BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF SOUTH DAKOTA

IN THE MATTER OF THE APPLICATION BY TRANSCANADA KEYSTONE PIPELINE, LP FOR A PERMIT UNDER THE SOUTH DAKOTA ENERGY CONVERSION AND TRANSMISSION FACILITIES ACT TO CONSTRUCT THE KEYSTONE PIPELINE PROJECT	))))))	HP 07-001 **REBUTTAL TESTIMONY OF BRIAN THOMAS**

1. State your name and occupation

A: Brian Thomas, Coordinator, Oil Movements, Keystone

2. Did you provide direct testimony in this proceeding?

A: Yes

3. In rebuttal, to whose direct testimony are you responding?

A: I am responding to the direct testimony of Messer's. Hohn, Davis, Miller, Walsh and Hannan.

4. Mr. Hohn at Page 8 along with Mr. Davis at Page 2 of their testimony indicate that oil leaks as large as 372,330 gallons or 1.5% of Keystone's flow rate could continue to leak for 90 days before they are detected. Can you comment?

A: Their testimony on this issue reaches a conclusion that is unrealistic and inconsistent with the capabilities of Keystone's comprehensive leak detection program. In addition to the complimentary leak detection systems that I described at Pages 7 and 8 of my direct testimony, Keystone will also incorporate computer based, non real time, accumulated gain/(loss) volume trending to assist in identifying low rate or seepage releases below the 1.5 to 2 percent by volume

detection thresholds. This involves performing calculations on routine time intervals (approximately 30 minutes) of the volume of oil gained or lost within a pipeline segment bounded by flow measurement equipment. By accumulating these gain/(loss) results over a succession of time intervals, the cumulative imbalance of the segment can be determined. Once this cumulative imbalance exceeds a prescribed threshold, further investigation and evaluation is undertaken. Thresholds will be established based upon the accuracy and repeatability of flow measurement equipment and the extent to which flow imbalances generated by the normal operation of the pipeline can be tuned out.

The system discussed above will be similar to that described by Mr. Richard B. Kuprewicz in a paper prepared for the Pipeline Safety Trust entitled "Observations on Practical Leak Detection for Transmission Pipelines An Experienced Perspective", within the section describing Seepage or Intermittent Releases. Within this section of the document on Page 12 of 15, Mr. Kuprewicz recommends this non real time balancing approach. Fundamentally, the system is comprised of plotting an accumulated daily gain/(loss) balance across a pipeline segment over a month-to-date and year-to-date time period. This information is then displayed in a graphic format and utilized to assist pipeline operators in identifying possible leak conditions. An alarm value or limit can also be set for when the accumulated gain/(loss) exceeds a prescribed threshold indicating further investigation is warranted.

Since Keystone will employ the system described above, as well as other direct observation methodologies included at Page 8 of my direct testimony, it is not reasonable to assume a leak at 1.5% of the pipeline flow rate could continue for 90 days prior to detection.

5. At unnumbered Page 11, beginning at Line 30 Mr. Walsh requests that Keystone include the effects of the instantaneous loss of pumping equipment in the surge analysis to ensure that pipe stress remains within acceptable limits. Can you comment?

A: Keystone will perform a comprehensive surge analysis using a transient hydraulic model of the pipeline to ensure operation within the prescribed pressure limits. This analysis will include the instantaneous loss of pumping equipment.

