Exhibit QGC-3.0

BEFORE THE
PUBLIC SERVICE COMMISSION OF UTAH

Questar Gas Company) Docket No. 02-057-XX

PREPARED DIRECT TESTIMONY OF
J. PETER WILLIAMSON
ON BEHALF OF
QUESTAR GAS COMPANY

May 3, 2002

Q. Please state your name and business address.

A. My name is J. Peter Williamson. My business address is 89 Main Street, West Lebanon, New Hampshire 03784, and P.O. Box 5160, Hanover, New Hampshire 03755.

Q. What is your occupation?

A. I am the Laurence F. Whittemore Professor of Finance Emeritus at the Amos Tuck School of Business Administration, Dartmouth College. I have retired from teaching and continue to act as a consultant to various organizations, both business and nonprofit institutions, on matters pertaining to corporate finance and investments. I have testified in numerous proceedings before the Federal Energy Regulatory Commission and other regulatory agencies regarding cost of equity, capital structure and other financial matters. My education and qualifications are set out in some detail in my Exhibit QGC-3.1.

Q. What is the purpose of your direct testimony in this case?

A. I have been asked to verify the cost of common equity for Questar Gas Company ("Questar Gas" or "the Company").

Q. Please identify the exhibits that have been marked as Exhibits QGC-3.2 through QGC-3.8.

A. I prepared these exhibits in connection with my research and analysis involved in determining the cost of equity capital for Questar Gas.

SUMMARY

Q. Please summarize your direct testimony.

A. My overall approach to determining the appropriate return on common equity for Questar Gas was to determine the required return on common equity for a number of publicly traded proxy companies, and then to use this cost to determine the cost of equity for Questar Gas. It is impossible to determine directly the cost of equity for Questar Gas because Questar Gas has no stock that is publicly traded. Questar Gas is a subsidiary of Questar Corporation

In determining the cost of common equity for the proxy companies, I relied primarily on the Discounted Cash Flow (DCF) method, and used for corroborative purposes the CAPM and Risk Premium methods.

Q. Please describe your use of the DCF method.

A. I first applied the DCF method to nine gas distribution companies. I shall describe later the selection of these proxy companies. I determined the dividend yields for the proxy companies, as the DCF model requires. Then I turned to strictly forward-looking estimates of growth. I made use of the analysts' earnings growth projections reported by I/B/E/S International, Inc. (IBES). I believe that the combination of dividend yields and IBES-reported earnings growth forecasts are

the most reliable measures of the cost of common equity for use in the DCF model. I also made use of earnings growth forecasts from *The Value Line Investment Survey* (Value Line). And I used forecasts from Value Line forecasts of ROE, earnings and dividends for 2003-2005 to derive an internal growth rate, or "retained earnings" growth rate. I averaged the results from these three applications of the DCF method. The average using the medians of the nine costs of equity for each of the three applications was 12.6%. I believe that the medians are more appropriate than the means, and I am accustomed to relying on the medians. But the average of the three means was **12.2%**.

I also performed the DCF analyses excluding Questar Corp. from the set of proxy companies, and the average of the medians was 12.77%, while the average of the means was 12.21%. Finally, I determined separately the cost of equity for Questar Corp. alone, using the three DCF methods, and the average for the three methods was 12.15%. These results are all tabulated in Exhibit QGC-3.8.

My final conclusion was a cost of **12.6%** for Questar Gas.

Q. Please describe your use of the CAPM and Risk Premium methods.

A. For the CAPM methodology, I examined beta coefficients published by Value Line and those published by Ibbotson Associates. The former are generally in the range .60 to .70 for my set of proxy companies. Value Line, however, does not disclose its methodology for determining beta coefficients, nor does it disclose any measures of reliability. Ibbotson Associates describe their methodology in detail, and I find the methodology entirely satisfactory. They also provide data with respect to reliability. The latter indicate that at the present time beta coefficients for these companies are quite unreliable. I shall discuss the reliability issue in more detail later. Nevertheless, since the Commission appears to have relied on Value Line betas in rate proceedings, and although I do not have confidence in beta coefficients at the present time, I used the average Value Line beta coefficient to

perform a CAPM analysis and obtained a cost of 12.3%. For Questar alone, using the Value Line beta coefficient gave a cost of equity of 13.1%.

