Washington is gasoline (38,000 B/D). Gasoline demand by area in eastern Washington was shown in Exhibit THW-1, TAB D. The northeast area, including Spokane and Moses Lake consumes about 44 percent. The southeast area including the tri-cities around Pasco uses around 25 percent and the central area including Yakima uses around 31 percent.

The northeast area is supplied predominantly by pipeline from Montana with some pipeline supply from Pasco. The southeast area is supplied predominantly by river barge from Portland. The central area is supplied by truck mainly from western Washington with the remainder from Pasco, Moses Lake and Spokane.

Q. What have been the recent movements of petroleum product into eastern Washington by pipeline?

A. The Yellowstone and Chevron pipelines deliver product to eastern Washington from Montana and Utah, respectively. The average pipeline movements from PADD IV to PADD V were reported by US DOE at 23,000 B/D in 1996 and 29,000 B/D in 1997. The Application, at Table 9.1-1 on page 9.1-2, shows around 29,000 B/D in 1996. The Chevron pipeline deliveries

ATTORNEY GENERAL OF WASHINGTON
Ecology Division
PO Box 40117
Olympia, WA 98504-0117
FAX (360) 438-7743

from Utah to Pasco have declined to about 6,000 B/D. Most pipeline supplies are on Yellowstone pipeline.

Pipeline deliveries from PADD IV to PADD V have fallen from 37,000 B/D in 1994. Deliveries from PADD IV to PADD V from 1994 to September 1998 are shown in TAB I of Ex. THW-1. When Yellowstone pipeline shut down part of its line from Missoula to Thompson Falls, Montana in mid 1995, distillate and jet fuel deliveries by pipeline were nearly stopped. In order to maintain gasoline delivery to eastern Washington, shippers began to rail product directly to Washington or to Thompson Falls for reinjection to Yellowstone. The rail movements to Washington are not included in Olympic's estimates of product deliveries to eastern Washington. Exhibit FH-T at TAB A and draft EIS at page 2-42. In 1998, a unit train began to operate between Missoula and Thompson Falls, so pipeline deliveries to PADD V are expected to increase. Yellowstone's 1998 deliveries to Spokane have been around 20,500 B/D. Ex. THW-7 at Comment # 6. When the Yellowstone pipeline completes its proposed rerouting, it expects to resume pipeline deliveries at around 30,000 B/D and decrease rail deliveries to eastern Washington. *Id*.

Yellowstone pipeline is in the process of a review of a draft EIS for its proposed pipeline from Missoula to Thompson Falls. The approval and timing is uncertain. The earliest date for operation, assuming approval, would be early 2001. Without approval, PADD IV shippers would have to continue to use rail for part of the segment to supply eastern Washington.

Q. Can you explain the product balance for the entire eastern Washington supply area?

A. The eastern Washington supply area including northern Idaho and eastern Oregon was defined earlier. Total product demand in this supply area is estimated at 91,000 B/D. Approximately 13,000 B/D of gasoline and diesel is trucked to northern Idaho from Spokane and Clarkston, Washington. This is about 23 percent of northern Idaho demand. Eastern Oregon consumes around 21,000 B/D of gasoline and distillate, or about 14 percent of state demand. It is

ATTORNEY GENERAL OF WASHINGTON
Ecology Division
PO Box 40117
Olympia, WA 98504-0117
FAX (360) 438-7743

supplied by barge from Portland and by truck from eastern Washington, Idaho and northern California.

During the 1990's the supply patterns to the region have changed. Barge deliveries from Portland have increased to 37,000 B/D including 31,000 B/D at Pasco and 6,000 B/D at Umatilla, Oregon. Truck and rail deliveries increased in 1996 after the interruption on the Yellowstone pipeline. Pipeline deliveries from the Rocky Mountain states (PADD IV) have declined from a peak of 47,000 B/D in 1991 but fell sharply in 1995 as discussed, and recovered to 29,000 B/D in 1997.

Approximate product balances are shown in TAB J of Ex. THW-1 for 1992 and 1997. Data for product demand and the volumes supplied by pipeline and barge are reported, and truck/rail is calculated by difference since they are not reported. Over the five-year period, barge deliveries increased by 13,000 B/D while pipeline deliveries from PADD IV fell by the same, partly due to the Yellowstone changes discussed above. By difference, truck/rail deliveries increased by 7,000 B/D to balance the demand growth.

The Application, at Table 9.1-1 on page 9.1-2, shows around 14,000 B/D of product supplied by truck from western Washington, in both 1992 and 1997. Therefore, the truck/rail volume supplied from PADD IV increased from 4,000 to 11,000 B/D, and much of this was due to the cutback of Yellowstone pipeline. The truck volumes are not precise as the West Coast volumes are calculated by difference. Exhibit THW-6 at page 119. It is not clear how the truck volumes are estimated, since the eastern Washington supply area appears to require truck/rail deliveries from both western Washington and PADD IV.

Q. How will the Chevron pipeline reversal impact on this market?

A. When Chevron pipeline reverses its line from Pasco to Boise in 2000, shipments from Washington to Boise could reach 20,000 B/D. The 6,000 B/D of product now moving from Utah to Pasco will no longer be available at Pasco, so other supplies to eastern Washington will have

ATTORNEY GENERAL OF WASHINGTON
Ecology Division
PO Box 40117
Olympia, WA 98504-0117
FAX (360) 438-7743

to rise by 26,000 B/D. This could come from the West Coast by barge or by the proposed pipeline and/or it could come from Montana if the full Yellowstone pipeline operation is restored. This would increase Yellowstone's deliveries to more than 47,000 B/D and exceed its 45,000 B/D capacity to Spokane. Ex. THW-6 at Comment #15. It would likely have sufficient capacity using drag reducing agent (DRA). Olympic claims to have increased capacity on its existing system by up to 25 percent with DRA. Exhibit THW-3 at page 7. A 25 percent increase on Yellowstone would increase its capacity to 56,000 B/D to Spokane.

