Witness CCS – 5D RR TN

Exhibit CCS – 5D RR TN

BEFORE THE PUBLIC SERVICE COMMISSION OF UTAH

In the Matter of the	**)**	**Docket No. 07-057-13**
Application of Questar Gas	**)**	**Direct**
Company to Increase	**)**	**Testimony of**
Distribution Non-Gas Rates	**)**	**Thomas J. Norris P.E.**
And Charges and Make	**)**	**For the Committee of**
Tariff Modifications	**)**	**Consumer Services**

April 21, 2008

INCREASED CAPITAL EXPENDITURE FOR INFRASTRUCTURE

DIRECT TESTIMONY

OF

THOMAS J. NORRIS P.E.

ON BEHALF OF

THE UTAH COMMITTEE OF CONSUMER SERVICES

APRIL 21, 2008

Q. PLEASE STATE YOUR NAME AND ADDRESS.

A. My name is Thomas J Norris and my business address is 35 Lincoln St. Andover, MA 01810.

Q. WHO ARE YOU REPRESENTING AND WHAT IS THE NATURE OF YOUR TESTIMONY?

A. I am representing the Committee of Consumer Services and my testimony will address the proposed inclusion of $45 million of feeder line replacement in the Questar Gas Company rate base in this proceeding, Docket 07-057-13.

Q. HOW IS YOUR TESTIMONY ORGANIZED?

A. First I'll outline my qualifications as a pipeline expert, next I'll analyze the Company's rationale for the proposed accelerated feeder line replacement, then I'll show the results of replacing the feeder lines, next I'll do a quick comparative analysis, finally I'll discuss my recommendation and conclusion.

I. QUALIFICATIONS

Q. DESCRIBE YOUR QUALIFICATION AND EXPERIENCE.

A. Attached as an exhibit is a resume of my education and experience. I will provide a brief description of the portions of my resume which are most relevant to the matters which I will testify about.

I have extensive experience in rates and regulatory matters. I was a member of the staff of the New York Public Service Commission, serving as Chief of Gas Rates and Chief of Gas Planning.

Following my tenure with the NYPSC, I joined Tenneco's natural gas pipeline division where I was Vice President of Rates. In subsequent assignments with Tenneco's pipeline division I was Vice President Operations, and Vice President Gas Supply. In my last assignment at Tenneco I was Senior Vice President Major Projects, an assignment that included presidency of Kern River Gas Transmission.

Since my employment at Tenneco ended in 1996 I have been practicing as an independent consultant.

I have testified on numerous occasions in state and federal proceedings involving rates and tariff matters of local distribution companies and interstate pipelines.

I am a professional engineer licensed in the state of New York.

II. QUESTAR'S NEED TO SIGNIFICANTLY ACCELERATE ITS FEEDER LINE REPLACEMENT PROGRAM

Q. DESCRIBE THE FEEDER LINE PROGRAM WHICH QUESTAR GAS COMPANY HAS INSTITUTED.

A. Questar began replacement of its feeder lines which were constructed with reconditioned pipe in 2007 and expects to conclude the program by 2012. At the beginning of the program it had over 300,000 feet (56.8 miles) of reconditioned pipe in service. In 2007 it expended $48.2 million on various feeder line replacements. It is planning to spend $45 million in both 2008 and 2009 on replacements projects. The company indicated that its replacement program is based on a number of considerations. The primary consideration is public safety. System reliability is another consideration as is the need to provide for customer growth. Lastly the program considers the effect of the construction on the convenience to the general public.

Q. DO YOU HAVE ANY COMMENTS ON THESE CONSIDERATIONS THAT WERE USED TO DEVELOP THE COMPANY PROGRAM?

A. In general these considerations are appropriate for a program of this type. However the major underpinning for the program is the notion that due to the age of the reconditioned pipe it should be replaced on an accelerated basis. The federal safety regulations do not permit Questar to continue to operate any pipeline determined to be unsafe. Those facilities determined to be unsafe must be replaced or

maintained to return them to safe operating condition immediately following such determination (49 CFR part 192). Therefore it must be assumed that the FL replacement program does not include pipelines determined to currently be unsafe.

Q. IF THE FL PIPELINES ARE NOT CURRENTLY UNSAFE WHAT IS THE COMPANY POSITION FOR REPLACING THEM DUE TO PUBLIC SAFETY CONCERNS?

