Exhibit No. ___ (BJC-5T)
Docket No. UG-11___
Witness: Barbara J. Cronise

BEFORE THE WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

In the Matter of)	
NORTHWEST NATURAL GAS)	Docket No. UG-11
COMPANY, dba NW Natural,)	
)	
Revision to Schedule P to include)	
acknowledging the recovery of the cost)	
of gas acquired through Gas Reserves.)	

NORTHWEST NATURAL GAS COMPANY

EXHIBIT OF BARBARA J. CRONISE

Quantification of Risk Probabilities

REDACTED

July 6, 2011

Quantification of Risk Probabilities

Risk	Magnitude	Probability
Gas supplies are	The typical audit tolerance of any reserve forecast is +/-	Low
lower than	10%. If volumes in every year were 10% below forecast	
forecast	the NPV to customers would be \$34.5 million instead of	NSAI estimates that
	\$66.3 million. If volumes in every year were 10% above	Proved Producing and
	forecast the NPV to customers would be \$98.1 million	Proved Undeveloped
	instead of \$66.3 million.	Reserves to be developed
		under the joint venture
	NSAI has concluded that the typical audit tolerance is	may vary from forecast as
	highly unlikely at Jonah given the production history at	much as 5% below
	Jonah. NSAI supports a tolerance of -5% or +10%. A -	forecast to 10% above
	5% would result in a NPV to customers of \$50.4 million	forecast. See further
	compared to \$66.3 million.	description in "Magnitude"
		column.
	The above assumes volumes are lower in all years by the	
	percentages shown. If volumes were overall lower by 5%	
	after year 16, the NPV to customers would be \$65.3	
	million and if they were higher by 10% after year 16 the	
	NPV to customers would be \$68.4 million.	
	In addition to the Drayed Draducing and Drayed	
	In addition to the Proved Producing and Proved	
	Undeveloped Reserves forecast by NSAI, Sections 32, 33 and 34 contain Probable Reserves not included in any	
	forecasts or financial models prepared by NWN. NSAI	
	estimates another 92 BCF of gross technical reserves that	
	could be categorized as Probable which by definition have	
	a 50% probability that actual reserves will equal or exceed	
	forecast.	
	Another upside not modeled is a lower final decline rate.	
	An exponential decline of 10% per year was used in the	
	NSAI analysis to account for well interference with infill	
	drilling. For many tight gas reservoirs without infill	
	drilling, a 6% per year final decline rate is typically used.	
Operating Costs	[Confidential] ******************	Low
Higher than	****************	
Forecast	*****************	

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Market Prices Lower than Prices Resulting from JV	If market prices remained at \$4.00 for every month for the entire 30 year period the additional cost to ratepayers would be \$144 million over the term.	Very Low
	If market prices remained at \$8.00 for every month for the entire 30 year period the savings to rate payers would be \$273 million over the term.	Very Low
	If market prices remained at \$5.00 for three years, then escalated \$0.50 per year for the next 10 years, then remained flat at \$10.00, the savings to rate payers would be \$252 million over the term.	Something In-Between May Be Most Likely
Encana Goes Bankrupt	NWN's interests are secured as a separate real property interest. [Confidential] ************************************	Very Low Encana will Experience Bankruptcy. Security and Agreements, however, structured to provide NWN protection in such an event.
Capital Costs to Drill Wells Higher than Forecast	NWN's capital costs are [Confidential] ********* *************. [Confidential]	[Confidential] *** *******[Confidential]
Capital Costs beyond Well Head	[Confidential] **************************	[Confidential] ******** ******** [Confidential]
Encana subjected to environmental fines and penalties related to operations at the Jonah Field	[Confidential] ************************************	[Confidential] ***** *******[Confidential]

JV Well Experiences Mechanical Failure or Produces No Gas	No impact on NWN. Encana assigns to NWN a 1.2% interest in a currently producing section with many existing wells for every well drilled. NWN has no dry hole or mechanical failure risk. Also of note, there has never been a well drilled at Jonah that did not produce gas.	Minimal Probability but with no material Impact on NWN
Tax Credits Repealed or Significantly Lowered	[Confidential] ************************************	Uncertain probability, but unlikely to eliminate economic benefit of the Transaction compared to other alternatives, and NWN could avoid negative consequences if they developed.
Future Restrictions on Hydraulic Fracturing	Encana fully fractures wells at time of completion. See response to "Tax Credits Repealed or Significantly Lowered".	Minimal to no risk associated with already earned interests; could halt future investment if event occurred.
Drilling Schedule Halted or Delayed	The agreement provides for make- up provisions in the next quarter and the option to terminate if drilling is more than 10 wells behind schedule during a 2 year period.	Uncertain probability; [Confidential] ******* *********** [Confidential]
Abandonment of Wells	[Confidential]	[Confidential] ***** ******** ******* *****[Confidential]