The additional product required for Boise could be available from the Billings, Montana refineries because extra product at Boise will push product back to Salt Lake City and perhaps back to Billings. If Yellowstone pipeline supplies 47,000 B/D of product to Spokane, the existing Chevron pipeline to Spokane from Pasco would carry very little product. If Yellowstone supplies 56,000 B/D of product at Spokane, the Chevron line would likely have to be reversed from Spokane to Pasco and would link to Boise. This could provide a less expensive supply route for the Billings refineries to supply Boise. The impacts of such a reversal will be discussed later.

Q. What is the balance between the production and sales of light products in Washington?

A. In 1997, the Washington refineries produced about 439,000 B/D of light products (gasoline, jet fuel and distillate) and product sales were 292,000 B/D. Ex. THW-1, TAB K. On balance, the state had a surplus of each product which is exported to other countries or states, especially Oregon.

When Oregon demand is considered with Washington, the Pacific Northwest is short of gasoline but still has a surplus of jet fuel, distillate and RFO for export. The gasoline shortfall is met primarily by receipts from California at Portland and from PADD IV in eastern Washington.

ATTORNEY GENERAL OF WASHINGTON
Ecology Division
PO Box 40117
Olympia, WA 98504-0117
FAX (360) 438-7743

Q. How does the market in western Washington compare with eastern Washington?

A. Most of the demand in Washington/Oregon is on the western side of the Cascades and most of the increase will also occur there as the overall market grows. Over a five year period (1992-1997) demand in western Washington/Oregon has grown by 35,000 B/D while demand in the eastern Washington supply area has grown by 5,000 B/D. The product balance in western Washington/Oregon is, therefore, influenced more by growth west of the Cascades than by deliveries to eastern Washington unless there are major changes like the Chevron pipeline reversal. Olympic asserts that market growth in eastern Washington will be supplied by the northwest refineries so they must expect the growth in western Washington/Oregon to be supplied from these same refineries.

Deliveries to eastern Washington do impact the product balance in western Washington/ Oregon. When the Chevron pipeline is reversed to Boise, shipments from Portland to the eastern Washington supply area could increase by 26,000 B/D, either from California, or from the Puget Sound refineries. However, California product supplies may become tighter as demand increases. For example, Tosco is reducing refining capacity in the Bay area. If the Boise demand is met solely by the Puget Sound refineries, higher crude runs and refinery expansion would be required. Another scenario is for Montana refineries to provide the additional product through eastern Washington with little or no impact at the West Coast.

Q. What is the product balance for western Washington and western Oregon?

A. TAB L of Ex. THW-1 provides an approximate product balance for the western Washington/Oregon area for 1997. Data for refinery production and sales are known, along with exports, imports and barge deliveries to eastern Washington/Oregon from Portland. Exports of light products are about 32,000 B/D of which less than 6,000 B/D is gasoline. Trucked volumes are assumed at 14,000 B/D from the application and are not precise, as discussed. Data on domestic marine movements (to and from PADD V) are incomplete around Washington, and

ATTORNEY GENERAL OF WASHINGTON
Ecology Division
PO Box 40117
Olympia, WA 98504-0117
FAX (360) 438-7743

they tend to be offsetting for light products. We estimate marine shipments of light products from Washington to be around 26,000 B/D, excluding exports and deliveries to Portland. Marine shipments of RFO are around 18,000 B/D, including exports. We estimate receipts at Portland from California to be around 28,000 B/D, although this supply source receives little discussion in the Application or prefiled testimony. In a letter to EFSEC, dated December 15, 1998, Mr. E. J. Schlueter of Conoco estimated these volumes to be in excess of 30,000 B/D. Ex. THW-4, Comment #10. The draft EIS, on pages 2-39 and 2-40, estimates these volumes at only 3,000 B/D.

Within the northwest region, barge volumes of light products from Washington to Portland are estimated at 11,000 B/D to balance Washington and Oregon. Estimates are not given in the Application or the draft EIS although the elimination of these barge movements is one of the justifications of the pipeline. These depend on the throughput of the existing Olympic pipeline to Portland/Vancouver which was assumed at 150,000 B/D over the year. Its capacity may be higher although it also supplies Tacoma and Tumwater south of Seattle.

The northwest region has a surplus of residual fuel oil (RFO) which is exported. Barge shipments of RFO from Washington to Oregon are estimated at 8,000 B/D to meet demand. RFO is not transported by Olympic so these barge movements will not be eliminated by the proposed pipeline.

Q. How would the proposed pipeline impact the balance of product in western Washington?

A. The proposed pipeline is not expected to change the amount of product transported from western Washington to eastern Washington. Rather, it is being proposed as a better means of transporting the predicted amount of product that will be going from western Washington to eastern Washington. However, the proposed pipeline may still impact the balance of product in western Washington by increasing the access to markets for the Puget Sound refineries.

ATTORNEY GENERAL OF WASHINGTON
Ecology Division
PO Box 40117
Olympia, WA 98504-0117
FAX (360) 438-7743

The proposed pipeline is projected to reduce deliveries of light product to Portland below the existing capacity of the pipeline segment between Renton and Portland. The Washington refineries, therefore, would have an additional opportunity to meet the demand for petroleum in the Portland market. Olympic estimates the unmet prorated demand on its existing pipeline south of Renton to be 44,500 B/D. Ex. THW-5 at page 3. In TAB L of Ex. THW-1, we estimated marine deliveries to Portland at 39,000 B/D from Washington and California. It appears that these marine volumes could likely be accommodated by the existing line south of Renton although the line north of Renton may need to expand its pumping capacity to handle both the proposed pipeline volume and the additional Portland volume. Ex. THW-5 at page 3. Thus, the existing north-south pipeline could be brought back to full capacity in an attempt to displace California supplies from Portland.