A. In response to CCS data request 19.06 asking for identification of lines that might be more likely to be problematic than others Questar responded that "… feeder lines containing reconditioned pipe as having elevated risk vis-à-vis pipelines constructed using current engineering and technology. Risk associated with transmission pipelines can be considered to be the result of two factors, probability and consequence of failure. The consequence of failure is taken into consideration under the U.S. Department of Transportation regulations for transmission pipeline safety through definitions for "high consequence area". "The probability of failure on all feeder lines containing reconditioned pipe is higher due to the existence of aging, reconditioned repairs and steel properties (e.g. lower fracture toughness)."

Q. GIVEN THE POTENTIAL ISSUES WITH RECONDITIONED PIPE IN THE FEEDER LINES HOW HAS THE COMPANY ASSESSED THE SITUATION AND CONCLUDED THAT THE REPLACEMENT PROGRAM INCLUDED IN ITS RATE CASE IS APPROPRIATE?

A. One of the key considerations is “reconditioned repairs”. The company indicated in its response to CCS 19.06 that its historical records do not “describe the precise location or extent of reconditioned repairs, thus it is not been possible to discriminate the possibility of failure of one reconditioned feeder line or location from another.”

Q. DO YOU AGREE WITH THE COMPANY’S CONCLUSIONS?

A. In part. However, I would note that there are other methods for determining pipes that may be at greater risk. For example, as part of the response the company indicated it had a self imposed operating pressure restriction of 250 psig on FL 18, which would indicate some level of concern. The 250 psig is in contrast to the 499 psig MAOP of that line. Nonetheless, FL 18 is not scheduled for replacement until 2010 and that is a commentary on the safety of the feeder line system. In contrast the lines scheduled for replacement in 2008 have had only minimal repairs of a routine nature over the last three years.

Q. HAS THE COMPANY PROVIDED A HISTORY OF NON-SCHEDULED MAINTENANCE ON ITS FEEDER LINES FOR THE PAST THREE YEARS?

A. Yes it has.

Q. CAN YOU SUMMARIZE THE NON-SCHEDULED MAINTENANCE HISTORY OF QUESTAR'S FEEDER LINES FOR THE PAST THREE YEARS?

A. Yes

a. **Feeder Line 4 16" Installed in 1962 Operated at 350 psig**
3 separate repairs to the pipeline coating each estimated to cost less than $1000

b. **Feeder Line 5 16" line installed in 1962 operated at 350 psig** 2 repairs to pipeline coating each estimated to cost less than $1000

c. **Feeder Line 7 6" line installed in 1971 operated at 350 psig**
Replaced section of line at cost of $345,000

d. **Feeder Line 11 12" installed in 1953,1961 and 1966 operated at 350 psig**
3 separate coating repairs each estimated to cost less than $1000.

e. **Feeder Line 12 14” line installed in 1954 and 1963 operated at 350 psig**

3 separate coating repairs each estimated to cost less than $1000.

f. **Feeder Line 13 12” installed 1952 original pipe operated at 350 psig**

Repaired coating at estimated cost of less than $1000.

g. **Feeder Line 18 14” line installed in 1955 operated at 315 psig**

Pipeline rupture. Segment replaced at cost of $108,000.

h. **Feeder Line 19 14” line installed In 1955,1957and 1964 operated at 440 psig**

Numerous repairs Third party damage- sleeve installed

Two coatings repaired at cost of less than $1000 each

Two field repairs of unknown character each estimated to cost less than $1000

Two instances of installation of repair sleeves at estimated cost of $5000 each

Two replacements of 9’ of pipe and one of 14’ costing a total of $11,350

One segment of unspecified length replaced at a cost of $878,000.

A total 10 incidents occurred on FL 19, a number of which arose as a result of an “integrity management dig”.

i. Feeder Line 25 6” line installed 1968 operated at 350 psig

Repair of damage caused by third party excavation at total cost estimated to be less than $5000.

j. Feeder Line 35 16” line installed 1964 original pipe operated at 350 psig

Two incidents of damage due to third party excavation repaired at cost of less than $1000 for each incident

Two coating repairs discovered by “integrity management dig” each costing less than $1000

k. Feeder Line 41 16” line installed 1965 original pipe operated at 350 psig

Repair of damage caused by third party excavation estimated to cost less than $1000

During the three year period a total of 31 repairs were made to the Feeder Lines mostly of a routine nature at minimal cost. Coating repair was common, probably due to the materials used and field fabrication techniques used during the times the pipe was installed.