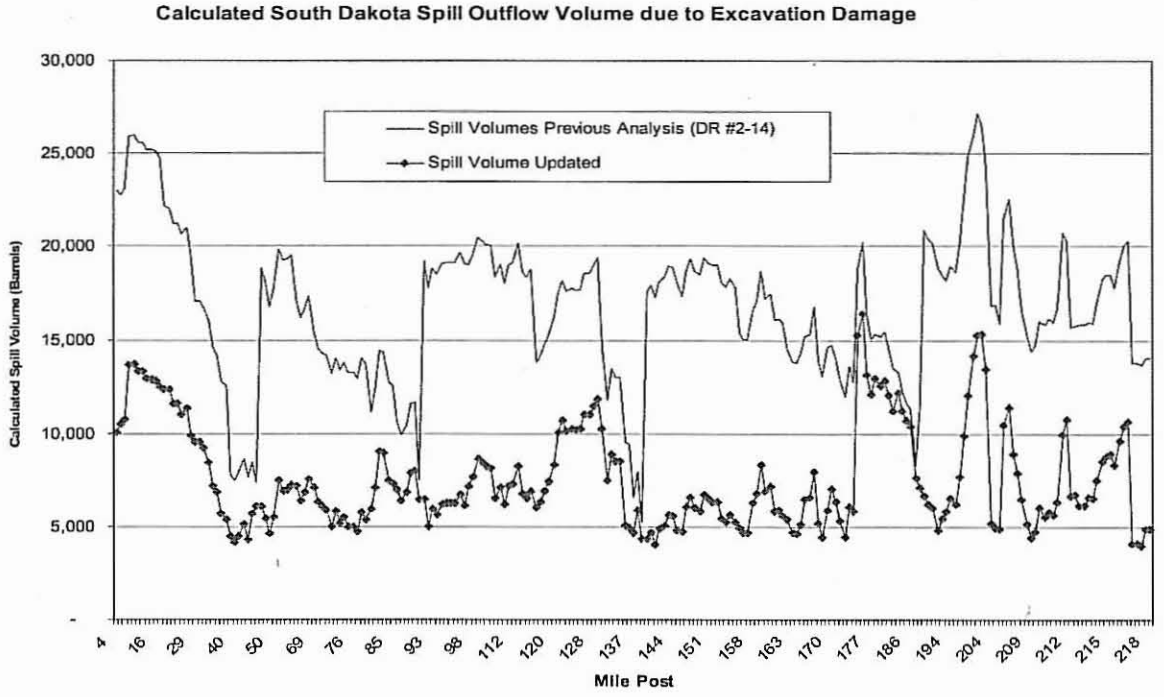
6. At unnumbered Page 9, beginning at Line 15 Mr. Walsh indicates that the emergency response team would have to excavate and clamp a large leak within 45 minutes to limit a large leak to 25,000 barrels. Can you comment?

A: Keystone's analysis of spill volumes associated with the large leak scenario was comprised of two components. The first component being the dynamic phase, which accounts for the volume escaping the pipeline while the pipeline remains in operation with pumping units on line. The second component is the static phase, which accounts for the volume draining out of the pipeline after the pipeline has been shutdown and isolation valves closed.

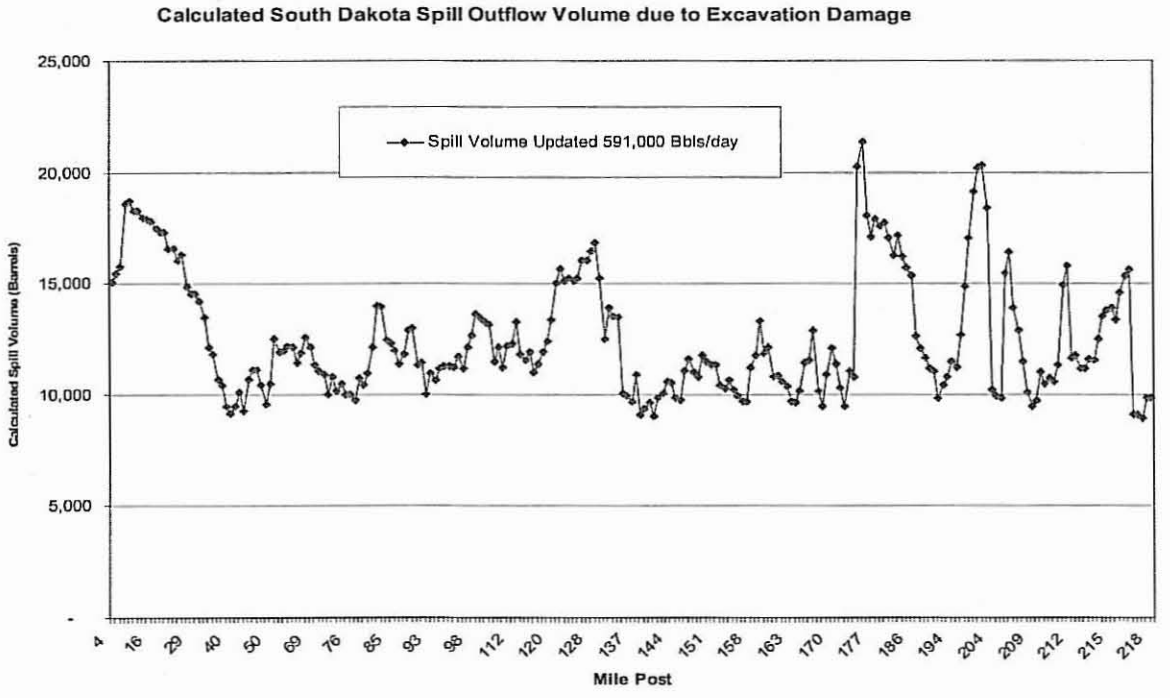
The leak rate and associated volume lost during the dynamic phase is calculated based upon the pressure at the leak site as determined by the pipeline operating hydraulic profile and the corresponding pipeline flow rate. The leak rate and associated volume lost during the static phase is calculated assuming a driving pressure equal to the static head after the isolation valves are closed, with no reduction in pressure during the leak. Although this would not be the case during operations, no source or other methods of control are applied and all volume with the exception of that trapped due to the elevation profile, is allowed to escape.

Following a detailed review of the information provided in response to Staffs Data Request 2-14 it was discovered that overly conservative assumptions within the large leak

scenario were incorporate by Keystone's consultant DNV. Accordingly, a revised analysis has been completed and is provided below:



In addition, a similar analysis was completed for a pipeline flow rate of 591,000 barrels per day and it has been provided below:



In order to provide additional background with respect to the methodology utilized to perform the above outflow analysis the following example calculation is provided for M.P. 175.29

Dynamic Phase

At this point along the pipeline, the leak rate is equal to the maximum pipeline flow rate of 24,625 barrels per hour. The leak is detected after 9 minutes with a corresponding 9 minutes allowed for shutdown of operating pumping units, followed by an additional 3 minutes for closure of isolation valves. This results in a total time of 21 minutes and yields a total volume of 8,619 barrels.

Static Phase

The length of isolated pipeline between valves located at Pump Station 23 and isolation valve 11 is 41.4 miles, however due to changes in elevation; only a volume corresponding to 2.4 miles of pipeline will escape. This yields a volume of 12,765 barrels.

Accordingly, the total outflow volume due to a large leak at M.P. 175.29 is 21,384 barrels, which is comprised of 8,619 barrels during the dynamic phase and 12,765 barrels during the static phase.

It should also be noted that Keystone will perform additional spill outflow analysis to determine worst case discharge volumes, as the Emergency Response Plan (Oil Spill Response Plan) is updated to ensure compliance with applicable regulations, including 49CFR Part 194.

7. At Page 17, Item 25 along with Exhibit J, Mr. Miller indicates that an obvious data omission has occurred, in that the amount of time required to shut down the pumps has not been included within Keystone's spill volume calculations. Thus, Keystone's estimates could be understated by 27% to 75% depending on the size of the hole in the pipe. Can you comment?

A: Please see Item 6 of my rebuttal testimony.

8. At Line 71, Mr. Hannan indicates that: "Keystone has assumed that a pipeline response crew could be dispatched to plug small- and medium-sized holes in a reasonable amount of time. No timeframe was provided and such repair work would require considerable coordination and time to shut the line down, locate the release, uncover the line, and then make the repair. The statement implies a fairly quick fix to such an occurrence. This assumption underestimates the level of effort and time necessary to make the required repairs to the pipeline." Can you comment?

A: Keystone's Emergency Response Plan (Oil Spill Response Plan) will be developed to respond to a worst case discharge as required by regulations including 49CFR Part 194; accordingly adequate resources will be available to respond to small and medium size leaks.

9. At Line 78, Mr. Hannan indicates that: "The study should be revised to better account for the likelihood of damage to the pipeline caused by the following excavation activities…" Can you comment?

A: Keystone did not include a risk associated with agricultural resources such as plowing and tilling, as it is unnecessary due to the minimum depth of pipeline burial of 48 inches.

10. Does this conclude your testimony?

A: Yes it does.

Dated this 26 day of November, 2007.

BRIAN THOMAS