If the Chevron pipeline segment between Boise and Pasco is reversed Olympic expects to increase the capacity on the proposed pipeline to be able to supply the entire 20,000 B/D that Chevron expects to move into Boise. Ex. THW-3 at p. 50-52. Olympic would not expect to increase the capacity of its proposed pipeline to meet the additional 20,000 B/D Boise demand if the Puget Sound refineries did not expect to supply that product. If the Puget Sound refineries attempt to supply all of the product for the proposed pipeline and the additional Portland demand, they will likely have to increase capacity. The impacts of the proposed project on refinery expansion and marine traffic will be discussed later.

Q. What area is covered by PADD IV?

A. As shown in TAB G of Ex. THW-1, PADD IV (Petroleum Administration Defence District IV) is comprised of Colorado, Idaho, Montana, Wyoming and Utah. All these states have refineries except Idaho. The refineries in PADD IV supply most of the refined product for the region, but some product is imported. In addition, some product is exported from PADD IV to PADD II and eastern Washington

ATTORNEY GENERAL OF WASHINGTON
Ecology Division
PO Box 40117
Olympia, WA 98504-0117
FAX (360) 438-7743

Q. What is the refinery capacity in PADD IV?

A. There are 15 refineries operating in PADD IV with a total crude capacity of 530,000 B/D and capacity has risen since 1992. Refinery crude capacity in PADD IV is shown in TAB M of Ex. THW-1. Three refineries closed in the 1992 to 1994 period with a combined crude capacity of 64,000 B/D. The 15 operating refineries had a crude capacity of 486,000 B/D in 1990, so their capacity "creep" has been around one percent per year. The capacities of major conversion units such as catalytic cracking which produce refined products have increased. The three refineries around Billings, Montana, have all expanded since 1997.

Q. What is the throughput and utilization of the PADD IV refineries?

A. Refinery crude runs in PADD IV have risen to 479,000 B/D and crude unit utilization reached 93 percent. PADD IV throughput and utilization is shown in TAB N of Ex. THW-1. Refinery crude runs have increased in Montana primarily. Montana utilization has exceeded 100 percent on a calendar day basis, although newly reported capacity exceeds crude runs. Wyoming refinery runs fell in 1992 after the 40,000 B/D Amoco, Casper refinery closure, but have increased since then so utilization in Wyoming/ Colorado has increased to 93 percent. Utah utilization fell with crude runs in 1995 when the small Pennzoil refinery closed and has remained low at around 81 percent.

Q. What is the crude oil supply situation in PADD IV?

A. PADD IV crude production has fallen to about 340,000 B/D and refinery runs are rising. Canadian crude imports satisfy the shortfall in PADD IV. Crude imports from Canada were steady up through 1997, and domestic transfers from PADD IV to other regions began to fall. In 1997, the new Express pipeline began to deliver imported crude for both PADD IV and PADD II, and total transfers from PADD IV to PADD II increased. The crude oil supply and demand balance for PADD IV is shown in TAB O of Ex. THW-1.

ATTORNEY GENERAL OF WASHINGTON
Ecology Division
PO Box 40117
Olympia, WA 98504-0117
FAX (360) 438-7743

More than half the PADD IV crude production is in Wyoming, and most of the decline has occurred there and in Colorado. Production in Montana and Utah has been steady.

Most of the crude imports are to Montana (over 104,000 B/D). Most of the Montana refinery crude runs are Canadian imports. Utah refineries receive most of their crude from Wyoming. They began small imports via Wyoming in 1996. Crude production in southwestern Wyoming is declining like the rest of Wyoming so some of the crude for Utah now moves from central Wyoming. This includes the small Canadian imports. The Frontier pipeline deliveries from Wyoming are increasing.

The Wyoming refineries use mainly local crude. Wyoming and Colorado refineries have used 8,000 to 14,000 B/D of imports since 1994. They also receive crude from Montana and North Dakota, and excess Wyoming crude is shipped to PADD II. The excess is disappearing as production falls.

Q. Can the crude oil pipelines deliver enough crude to the refineries in PADD IV?

A. Crude Oil pipelines supply indigenous crudes and Canadian imports to PADD IV refineries. Most of the excess crude leaves PADD IV on the Platte pipeline. The crude oil pipelines in PADD IV are shown in TAB P of Ex. THW-1.

Pipeline developments which occurred in 1997 will allow Canadian crude imports to increase. Cenex built a new 90,000 B/D line from Cut Bank to Billings, Montana, so Billings refiners have sufficient crude pipeline access.

The Express Pipeline delivers from Alberta to the Casper, Wyoming hub for ongoing deliveries to refineries in Wyoming, Utah and Colorado as well as PADD II via Platte pipeline which Express acquired. To date, Express' throughput has been well below its 170,000 B/D of capacity due to restrictions on Platte.

Amoco and Conoco constructed a joint venture Beartooth pipeline joining the Conoco pipeline at Billings to the Amoco pipeline at Elk Basin, Wyoming. It is used to import light

ATTORNEY GENERAL OF WASHINGTON
Ecology Division
PO Box 40117
Olympia, WA 98504-0117
FAX (360) 438-7743

sweet crudes from southwestern Alberta for southern PADD IV. As part of the joint venture, the Glacier pipeline from the border to Billings has a capacity of 105,000 B/D.