Q. HOW WOULD FUTURE MAINTENANCE COSTS BE IMPACTED BY THE REPLACEMENT PROGRAM?

A. Apparently very little. In response to CCS 19.08 Questar stated "Typical operation and maintenance activities include atmospheric corrosion inspection, pipeline patrol, marking line locations, line crossing inspection, leak surveys, cathodic surveys and valve inspections. It is not anticipated that these costs will vary significantly from past levels as a result of the replacement program."

However, the response goes on to state that, "Pipeline replacement will reduce future integrity management costs for Feeder Lines 4, 5, and 11. Under the current integrity management program, these pipelines are assessed at seven year intervals. Because the existing pipelines cannot be assessed by internal inspection tools, external corrosion direct assessment (ECDA) surveys were completed on the pipelines from 2005 to 2007. The estimated cost of these surveys was approximately $600,000. Future integrity surveys of the lines can be conducted with internal inspection tools in conjunction with survey of existing upstream segment of Feeder Line 4 at nominal incremental cost of approximately $10,000." However since these lines were surveyed during the 2005 to 2007 period, new surveys will not be required until the period beginning in 2012.

Q. BASED ON THE RECENT REPAIR RECORDS, THE FEEDER LINES #18 AND #19 PRESUMABLY HAVE MORE CHANCE OF PROBLEMS, THAN THE LINES THAT THE COMPANY PROPOSES TO REPLACE IN 2008?

A. That is correct. Based on this information, the Company has not provided adequate evidence to demonstrate that public safety, its stated number one consideration, is primarily driving the replacement program.

Q. PLEASE COMMENT ON THE SECOND CONSIDERATION OF THE REPLACEMENT PROGRAM SYSTEM RELIABLIITY.

A. System reliability is intended to refer to both the need to have a core network of transmission lines available to move gas to areas of the distribution system where it is needed during various times of the day and various seasons of the year. While system reliability is described as a second consideration, Questar has provided no particulars as to how the program addresses this need. Obviously newer pipe installed using modern technology will reduce the probability of a system failure but there is no reason to believe that a failure of the existing pipe is imminent. The maintenance history of the feeder lines would indicate otherwise.

Q. ARE YOU SUGGESTING THAT THE FEEDER LINE REPLACEMENT PROGRAM SHOULD NOT GO FORWARD.

A. Not really. What I am saying is that Questar has not provided adequate evidence or explanation supporting the details of the replacement program. Where the feeder lines are inadequate due to growth or gas supply considerations they will of necessity be replaced in whole or in part. Where the maintenance history indicates a significant problem replacement probably makes sense. For example Feeder Line 19 which operates at 350 to 440 psig, was the subject of numerous non-scheduled maintenance over the past three years and replacing that line would appear to make sense. In fact Questar is planning to replace it in 2009 at an estimated cost of $45 million. Feeder Line 18 suffered a rupture in 2006 and is being operated at 250 psig despite having a MAOP of 499 psig. Feeder Line 18 is not scheduled for replacement until 2010. On the other hand, Feeder Lines 4, 5 and 11 which are scheduled for replacement in 2008 only had non-scheduled maintenance due to need for repairs to external pipe coating discovered during 'integrity management digs'. Questar hasn't disclosed its rationale for the specific lines it designated for replacement in 2008 vs those scheduled to be replaced in later years. On the surface it would not appear that neither safety nor reliability considerations are the driver.

Q. THE THIRD CONSIDERATION GIVEN BY QUESTAR IS TO PROVIDE FOR CUSTOMER GROWTH. HOW DOES THAT FIT INTO THE PROPOSED SCHEDULE TO REPLACE FEEDER LINES?

A. Questar has provided no specific information in this docket as to how its schedule for feeder line replacement fits with additional capacity needs to serve customer growth.

Q. WHAT ABOUT THE LAST CONSIDERATION?

A. Considering the cost of replacing a pipe, the lowest reason on a priority list to replace a section of pipe would be convenience.