For the Risk Premium method (which does not make use of betas), I derived a cost of equity of 16.2% from the data I had used for the CAPM analysis, and a cost of 13.1% from use of the Ibbotson historic risk premium and the current yield on long-term U.S. government bonds. I believe that both results confirm that my recommended cost of equity derived from the DCF analysis is conservative.

Q. How did you reach your final conclusion?

A. I believe that the risk in Questar Gas is approximately the average risk of the proxy companies. I note that the past Utah requirement that Questar's rates be set on the basis of a historical test year exposes the company to a substantially higher regulatory risk than that of most of the proxy companies. I therefore concluded that a conservative determination of the cost of equity for Questar Gas is **12.6%.**

DCF METHOD

Q. Please explain the DCF method.

A. The origin of the method can be found in the work of John Burr Williams, published in 1938 and entitled *The Theory of Investment Value*. Williams said the value of a share of stock is the discounted present worth of all the dividends to be received on that share. The equation he set out (on pages 55 and 56 of his book) is:

$$\text{Share Value} = \text{Div}_1 / (1 + i) + \text{Div}_2 / (1 + i)^2 + \text{Div}_3 / (1 + i)^3 + \ldots$$

where Div_1 is the dividend to be received next year; Div_2 is the dividend to be received in the following year, and so on until the dividends cease. The denominator in each term in the right hand side of the equation contains a discount factor, and i is (in Williams' words) the "interest rate sought by the investor." He

went on to point out (on pages 87 and 88 of his book) that if dividends are expected to grow at a constant rate *g*, then $Div_2 = Div_1(1 + g)$ and so on, and $Div_1 = Div_0(1 + g)$, where Div_0 is the dividend in the year just past. Further, if we assume that the stream of dividends is infinite then the equation above becomes:

$$\text{Share Value} = Div_0(1 + g) / (i - g).$$

Williams also considered cases in which dividends are not expected to grow at a uniform rate and produced somewhat more complicated equations incorporating changes in the rate of growth.

Q. Is it the Williams equation you used in your determination of the cost of common equity for Questar Gas?

A. I used the equation in a different form. Williams was concerned with determining the value of a share of stock. His starting point was the investor's desired rate of return.

Professors M. J. Gordon and E. Shapiro turned the Williams equation around to the form generally recognized as the DCF equation for the cost of common equity. In an article published in 1956 ("Capital Equipment Analysis: The Required Rate of Profit," 3 *Management Science* 102, October 1956), they pointed out that if we *start* with a figure for the value in the Williams equation we can *calculate* the investor's desired rate of return. If the *market price* is used for value, then the equation will give us the rate of return required by the *market*.

The Gordon and Shapiro version of Williams' constant growth equation is:

$$\text{Share} = \text{Price } P_0 = Div_0 / (k - g),$$

so that

$$k = D_0 / P_0 + g ,$$

where k is the rate of return required by the market (not necessarily by any particular investor), D_0 is the dividend in the year just ended and P_0 is the price at the point in time when k is determined.

Q. Did you use the equation above in your determination of the cost of common equity for Questar Gas?

A. Not quite. There is a small difference between the Gordon and Shapiro equation:

$$k = D_0 / P_0 + g$$

and the Williams equation, which can be rewritten as:

$$k = D_1 / P_0 + g$$
$$= D_0(1 + g) / P_0 + g$$

The difference is due to Williams' assumption that dividends are paid once a year at the year end, while Gordon and Shapiro assumed that they are paid continuously. Neither assumption is quite correct, and I believe that an appropriate third formulation, one that appears to be used by the Commission, is:

$$k = (1 + g)y + g ,$$

where

k = market required rate of return,

y = current dividend yield (current annual dividend divided by current market price) = D_0 / P_0,

g = growth rate.

THE USE OF PROXY COMPANIES

Q. Please explain the use of proxy companies, rather than relying on Questar Gas itself, for the actual application of the DCF model.