Murphy's Wascana pipeline enters eastern Montana at the Canadian border and delivers to Guernsey, Wyoming via Texaco and Butte pipelines Its capacity is 45,000 B/D, but it shut down in 1997 after the startup of Express pipeline. The total pipeline capacity available to import crude to PADD IV is 410,000 B/D. In 1997 Canadian imports were around 177,000 B/D including 53,000 B/D for PADD II.

The Utah refineries receive crudes via Amoco, Chevron and Frontier pipelines. Since southwestern Wyoming crude production has declined, Amoco pipeline receives crude at Guernsey, Wyoming and delivers to Utah refineries directly and via Chevron. Amoco's Frontier pipeline was reversed in 1993 to receive crude at Casper and deliver to Amoco pipeline at Divide Junction, Wyoming and Ranch Pipeline in Utah. Ranch pipeline delivers to Chevron pipeline. Frontier deliveries have risen to 24,000 B/D in 1997. The capacity of the Frontier pipeline is estimated at 38,000 B/D, but this 16-inch line should be expandable. The connecting pipelines into Utah may also need expansion.

Q. What is the balance of light products in PADD IV?

A. Historical demand is compared with refinery production in TAB Q of Ex THW-1. PADD IV refineries produce about 418,000 B/D of light products (gasoline, distillate, jet fuel) which is most of the PADD IV demand (480,000 B/D). Overall, PADD IV has changed from having excess product in the early 1990's to being short by a net difference of 62,000 B/D in 1997.

The average annual growth rate for light product in PADD IV has been 3.2 percent since 1990. Demand for all light products has grown in each state of PADD IV. The largest demand and fastest growth have been around the larger population centers in Colorado and Utah.

ATTORNEY GENERAL OF WASHINGTON
Ecology Division
PO Box 40117
Olympia, WA 98504-0117
FAX (360) 438-7743

Within PADD IV, Montana has excess product for Washington, North Dakota and Wyoming. Utah has excess product for Idaho although it is short on jet fuel. Idaho has no refineries and receives most of its product from Utah. Wyoming has excess product for Colorado, Utah, South Dakota and Nebraska. Colorado is short of all products, with make-up mostly by pipelines to the Denver area from Wyoming, Kansas and Texas.

PADD IV balances for total light products are given in TAB R of Ex. THW-1. Product imports are small with only 10,000 B/D of distillate from Canada. On balance, PADD IV receives more products from other PADDs than it delivers.

The net receipts have grown steadily, and balance gross receipts from PADDs II and III against shipments to PADDs II and V (eastern Washington). Total receipts from PADD II have risen to about 110,000 B/D which is less than pipeline capacity. Total deliveries from PADD IV have fallen to 52,000 B/D, partly due to changes on the Yellowstone pipeline to Washington. Deliveries to Washington bottomed at 23,000 B/D in 1996, but increased to 29,000 B/D in 1997.

Q. Can you describe the product pipeline system within PADD IV?

A. The product pipelines in and around PADD IV are shown in TAB F of Ex. THW-1. PADD IV supplies products to PADD V (eastern Washington) via Yellowstone pipeline from Billings, Montana and Chevron pipeline from Salt Lake City. Within PADD IV the Yellowstone line supplies western Montana and the Chevron line supplies southern Idaho including Boise. Yellowstone is owned by Conoco and Exxon affiliates.

PADD IV supplies products to PADD II via Cenex pipeline from Montana to North Dakota, and Kaneb and Conoco pipelines from Wyoming to South Dakota, respectively.

Product pipelines supply the Denver area from Kansas and the Texas Panhandle, outside of PADD IV. Denver also receives product from Wyoming on Sinclair and Kaneb pipelines. Sinclair has made its pipeline reversible to move product from Denver to Rawlins, Wyoming.

ATTORNEY GENERAL OF WASHINGTON
Ecology Division
PO Box 40117
Olympia, WA 98504-0117
FAX (360) 438-7743

Also within PADD IV, Conoco pipeline connects Billings to Wyoming, including the Pioneer pipeline. Pioneer is owned by Conoco and Sinclair and it supplies Salt Lake City from Rawlins, Wyoming. Conoco also connects to Kaneb which delivers south to Denver.

Q. What is the capacity of the product pipelines to move product into, out of, and within PADD IV?

A. The capacities of pipelines around PADD IV are shown in TAB S of Ex. THW-1. The primary capacity into PADD IV is at Denver and totals 147,000 B/D. The new Ultramar Diamond Shamrock line can be expanded by 18,000 B/D to provide 165,000 B/D of total pipeline capacity.

The Yellowstone, Chevron and Cenex lines leaving PADD IV also deliver within PADD IV. Chevron pipeline has been near its 65,000 B/D capacity leaving Utah. Chevron has 17,000 B/D of capacity beyond Boise to deliver to Pasco, Washington. Deliveries have fallen to around 6,000 B/D and Chevron plans to reverse this line from Pasco to Boise in the year 2000 and transport up to 20,000 B/D into Boise. Chevron also receives product at Pasco for delivery to Spokane. The capacity of this line is around 18,000 B/D, but it can be expanded to 35,000 B/D with a mid-point pump station.

Yellowstone pipeline had been near its 60,000 B/D capacity leaving Billings. Volumes fell in 1995 when Yellowstone discontinued movements through the Flathead Indian Reservation from Missoula to Thompson Falls, Montana. It has applied to the United States Forest Service to run a line around the reservation through a National Forest. A regulatory review is underway with a final EIS scheduled for 1999.