III. RESULTS OF THE FEEDER LINE REPLACEMENT

Q. WILL THE REPLACEMENT OF FEEDER LINES 4, 5 AND 11 IN 2008 RESULT IN AN INCREASE IN THE CAPACITY OF THOSE LINES?

A. Yes. The existing lines being replaced are 12", 16"and 18" pipes that are being replaced by 24" pipes. Both the existing segments and the replacement segments are designed to be operated at 354

psig. In a response to CCS 2.02, Questar indicates that the 354 psig pressure limit is based on pressure limitations of its feeder line system in the area south of North Temple Station. There is no indication that the 354 psig MAOP is related to the strength of the pipe being installed. It is quite possible that pipe could be operated at higher pressures but for the pressure limitations of interconnected lines in that area of the system. Installing pipe now which is physically capable of being operated at higher pressures will provide Questar with the ability to increase the capacity of that part of its system later at no additional expense. The incremental cost of higher grade pipe is akin to plant held for future use.

Q. WILL THE FEEDER LINE 4, 5, AND 11 REPLACEMENT PIPES INCREASE THE CAPACITY OF THE QUESTAR SYSTEM?

A. In its response to CCS 2.02 Questar avoided a response to increased capacity by stating that “Feeder Lines 4, 5 and 11 are integral to the Questar Gas high pressure transmission system and as such do not have defined individual capacities.” This is not responsive. The carrying capacity of the existing and replacement lines can be determined using pipeline flow equations regardless of the integrated nature of the system or the pressure limitation.

Q. HOW HAVE YOU EVALUATED THE POTENTIAL BENEFITS OF INCREASED CAPACITY?

A. In the first place Questar would not replace smaller diameter pipe with 24” pipe at considerably more cost unless it provided a benefit commensurate with the cost increase. Second, the limitation on the part of the system in which the replacements are being installed is the 354 psig. Using 354 psig operating pressure a 24” pipe can carry significantly more gas than a 12”, 16” or 18” pipe operated at the same pressure. The carrying capacity of a pipeline is proportional to the square of the diameter. So that in a given segment a 24” pipe could carry 4 times as much gas as a 12” pipe everything else being equal. As long as the pressure in the 24” pipe did not exceed 354 psig the operations of the interconnected pipes would not be adversely affected. Because the system is integrated the capacity of the whole is increased by the replacement of small diameter pipe with larger diameter pipeline. Questar acknowledges this in CCS 2.02 when it states, ”System operation will be enhanced by significantly increasing feeder line pressures under peak load conditions throughout the Salt Lake valley and west in the Toole and Grantsville areas. The pressures in the Toole area increase by almost 30 psig on a peak day.” That is another way of saying that maintaining the same operating pressure of the integrated feeder line system with larger diameter replacement pipe

in FL 4, 5 and 11 would allow additional gas supply to be delivered. The replacements increase system capacity.

Q. IS A DRIVER FOR QUESTAR'S FEEDER LINE REPLACEMENT INCREASED SYSTEM CAPACITY?

A. It is certainly a product of the replacement and may well have been a driver in the replacement schedule adopted by Questar.

IV. COMPARATIVE REVIEW

Q. HOW DO THE PROJECTED COSTS FOR 2008 PROJECTS COMPARE WITH QUESTAR'S HISTORICAL EXPERIENCE?

A. During the period 2002 through 2007 Questar replaced 156,937 feet of Feeder Line 26, a 24" pipe, at a cost of $40.8 million or $1.37 million per mile. In comparison Questar is projecting $45 million per year for five years, $225 million, to replace approximately 56.8 miles of feeder line a unit cost of $3.96 million per mile.

Q. ARE THERE FACTORS WHICH EXPLAIN THE INCREASE IN COSTS FROM THE HISTORICAL PERIOD?

A. Yes. There are factors which help explain some of the large increase in cost per mile. While the 24" diameter of line 26 is the largest diameter of the feeder line system and therefore the most expensive to construct, other factors influence cost. For example steel mill products increased 74% from 2002 to 2007. Pipeline construction in the Rocky Mountain region has increased considerably and as a result contractor costs have increased significantly. In addition, specific location can have a significant impact on cost. The Phase VI of the FL 26 project constructed in 2007 cost twice as much per mile as Phase V-b also constructed in 2007.