A. The "market based" DCF model can only be applied to companies for which the common stock is publicly traded. Questar Gas is not publicly traded, although its parent company, Questar Corp., is. An argument can be made for relying entirely on Questar Corp. itself, but I believe that it is unwise to use a single company for the determination of the cost of capital because of random variations

in the data for one company. Aggregating the data for several companies is more likely to satisfy the assumptions of the constant-growth DCF model and leads to a much more reliable determination of the cost of capital.

Q. How did you choose your particular set of proxy companies?

A. I began with the Value Line set of gas distribution companies, as apparently did the witnesses in Docket No. 99-057-20. I also examined Questar Corp. as a potential proxy company. Questar Gas is a subsidiary of Questar Corp., as is Questar Pipeline. Both subsidiaries have S&P bond ratings of A+. Questar Corp. itself has no bond rating because it does not issue long-term debt. Particularly since the two subsidiaries have the same bond ratings, indicating approximately the same financial risk, I believe it is appropriate to use Questar Corp. as a proxy company. However, I have performed DCF analyses both including and excluding Questar. This is largely because all of the witnesses in Docket No. 99-057-20 excluded Questar Corp. from their proxy company lists, although they relied heavily on the risk characteristics of the parent company. It appears illogical to me to rely on the parent risk characteristics in choosing proxy companies and then to exclude the parent from the set of proxy companies.

The set of risk characteristics I used as the basis for choosing the proxy companies is the bond rating of A+ (which, of course, is actually the rating for Questar Gas), and two risk characteristics tabulated by Value Line: the safety ranking and the financial strength ratings for Questar Corp. These are shown in my Exhibit QGC-3.2.

I determined that seven companies from the Value Line distribution group had bond ratings in the A range, and also Value Line ratings that were identical or very close to those for Questar Corp. I excluded those companies that did not have a substantial part of their revenue derived from gas operations (relying on C.A. Turner Utility Reports for the data). And I excluded companies that had revenues

and a mix of revenue sources very different from that of Questar Corp.

Since Questar Corp itself is not included in the Value Line distribution group but in the diversified gas group, I also examined that group and identified Equitable Resources and National Fuel Gas as also matching closely the risk characteristics of Questar Corp. Both companies are regarded in the investment community as primarily distribution companies. (All three companies are classified as distribution companies in the Turner Reports.) I dropped Equitable Resources after finding that, on the basis of the DCF model, its indicated cost of equity was far in excess of the average. In short, it was an "outlier." I dropped Laclede Gas Company because its growth forecast from IBES was so low as to make it also an "outlier." I note here that exclusion of these two outliers does not affect any of the calculations that are based on medians, because one outlier is above and one is below the median. My final recommendation is based on median values.

The resulting set of nine companies is shown in Exhibit QGC-3.2.

CRITERIA TO BE SATISFIED FOR THE DCF METHOD

Q. What criteria are to be used for the determination of the cost of common equity?

A. The Supreme Court has established the criteria in *Bluefield Water Works v. PSC*, 262 U.S. 679, 692-93 (1923), and *FPC v. Hope Natural Gas Co.*, 320 U.S. 591, 605 (1944). The utility must be allowed a rate of return commensurate with returns on investments in other enterprises having corresponding risks, one that assures confidence in the utility's financial integrity, and one that maintains its credit and enables it to attract capital.

Q. Do these criteria require a methodology that is based on measurement of actual investor expectations?

A. Yes. The regulated utility must be able to attract investment capital in a free

and competitive capital market. It must offer investors the prospect of a competitive rate of return, and its allowed rate of return must therefore reflect investor expectations. Equity capital is supplied by investors.

DCF MODEL MARKET BASED

Q. The DCF model that you have set out in your testimony is: $k = (1 + g)y + g$, where $y = D_0 / P_0$. What is the basis for stating that the DCF model that you have described is "market based?"

A. The element *y* in the formula is the dividend yield actually available in the market place for a particular stock. It is, as I have stated above, the dividend per share, a known quantity for any particular stock, divided by the quoted market price of a share of stock, also a known number and one established in a free market where shares are traded frequently. There is rarely any significant dispute over the value of *y* to be used in the DCF model in any particular case.

For the value of *g* to be "market based," it must reflect the growth rate expected by the investment community for the particular company.

DIVIDEND YIELD

Q. How did you determine the dividend yield for each of your proxy companies?

A. I averaged the high and low prices for each company over the most recent three months and divided the average price into the annualized dividend to arrive at a yield for each company. The months were January through March 2002. The prices were taken from Dow Jones Interactive and the most recent dividends from the March 22, 2002 Value Line reports. The prices, dividends, and yields are shown in Exhibit QGC-3.2.

Q. Why did you use three-month averages?

A. I believe the Commission generally favors the use of three-month averages

to compute yields for use in the DCF model. The three-month averaging avoids the danger in a set of spot prices that may reflect quite transient or temporary effects, and it also avoids the disadvantage of using stale data that can result from averaging over a longer period.

INVESTOR EXPECTED GROWTH

Q. How should the growth rate *g* be determined for use in the DCF equation?

A. First, it is important to note that the rate *g* is the growth rate *expected* by the market—that is, by investors as a whole. It is not necessarily a correct growth forecast; the market may be wrong. But the cost of common equity to a regulated enterprise depends upon what the market *expects*, not upon precisely what is actually going to happen.

Since the DCF method requires the use of growth rates expected by investors, it is important to make use of actual forecasts of *g*. In order to determine the growth rate *g*, I made use of two sources of analysts' forecasts. First, I used analysts' earnings forecasts reported by IBES. I also examined reports published by Value Line. These reports include explicit growth forecasts for earnings and dividends.

Q. Why is it appropriate to make use of growth forecasts of securities analysts?

A. There is empirical evidence that analysts' forecasts are the most reliable representation of investor growth expectations for use in the DCF model. I shall discuss this evidence.

IBES Growth Forecasts

Q. Please explain how you made use of IBES growth forecasts.

A. IBES is a service sold by subscription. The forecasts are tabulated and distributed to subscribers. I made use of the most recent five-year earnings growth

forecasts, published on March 14, 2002, for the nine proxy companies that I have used.

Q. Why are the IBES growth rate forecasts relevant for the DCF methodology?

A. The DCF model requires investor-expected growth rates. In theory, it might be appropriate to survey investors to determine what growth they anticipate. In practice, it would be difficult to carry out such a survey, and the results might well be biased if the subjects of the survey knew the purpose for which it was being conducted. The analysts from which IBES collects forecasts are professionals, exercising their best judgment as to the future growth in earnings of the companies they follow. At least four analysts contributed to the IBES reported forecasts for each of my nine companies, and the average number was five. Their analyses are provided as a service to investors and should therefore serve as a good measure of the expectations investors have formed.

Q. Is IBES the best source of professional forecasts of growth rates?

A. I believe it is at the present time, although Zacks Investment Research is also well known in the investment community. I believe IBES draws on more professional forecasts than any other similar service except perhaps for Zacks. The Federal Energy Regulatory Commission relies on IBES-reported growth rates.

Q. Are the earnings growth forecasts reported by IBES strictly five-year forecasts?

A. IBES identifies them as "long-term growth" forecasts, although they are based on five-year projections. So far as investors are concerned, I believe that a five-year forecast is regarded as "long term."

Q. Are the IBES forecasts reliable as a measure of investor growth expectations

for use in the DCF model?

A. Empirical research results indicate that they are. In an article entitled "Using Analysts' Growth Forecasts to Estimate Shareholder Required Rates of Return" in *Financial Management*, Spring 1986, pages 58-67, Robert S. Harris reported tests of IBES-reported forecasts as sources of the growth expectation in the DCF model. He concluded that the use of the IBES data "offers a straightforward and powerful aid in establishing required rates of return either for corporate investment decisions or in the regulatory arena". More recently, with two co-authors (David A. Gordon and Lawrence I. Gould), Professor Myron Gordon published the article "Choice Among Methods of Estimating Share Yield," *Journal of Portfolio Management*, Spring 1989, pages 50-55, in which the authors concluded that IBES-reported forecasts were the most reliable source of investor-expected growth rates.

Q. Please continue.

A. The table in Exhibit QGC-3.2, shows for each of the nine companies the median of the analysts' five-year earnings growth forecasts, and the number of analysts for each forecast. It also shows the dividend yield for each company. And the table shows for each company the sum of yield and growth, using the factor (1 + *g*) to adjust yield, which is the cost of capital for each company from the DCF model. I discussed above the (1 + *g*) adjustment. The median value of the costs is **11.68%** and the mean is.**11.23%**.

VALUE LINE GROWTH

Q. Please explain Value Line.

A. Value Line reports on about 1700 companies, mailing to its subscribers a weekly report. Reports on each company are provided four times a year. The most recent report, the one I have used, was published on March 22, 2002.

Q. Why are Value Line reports relevant to the DCF methodology?

A. Since Value Line is read by a large number of subscribers, it can have an influence on investors, and its opinions can be representative of those of investors generally.

Q. Is Value Line as reliable a source of investor expectations for individual companies as IBES?

A. I do not believe so. Value Line generally assigns no more than one analyst to a company, while IBES, as I have noted, collects forecasts from several analysts for each company.

Q. What use did you make of Value Line earnings growth data?

A. Exhibit QGC-3.3 repeats the calculations of QGC-3.2, substituting Value Line earnings-growth for IBES-reported growth rates.

Q. What do you conclude from the table in your Exhibit 5.3?

A. The median value of the costs of equity using Value Line data is **13.80**% and the mean is **13.77**%.

Q. Value Line also includes expected growth in dividends in its reports. Did you make use of dividend growth forecasts to determine the cost of equity for your proxy companies?

A. I show in Exhibit QGC-3.4 the results of replacing the Value Line earnings growth forecasts by dividend growth forecasts. These results are not consistent with the expected growth rates in earnings. Indeed, they make no sense, and I did not rely on them.

Q. What is wrong with dividend growth forecasts in the DCF model?

A. It can be seen from the earnings and dividend growth rates in Exhibits QGC-3.2 and QGC-3.3 that for all of the proxy companies the dividend growth expectations are well below the earnings growth forecasts. This means that the payout ratios, that is, the ratios of dividends to earnings, are expected to decline significantly over the next few years. In Exhibit QGC-3.5, I show that for Questar Corp. payout ratios have indeed been declining in recent years. But this decline cannot be a reasonable long-term prediction, because the result would be a steady reduction of the dividend yield; this is not a realistic outcome.

Earning power is the basis for dividends. Managements of corporations control the dividends, within bounds that are determined by earnings. Earnings are not *generally* discretionary with managements, as dividends are, and investors are primarily interested in earnings rather than dividend projections. Value Line is the only source I know of for dividend growth forecasts; neither IBES nor Zacks publish dividend growth forecasts. Value Line's dividend growth forecasts cannot be relied on as measures of investor-anticipated growth for use in the DCF model. They lead to cost-of-equity estimates of 6% to 7%. These values clearly do not represent the cost of equity capital for gas-distribution companies.

HISTORICAL GROWTH

Q. Does your determination of growth expected by investors take account of historical data?

A. Yes. The growth forecasts I have used in applying the DCF method, those collected by IBES and those published by Value Line, are the work of professional analysts who can be expected to have made use of all relevant sources of information, including both earnings and dividend history for the nine companies. So, in using analysts' forecasts, I have incorporated historical growth in my analysis.

INTERNAL GROWTH

Q. Did you consider any other method for determining growth rate expectations for gas pipeline companies?

A. Yes. I have used another method that is sometimes called the implied growth rate or internal growth rate method. This method is set forth in many financial textbooks as a theoretical method by which to estimate future dividend and earnings growth.

Professor Myron Gordon proposed the method many years ago, and provided an interesting theoretical basis for it. This is the model $g = b \times r$, where g is expected growth, b is the earnings retention ratio, and r is the rate of return on book common equity. Later, Professor Gordon co-authored an article (to which I referred earlier, in connection with IBES growth forecasts) in which he concluded that IBES forecasts are a more reliable source of growth expectations than is his model for the DCF methodology. However, the model is still in use, and it has been used before by witnesses before the Commission.