In a letter to EFSEC dated December 15, 1998, Mr. J. L. Rockwell of Yellowstone pipeline stated that Yellowstone is expanding its pipeline from Billings to Missoula at shippers' request with the use of DRA. Ex. THW-6 at Comment #7. The extra capacity was not specified

ATTORNEY GENERAL OF WASHINGTON
Ecology Division
PO Box 40117
Olympia, WA 98504-0117
FAX (360) 438-7743

and would depend on DRA type and dosage, hydraulics and product mix. Olympic has testified that they achieve up to 25 percent more capacity with DRA. Ex. THW-3 at page 7. A 25 percent increase would be 15,000 B/D on the line leaving Billings.

Yellowstone has a capacity of 45,000 B/D on its 10-inch line into eastern Washington. Deliveries have been around 20,500 B/D in 1998, excluding rail and truck shipments. Yellowstone expects that deliveries would be around 30,000 B/D after its pipeline is reconnected, and concludes that it would have 15,000 B/D of spare capacity. Ex. THW-6 at Comment #15. We understand that this capacity does not rely on DRA, so a 25 percent increase would provide another 11,000 B/D, or 56,000 B/D.

Within PADD IV, the Pioneer pipeline to Salt Lake City had reached capacity, and it has recently been expanded in the range of 48,000 to 54,000 B/D, depending on DRA, to supply more product to Utah.

Q. What is the capability for PADD IV to supply light products to eastern Washington in the near future?

A. There should be enough refining and pipeline capacity and flexibility to supply PADD IV and deliver 45,000 B/D to 56,000 B/D of product to eastern Washington on Yellowstone pipeline in 2001. That would be an increase of up to 36,000 B/D from 1998. Without restoration of pipeline service from Missoula to Thompson Falls, the current unit train movements would increase.

To supply more product from the north of PADD IV, the refineries and pipeline suppliers would have to rebalance products in the south of PADD IV. The pipeline supply potential into PADD IV in the Denver area is 147,000 to 165,000 B/D, depending on future expansion of the Ultramar Diamond Shamrock line. The 1997 receipts were 110,000 B/D, so there should be 37,000 to 55,000 B/D of additional pipeline capacity to supply product to the Denver area.

ATTORNEY GENERAL OF WASHINGTON
Ecology Division
PO Box 40117
Olympia, WA 98504-0117
FAX (360) 438-7743

Depending on demand growth in the Denver market, more pipeline deliveries from the south and east could displace volumes from the north. Sinclair pipeline shippers can now move product from Denver north to Wyoming, and then to Salt Lake City on Pioneer pipeline. Depending on demand growth in Utah and Idaho, some volumes now moving from Wyoming to Utah may be backed out of Utah since the reversal of the Chevron pipeline from Pasco, Washington could push supplies out of Boise. Some of the product moving south from Billings to Wyoming and then to Denver or Salt Lake City may have to find other markets in North Dakota or eastern Washington. Since Yellowstone pipeline curtailed deliveries to Spokane, Conoco pipeline has delivered more product south, and this trend could be reversed after the change in the Chevron line into Boise.

Q. What are the cost comparisons for the different refining centers to supply petroleum products to Spokane?

A. We define the supply cost of light products (gasoline, jet fuel and distillate) as the total cost of crude (less by-product credits) plus refinery operating costs plus transportation to the market, divided by the yield of light products.

As shown in TAB T of Ex. THW-1, the Billings refineries have been the low cost suppliers of light products (gasoline, jet fuel and distillate) at Spokane over most of the last six years, based on annual average costs. The Billings refineries use low cost heavy crude and have either coking or asphalt operations. The Billings supply costs increased in 1995 when the rail operation replaced part of the pipeline system in Montana. If the full pipeline operation had continued, the Billings supply costs would have been lowest each year. The future pipeline tariff from Billings is estimated to be $0.32 per barrel higher than in 1995. Transportation costs are given in TAB U and TAB V of Ex. THW-1.

The Salt Lake City refineries use high cost light sweet crude and are relatively small, so their supply costs at Spokane are highest. This may partly explain why Utah deliveries to

ATTORNEY GENERAL OF WASHINGTON
Ecology Division
PO Box 40117
Olympia, WA 98504-0117
FAX (360) 438-7743

Washington have fallen, and why Chevron pipeline plans to discontinue these deliveries in favor of a reversal.

The supply costs from the West Coast to Spokane vary. In general the ANS coking refineries in Puget Sound (e.g., ARCO and Equilon/Texaco) produce product at a lower cost than the ANS cracking refineries in Puget Sound (e.g., Tesoro/Shell and Tosco).

The supply costs from an ANS coking refinery at Puget Sound (e.g., ARCO/Texaco) were competitive in 1995/96 (after Billings transportation costs increased) using the existing Olympic barge route through Portland and Chevron pipeline. However, for ANS cracking refineries (e.g., Shell/Tosco), the supply costs from Puget Sound were higher. The Puget Sound supply costs were even higher using ocean barges via Portland. The supply costs from San Francisco via Portland have been competitive with the high cost Puget Sound supplies.

Q. How would the supply costs compare when the proposed Cross Cascade pipeline is available?

A. The use of the proposed Cross Cascade pipeline, with an assumed tariff of $1.25 per barrel, would reduce supply costs from Puget Sound refineries by $0.61 per barrel as compared to the existing Olympic/barge route. This would make Puget Sound supplies more competitive, even for the Tesoro/Tosco cracking refineries. Ex. THW-1, TAB W. As discussed earlier, the pipeline tariff may or may not be firm.

Puget Sound supply costs could still be higher than Billings as in 1997. Billings supply costs should become lower by about $0.84 per barrel if the new pipeline segment replaces the current rail delivery system. Over each of the last six years, the Puget Sound supply costs for the coking refineries like ARCO/Equilon using the Cross Cascade pipeline would have been lower than Billings in 1994/95/96. The cracking refineries like Tesoro/Tosco would have been competitive with Billings by rail in 1995/96, but would not have been competitive with Billings product delivered by pipeline.