V. CONCLUSIONS AND RECOMMENDATIONS

Q. BASED ON YOUR REVIEW OF THE INFORMATION PROVIDED BY QUESTAR IN SUPPORT OF THEIR RATE FILING HOW WOULD YOU PROPOSE TO TREAT THE REPLACEMENTS OF FEEDER LINES 4, 5 AND 11 FOR RATE PURPOSES?

A. The rate making process is one of balancing investment and related operating expenses with revenues. If an investment has the potential to increase revenues then it should be included in rate

base only to the extent that the revenues to be derived from its utilization are also included. With respect to the feeder line replacements scheduled for 2008 those lines will be capable of moving significantly greater quantities of gas than the lines they are replacing. For example the 24" line that replaces a 12" line is capable of moving about four times as much gas at the same pressure drop. The 24" line replacing 16" line is capable of moving over twice as much gas under the same operating conditions. The 24" line replacing 18" pipe is capable of moving about 1.75 times as much gas. The actual increase in gas capacity will in actuality be somewhat greater than the amounts cited above since new pipe will be less rough internally. The choice of 24" pipe is based on anticipation of increased gas flow. A recent Questar IRP indicated that replacement of 2 miles of 16" with 24" between 27th E and 33rd S would increase the take away capacity from the Little Mountain gate by 46,000 dth/d

Q. HOW WOULD YOU ADDRESS THE INCLUSION OF THE 2008 FEEDER LINE REPLACEMENTS IN RATE BASE GIVEN THE INCREASED CAPACITY RESULTING FROM THE LARGER DIAMETER OF THE REPLACEMENT PIPE?

A. Given that Questar has not provided adequate justification that safety or system reliability are driving the feeder line replacement

program, it appears that increased system capacity is one of the primary benefits and drivers. Therefore, I would allocate the cost of the replacement pipe between replacement capacity and increased capacity. The cost associated with increased capacity would be included in rate base only after the utilization of the increased capacity was recognized in rates. In other words the increased capacity must be shown to be used and useful in providing service to Questar Gas' customers.

Q. DOESN'T YOUR APPROACH UNFAIRLY PENALIZE QUESTAR FOR BEING PROACTIVE IN DEVELOPING A PLAN TO REPLACE ITS AGING FEEDER LINES?

A. Not in my opinion. Questar has determined to replace its feeder lines over a five year period at a cost of about $225 million. Its primary rationale for doing so is the age of the feeder lines and the fact that many of them were constructed with reconditioned pipe from the 1929 era. Pipe materials and construction techniques have advanced considerably since the time these lines were installed. Nonetheless, Questar's history with these lines doesn't indicate excessive maintenance or problems with their integrity. Moreover, the line with the greatest number of maintenance issues over the past three years, line 19, is not scheduled for replacement until 2009. Line 19 is operated at over 400 psig in contrast to the 350

psig for the lines scheduled for replacement in 2008. As I indicated earlier FL 18 which had experienced a rupture and is currently being operated at about 50% of its MAOP is not scheduled for replacement until 2010. I mention this not because I'm questioning Questar's judgment but because I believe that the 2008 replacements which increase system capacity were chosen for their beneficial impact on Questar's operating income. Questar's only explanation for choosing to replace 12", 16", and 18" pipe with 24" pipe is that it would reduce future maintenance costs by allowing for use of internal inspection tools. They could have accomplished that by use of 18" or perhaps even 16"diameter pipe instead of 24".

Q. WHAT ARE YOUR RECOMMENDATIONS FOR RATE TREATMENT OF THE FEEDER LINE PROJECT?

A. Questar's stated reasons for this accelerated feeder line replacement do not hold up under scrutiny. The Company has not provided evidence supporting this level of proposed increased spending and rate base buildup and absent an evidentiary record the Company should not receive the requested funding. However, I am not recommending a financial adjustment at this time, presuming the Company can provide the necessary evidence. In the case that this evidence is not forthcoming, I recommend excluding a portion of the replacement cost of FL4, 5 and 11 (the

planned feeder line replacement for the test period) based on the marginal cost difference associated with the larger capacity of the new lines relative to replacing the old lines at the same capacity. In my estimation, this cost differential would be at least twenty percent.

Q. ANY FINAL COMMENTS?

A. Yes. It is evident that by replacing these feeder lines the Company's capacity is increased and therefore, the potential for increased operating income.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes