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April 22, 2008

MS ILLONA A JEFFCOAT-SACCO
EXECUTIVE SECRETARY
PUBLIC SERVICE COMMISSION
600 EAST BOULEVARD, DEPT 408
BISMARCK ND 58505-0480

HAND-DELIVERED

Re: TransCanada - Keystone Pipeline Project
Case No: PU-06-421
Our File No. 11815



Dear Ms. Jeffcoat-Sacco:

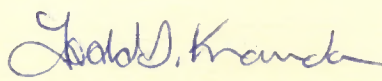
Enclosed for filing in the above-referenced matter is the original Affidavit of Michael James Koski in Support of Keystone's Request for Approval of Keystone's Pipeline Route Between Mileposts 168 and 170, a copy of which was filed with your office on April 21, 2008.

Also enclosed is a CD containing a copy of the material in which a paper copy was filed with your office on April 21, 2008 of the following documents:

1. Motion for Approval of Keystone's Pipeline Route Between Mileposts 168 and 170;
2. Affidavit of Loys A. Gray, III in Support of Keystone's Request for Approval of Keystone's Pipeline Route Between Mileposts 168 and 170 with Exhibits;
3. Affidavit of Michael James Koski in Support of Keystone's Request for Approval of Keystone's Pipeline Route Between Mileposts 168 and 170 with Exhibits.; and
4. Certificate of Service.

If you have any questions, please feel free to contact me.

Sincerely,



Todd D. Kranda

TK:ls
Encs
c: TransCanada Keystone



STATE OF NORTH DAKOTA

PUBLIC SERVICE COMMISSION

TransCanada Keystone Pipeline, LP
30-Inch Crude Oil Pipeline/Cavalier to
Sargent Ctys

Case No, PU-06-421

AFFIDAVIT OF MICHAEL JAMES KOSKI

IN SUPPORT OF KEYSTONE'S REQUEST FOR APPROVAL OF PIPELINE ROUTE
BETWEEN MILEPOSTS 168 AND 170

MICHAEL JAMES KOSKI, BEING FIRST DULY SWORN, ON OATH, DEPOSES AND STATES, AS FOLLOWS

- I have attached a copy of my resume with my educational background and qualifications.
- Paragraph 2 of the North Dakota Public Service Commission (PSC) Order dated February 21, 2008 requires:

"Keystone is issued Certificate of Corridor Compatibility No. 101 and Route Permit No. 111 to construct the 218 mile, 30-inch crude oil pipeline. The route that is approved for this purpose is the route identified in the Application, as supplemented by Exhibit Nos. T16 and T17 that were submitted at the hearing for the reroutes at the Bures and Zacharias properties. The Route Permit between mileposts 168 and 170 is conditioned upon Commission approval of an acceptable HDD proposal that goes under the Sheyenne River and the trees and shrubs on both the north and south embankments of the Sheyenne River valley. There shall be no construction activity related to the pipeline between mileposts 168 and 170 until Keystone's HDD proposal has been approved by the Commission. Keystone shall file a HDD proposal by May 21, 2008."

- In accordance with paragraph 2 of the Order, I am filing this testimony with drawings depicting HDD (Horizontal Directional Drilling) of the Sheyenne River and the South embankment of the Sheyenne River marked as EXHIBIT A and of the proposed route submitted for approval with an HDD of only the Sheyenne River crossing marked as EXHIBIT B.
- I have 19 years of experience associated with the routing of pipelines and the design of pipeline water crossings particularly as related to geotechnical issues which affect pipeline installation and stability. I have completed or led the completion of designs for thousands of water crossings in the United States, Canada, Mexico and South America. This experience has included the assessment and design of numerous HDD installations. I am the prime author of the American Gas Associations Pipeline Water Crossing Design and Installation Manual. From this experience, I am very familiar with the installation of large diameter pipelines utilizing the HDD crossing method.
- The PSC and staff advised Keystone during the hearings that the Sheyenne River Valley is one of the most scenic areas in North Dakota and its intent was to minimize the visual impact to the Valley by the construction of the pipeline. Specifically, the PSC's intent was to minimize the impacts to the trees adjacent to the River and on the North and South embankments of the Sheyenne River Valley.
- Keystone had initially proposed an HDD across the Sheyenne River which crossed the trees adjacent to the river and the trees on the South embankment. A drawing of this crossing is attached to this testimony and is marked as EXHIBIT A.

- EXHIBIT A depicts a proposed HDD involving a horizontal drilled length of 3496 feet. The drill would enter on the North side of the river and pass through approximately 40 to 50 feet of clays, silts, and sands before entering shale. The drill would then pass through shale material until some point on the south side of the river where the material would then enter into silts, sands, gravels, cobbles and boulders before reaching the surface. The elevation difference between the entry point and the exit point is approximately 200 feet.
- The combination of the length of the HDD (3496 feet), the diameter of the pipe (30 inch pipe), and the soil conditions suggests this proposed drill has a significant risk of failure. Failure refers to the inability to install the pipeline by the proposed method. Additionally, the proposed drill has a significant risk of an inadvertent release of drilling mud during the installation. This results in the unplanned release of a water and bentonite clay mixtures at some point between the entry and exit points.
- Factors which increase the risk associated with this crossing are the soil conditions and the elevation difference between the entry and exit points. While significant advances have been made in HDD equipment and techniques, soils containing cobbles and boulders continue to present challenges to the HDD technique. Such material can readily fall into the opened hole and cannot be lifted and removed by the circulating drilling mud. These materials can then remain in the opened hole to bind or stick drilling tools or pipe. The response to a failure in this nature could involve the need for additional excavation beyond the indicated workspace limits, which is likely to involve the need to remove trees.
- In many instances, it is possible to install a casing through these objectionable materials to allow drilling to proceed in the more stable shale without interference from the cobbles and boulders. However, the depth of these materials on the order of 80 feet on the south side of this crossing precludes this approach.
- The approximate 200 foot elevation difference between the entry point and the exit point combined with the soil conditions presents an increased risk of an inadvertent release of drilling mud. If larger materials fall into the opened hole during drilling and obstruct mud flow back to the entry point, the hydraulic head acting on the mud could be significant depending upon the location of the blockage. This creates a potential for drilling mud to be forced to the surface most likely in the vicinity of the river or the lower portion of the south embankment. Any release of drilling mud at the surface would be recovered and removed by Keystone to the extent practical, however, if this occurred in treed areas, removal or disturbance of trees would be necessary.
- Keystone has identified alternative routes on the South and North embankments that it believes meets the intent of the PSC to minimize visual impacts and tree removal. These alternatives still incorporate an HDD of the Sheyenne River crossing and the trees adjacent to the River. Exhibit B depicts the proposed route with an HDD design drawing of the Sheyenne River for this scenario.
- This proposed route with an HDD design involves a horizontal drilled length of approximately 1590 feet and a difference in elevation between the entry and exit points of approximately 30 feet. The drill is not expected to encounter material containing cobbles and boulders.
- It is my professional opinion that the proposed route with an HDD for the Sheyenne River crossing represents significantly less risk of failure or an inadvertent return of drilling mud during installation than the previously submitted HDD of the Sheyenne River and the South Embankment, while still achieving the Commission's intent of minimizing impact to trees in the area.