ATTORNEY GENERAL OF WASHINGTON
Ecology Division
PO Box 40117
Olympia, WA 98504-0117
FAX (360) 438-7743

Q. Would you expect the cost savings from the proposed pipeline to allow the Puget Sound refineries to capture all the growth in the market?

A. The dynamics of the market cause relative costs to change quickly and vary widely. From month to month, the supply costs from Puget Sound refineries have moved higher and lower relative to supply costs from Billings. At times the cost from the cracking refineries like Tesoro/Tosco via existing transportation has been lower than from Billings. At other times, the cost from even the lower cost coking refineries like ARCO/Equilon refineries via the proposed Cross Cascade pipeline would have been higher than from Billings (Exhibit THW-1, TAB X).

Based on historical supply costs, product from the Billings refineries would be competitive in the eastern Washington market even if the proposed Cross Cascade pipeline is built and the Yellowstone proposed line replacement is not built. The additional capacity available on the Yellowstone pipeline combined with the Billings refineries' low production costs should allow the Billings refineries to at least retain their market share and increase supplies as demand grows in the eastern Washington supply area.

Q. If, as an alternative to the proposed pipeline, Olympic expands the existing pipeline from Renton to Portland, how would this affect the supply cost from Puget Sound?

A. Olympic investigated alternatives to expand its existing north-south system from Renton to Portland. To replace the existing line, Olympic estimated a tariff of $3.00 per barrel for new incremental capacity but showed that the tariff would be $1.00 per barrel if the cost was distributed over all product being shipped north-south. Ex. FH-T, TAB D. The $1.00 tariff would be lower than the cost of ocean barging to Portland. In deposition testimony Olympic did not have a method to differentiate the tariffs, and thus the $3.00 figure does not appear to be a likely tariff for the proposed alternative. Ex. THW-3, pages 23 to 26. For a single line which replaces the existing line, separate tariffs would not seem to be workable. Accordingly, I would

ATTORNEY GENERAL OF WASHINGTON
Ecology Division
PO Box 40117
Olympia, WA 98504-0117
FAX (360) 438-7743

expect the tariff on north-south system that had a new expanded segment from Renton to Portland to be $1.00 per barrel not $3.00 per barrel.

Q. What are the cost comparisons for the different refining centers to supply central Washington and Boise?

A. Central Washington is now supplied by pipeline/rail/pipeline from Billings to a Moses Lake terminal and by truck from Puget Sound directly to users. The proposed Cross Cascade pipeline will supply a new terminal at Kittitas. Terminal deliveries incur an extra charge whereas direct deliveries by truck avoid this charge. The proposed Cross Cascade pipeline, with an assumed tariff of $0.83 per barrel, plus terminal would reduce Puget Sound supply costs by $0.82 per barrel compared with direct trucking.

On a month to month basis, ARCO and Equilon/Texaco refinery supply costs would have been less than Billings supply costs in central Washington most of the time using the Cross Cascade pipeline, unless pipeline deliveries from Billings had not been interrupted by a rail segment. The Tesoro/Shell and Tosco refinery supply costs via Cross Cascade could have been higher or lower than Billings supply costs in 1994 - 1996, but higher throughout 1997/98. Ex. THW-1, TAB Y.

Like Spokane, product from the Billings refineries should be competitive in the Moses Lake and central Washington market much of the time even if the Yellowstone pipeline does not replace its proposed pipeline segment. Product from the Billings refineries would be even more competitive in the Moses Lake and central Washington market if the proposed pipeline segment is replaced.

Billings product can now move to Boise, Idaho through Salt Lake City and Chevron pipeline. After the Chevron pipeline reversal from Pasco to Boise, Billings could supply Boise through Spokane if the Chevron line segment is also reversed from Spokane to Pasco. Assuming no changes in the Chevron tariffs after reversal, the transportation cost to Boise would be lower

ATTORNEY GENERAL OF WASHINGTON
Ecology Division
PO Box 40117
Olympia, WA 98504-0117
FAX (360) 438-7743

via Spokane. TAB Z of Ex. THW-1 shows that the supply costs at Boise from Billings via Spokane by pipeline would have been lower than Puget Sound products via Cross Cascade pipeline in 1997 and 1998. Billings' supply costs would have been higher in 1994 and 1995 and competitive with Puget Sound in 1992, 1993 and 1996. The Chevron reversal may allow PADD IV product to continue to supply at least part of the Boise market rather than the West Coast.

Q. What are the netback prices for the Billings refineries in the markets they supply?

A. We define the netback price of a product as the price at a destination market minus the transportation cost from the source. It represents the market price and not necessarily the supply cost or refining profit. The highest netback market is most attractive to the refiner. Billings refineries supply markets in Montana as well as Washington, Wyoming, Utah, Colorado and North Dakota and receive different netback prices from each market, as well as the local Billings market.

Product prices in Billings generally exceed prices in the surrounding markets, but the Montana demand is smaller than the refinery production, so product is shipped to the other markets, even though netback prices are lower.

For gasoline, the annual average netback prices from Spokane, Salt Lake City and Minot, North Dakota have been similar (6 to 8 cents per gallon) below the Billings price with the Spokane netback generally around 1 cent per gallon lower than the others. Ex. THW-1, TAB AA. The Spokane netback would have been higher without the rail costs from Billings, assuming the same market prices. The netback price from Denver has been much lower (12 to 14 cents per gallon).

In a dynamic market, the netback price of gasoline from Spokane at Billings has been higher and lower than the netback from both Salt Lake City and Minot, North Dakota, on a month to month basis. Ex. THW-1, TAB AB.

ATTORNEY GENERAL OF WASHINGTON
Ecology Division
PO Box 40117
Olympia, WA 98504-0117
FAX (360) 438-7743

For the low sulfur diesel market, the netback price from Spokane at Billings is less than from Salt Lake City, even on a monthly basis. Ex. THW-1, TAB AC. Like gasoline, it has been well above the Denver netback. On an annual average basis it is similar to the Minot, North Dakota netback. On a month to month basis, the Spokane netback price of low sulfur diesel has moved higher and lower than the Minot netback at Billings.

In summary, refineries attempt to find the highest netback prices for their product. The Spokane market has offered an attractive netback price at Billings compared with most of the alternatives available except Salt Lake City for distillate and sometimes gasoline. Salt Lake City will probably need less product from Billings after Chevron pipeline starts to supply Boise from Pasco, so the Billings refineries should find Spokane to be a more attractive market in the future.

Q. What are the netback prices for the Puget Sound refineries in the markets they supply?

A. The major markets for Puget Sound refineries are western Washington and western Oregon. The next largest market is eastern Washington.

For gasoline, the netback price from Spokane using the Olympic/barge/Chevron route is competitive with the Seattle netback. Ex. THW-1, TAB AD. Using the ocean barge route, the netback from Spokane is lower, so the Spokane market provides less revenue for the Puget Sound refiner compared with moving the last barrel to Seattle.

The proposed Cross Cascade pipeline would reduce the transportation cost to eastern Washington by $0.61 per barrel or 1.5 cents per gallon. The netback price from Spokane at Puget Sound would have been higher by 1.5 cents per gallon with the proposed pipeline, assuming that the Spokane price did not change, making eastern Washington a more attractive market for the Puget Sound refiners, as their revenue would be higher from Spokane than from Seattle.

The Boise, Idaho, market will be accessible after the startup of the proposed pipeline due to Chevron's plan to reverse its pipeline from Pasco. Assuming a tariff of $0.23 per barrel on

ATTORNEY GENERAL OF WASHINGTON
Ecology Division
PO Box 40117
Olympia, WA 98504-0117
FAX (360) 438-7743

Chevron pipeline and no change in the Boise price, the netback price from Boise would have been the highest for the Puget Sound refineries.

For diesel, the netback price from Spokane using the existing Olympic supply route has been better than from Seattle. Like gasoline, the use of the proposed Cross Cascade pipeline would have increased the netback for diesel from Spokane by 1.5 cents per gallon, and Boise would have provided the highest netback at Puget Sound, assuming no change in the market prices.

Since Boise could provide the highest netback prices, the Puget Sound refiners will likely attempt to supply the 20,000 B/D that will be transported on the Chevron line from Pasco to Boise. There is insufficient gasoline to divert from the export market, and, therefore, unless the Puget Sound refineries divert product from their existing northwest markets, they will need to expand in order to supply the Boise market.

Q. Can the Puget Sound refineries meet future demand growth in the northwest without expanding their capacities?

A. If the Puget Sound refineries are to keep up with future demand growth, further expansions will be needed, because they are configured to yield only a certain amount of gasoline and the major increase in demand will be for gasoline. For example, ARCO has announced a new 225,000 B/D crude oil desalter with a capacity exceeding its current 202,000 B/D nameplate crude capacity.

Q. What is the product yield from the Puget Sound refineries?

A. The major products from the Washington refineries are gasoline (39 percent), distillate (23 percent), jet fuel (14 percent), and resid fuel oil (RFO - 10 percent). Since 1990, the gasoline and jet fuel yields have remained the same while RFO yield has fallen and the distillate yield has

ATTORNEY GENERAL OF WASHINGTON
Ecology Division
PO Box 40117
Olympia, WA 98504-0117
FAX (360) 438-7743

risen. Two of the Washington refineries (ARCO and Equilon) have cokers, which minimize the production of RFO. The others produce RFO as a by-product and the surplus is exported.

The ratio of refinery gasoline production to combined jet fuel/distillate is nearly 1:1. However, market demand for gasoline is around 150 percent of the combined jet fuel/distillate demand. The Puget Sound refineries, therefore, produce an excess of distillate to meet gasoline demand. This excess distillate is exported.

Q. What is the refinery capacity and utilization for crude in Washington and the outlook for expansion?

A. Most of the product supplied to Washington and Oregon is manufactured by the refineries at Puget Sound. Reported crude capacity has reached 596,000 B/D and has grown by 49,000 B/D in the last five years. Ex. THW-1, TAB AE. The major refineries are ARCO, Equilon (former Texaco), Tesoro (former Shell) and Tosco. They all supply Olympic pipeline. Crude runs have increased but not as quickly as total capacity, so utilization has shifted from very high levels of around 103 percent in 1992/93 to around 97 percent in 1998 which is still a high rate for sustained operation.

As demand for product grows in Washington and Oregon, additional product supplies will have to be imported, or the Puget Sound refineries will have to increase production. Some of these refineries might produce more gasoline by converting distillate or RFO with additional processing such as hydrocracking or coking, respectively. These processes require large capital investments. Instead, these refineries have historically increased crude runs and exported surplus distillate and RFO. If they increase production to meet the increased market, they will likely continue to increase crude runs. Since the refineries are nearly full, refinery expansions will therefore be needed.

ATTORNEY GENERAL OF WASHINGTON
Ecology Division
PO Box 40117
Olympia, WA 98504-0117
FAX (360) 438-7743

Q. What is the nature of crude receipts into the Puget Sound refinery?

A. Historical crude receipts are shown in TAB AF of Ex. THW-1. Most of the crude used in Washington is Alaska North Slope (ANS) delivered by tanker from Valdez to Puget Sound. The Alaska crude runs reported by DOE do not include the NGL's which are blended into the crude at the source and shipped to refineries, so the Alaska crude volumes have been adjusted upward. Overall, waterborne crude receipts are slightly lower than in the early to mid 1990's. Canadian crude is received by pipeline and volumes have increased from 17,000 B/D in 1992 to around 104,000 B/D in 1998.

Q. Do you expect Canadian crude receipts to continue to increase?

A. No. Most of the Canadian crude is from Alberta which has export pipelines moving east, south and west. Until late 1998, the major eastbound pipeline of Interprovincial Pipeline (now Enbridge) was at capacity and on apportionment, so crude production had to move to other markets. The Alberta government and the Canadian producing industry developed a "West Coast Initiative" which allowed a marketing agent to sell royalty crude on the West Coast at a competitive price.

Enbridge has expanded its pipeline system and crude production has been falling due to low prices, so there is now spare pipeline capacity to the east. The West Coast Initiative has now ended. A new pipeline connection from British Columbia to Alberta will also allow British Columbia crude to move east on Federated pipeline. The netback price for crude in Alberta is generally higher from the U.S. Midwest than the netback from the U.S. West Coast, so Canadian crude deliveries to Washington should fall, causing waterborne crude receipts to rise.

If Washington were an attractive market for Canadian crudes, deliveries via pipeline could still not rise significantly, unless TransMountain pipeline expands. TransMountain also carries refined products and is near its capacity. We expect that Canadian crude imports by

ATTORNEY GENERAL OF WASHINGTON
Ecology Division
PO Box 40117
Olympia, WA 98504-0117
FAX (360) 438-7743

pipeline will fall, so waterborne crude receipts will rise. Thus, if crude runs increase at the Washington refineries, the increased volume will likely be waterborne.

Q. How would the proposed pipeline impact waterborne movements of petroleum in Washington and Oregon?

A. As discussed earlier, the proposed pipeline should greatly reduce the current river barge movements from Portland as well as the current ocean barge movements from Puget Sound to Portland. The Application assumes that all future growth in Eastern Washington will be supplied from Puget Sound and that, without the proposed pipeline, barge movements would increase accordingly. However, we expect at least some of the growth to come from PADD IV, so the barge traffic that will be displaced by the proposed pipeline would be lower than projected by Olympic.

To the extent that more product is supplied to eastern Washington from Puget Sound, the Puget Sound refineries will need to run more crude and the increased crude will likely be waterborne for reasons given earlier. Based on historical yields, crude runs will rise by 2.5 barrels to produce one barrel of gasoline at Puget Sound.

Increased crude runs will also result in higher exports of distillate products as well as Residual Fuel Oil(RFO). In eastern Washington, most of the demand is for gasoline with less for distillate/jet fuel. For one barrel of gasoline, the demand for distillate is around one half barrel. RFO demand is negligible. However, without major refinery changes, the Puget Sound refineries produce around one barrel of distillate/jet fuel and 0.25 barrels of RFO for one barrel of gasoline. Therefore, for each barrel of gasoline produced for the eastern Washington market, approximately one half barrel of distillate and 0.25 barrels of RFO will have to be exported.

The Puget Sound refiners may wish to reduce distillate exports by selling more in eastern Washington. However, they already have most of the distillate market share since PADD IV has supplied only about 6,000 B/D to 10,000 B/D to eastern Washington.

ATTORNEY GENERAL OF WASHINGTON
Ecology Division
PO Box 40117
Olympia, WA 98504-0117
FAX (360) 438-7743

Q. Will access to new markets impact on waterborne movements?

A. Access to the Boise market in 2000 will increase the product market by 20,000 B/D. Without the proposed pipeline, this may increase barge activity from Puget Sound by 26,000 B/D, although some product may be supplied from Billings. By reducing transportation costs, the proposed pipeline will improve the competitive position of the Puget Sound refineries in Boise and encourage them to increase throughput and thus waterborne crude receipts and distillate/RFO exports. Producing 15,000 B/D of gasoline and 5,000 B/D of distillate for Boise would require 37,500 B/D of crude and cause around 10,000 B/D of distillate and 3,700 B/D of RFO to be exported.

The proposed pipeline will cause spare capacity on the existing north-south pipeline to Portland and thus will provide the opportunity for the Puget Sound refineries to increase throughput and production to refill this line. This would further increase waterborne crude receipts and distillate/RFO exports. As discussed earlier, we estimate that California supplies about 28,000 B/D of product to Portland (mostly gasoline) and the available pipeline capacity at Portland should be near this level. For the Puget Sound refineries to produce another 20,000 B/D of gasoline for Portland, they would need 50,000 B/D of crude and around 20,000 B/D of distillate would have to be exported along with 5,000 B/D of RFO.

Within the limits of the project defined in the Application, the proposed pipeline by itself would not cause crude runs or product exports to rise. However, the proposed pipeline would facilitate the pursuit of other market opportunities for the Puget Sound refiners and these would involve

/ / /

/ / /

/ / /

ATTORNEY GENERAL OF WASHINGTON
Ecology Division
PO Box 40117
Olympia, WA 98504-0117
FAX (360) 438-7743

expansion of the refineries, increased waterborne crude receipts, and increased waterborne exports of distillate and RFO by-products.

I declare under penalty of perjury, under the laws of the state of Washington, that the foregoing is true and correct to the best of my knowledge.

DATED this 15 April, 1999.

_____
THOMAS H. WISE

ATTORNEY GENERAL OF WASHINGTON
Ecology Division
PO Box 40117
Olympia, WA 98504-0117
FAX (360) 438-7743