Q. How did you use the model and what results did you reach?

A. The model is reflected in my Exhibit QGC-3.5. I have tabulated the ROE for each proxy company, forecasted by Value Line for 2005-2007, as well as the dividend and earnings per share for the period. The portion of earnings retained for reinvestment in the company is:

(earnings per share – dividends per share) / (earnings per share).

This ratio is multiplied by the ROE forecast to obtain the growth rate. In the growth forecast column I use this calculation, incorporating the Value Line forecasts for each company.

Q. What are the results from Exhibit QGC-3.6?

A. The indicated median cost of equity is 12.36% and the mean is 11.62%.

Q. You have said that you also performed your DCF analyses with a set of only eight proxy companies, with Questar Corp. excluded. What were your results?

A. For the model using IBES-reported growth rates the median cost of equity was 11.60% and the mean was 11.16%. For the model using Value Line earnings growth rates, the median was 14.22% and the mean was 13.95%. For the model using the internal growth method the median was 11.76% and the mean was 11.53%. These results can be directly derived from Exhibits QGC-3.2, 5.3 and 5.5.

Q. What were the costs of equity for Questar Corp. alone?

A. For the same three models they were 11.79%, 12.30% and 12.36%. I show all of the results for the DCF method in Exhibit QGC-3.8.

SUMMARY OF DCF ANALYSES

Q. What applications of the DCF method did you rely on, and what are your conclusions?

A. I relied on the DCF yield plus growth model, making use of three different sources of growth: IBES-reported growth rates, Value Line forecasts of earnings growth rates, and internal growth rates derived from Value Line forecast data. I made use of a set of nine proxy companies and repeated the analysis for a set of eight, with Questar Corp. excluded. I also repeated the analysis for Questar Corp. alone. My results are shown in Exhibit QGC-3.7.

My conclusion is that the best guide is the average of the median results from the three methods applied to the set of nine proxy companies. My determination of the cost of equity for Questar Gas is 12.6%.

THE CAPITAL ASSET PRICING MODEL (CAPM)

Q. Please describe the CAPM.

A. The CAPM is a theory based on the proposition that investors are averse to taking risk, and will take it only if they expect to be adequately compensated for the risk by extra rate of return. This relationship is a familiar one, but the CAPM goes further. It postulates that only non-diversifiable risk contributes to expected rate of return. That is, since it is possible for an investor to assemble or participate in a highly diversified portfolio of investments, there is no reason for the investor to expect to achieve an unusual rate of return on an investment the risk of which can be diversified away. The risk that *cannot* be diversified away—non-diversifiable, or "systematic," risk—is a risk that every investor must face and, according to CAPM theory, is the only risk that gives rise to an expected rate of return above the rate one would expect on a risk-free investment.

Q. Please explain non-diversifiable risk.

A. The measure of non-diversifiable risk in CAPM terms is the so-called beta coefficient of an investment. The beta coefficient is an index of the relative sensitivity of the rate of return on the investment being analyzed to the rate of return on all risky investments. As a practical matter, we generally represent this latter return by the return on a broad stock market index.

A stock with a beta of 1.00 moves up and down equally with the market—its risk is the same as the market risk. A beta greater than 1.00 indicates movement greater than movement of the market and hence risk greater than market risk. A beta below 1.00 indicates risk below market risk. Beta coefficients have become a familiar measure in the investment community. Value Line includes beta coefficients in the data it publishes quarterly for gas companies, and I believe that witnesses before the Commission have often made use of these betas.

Q. Are the beta coefficients published currently by Value Line reliable measures of market risk in the proxy companies?

A. I believe not, and I shall discuss this point later in my testimony. However, since Value Line is read and probably relied on by many investors, and because the Commission has used Value Line betas in the past and may wish to consider them in the current case, I have included Value Line betas in my Exhibit QGC-3.7. The exhibit, however, I use primarily to show that beta coefficients at the present time are unreliable. For this purpose, I use the beta coefficients published by Ibbotson Associates and the statistics that accompany them.

Q. Please explain your use of beta coefficients published by Ibbotson Associates.

A. As I have noted, I do not believe that the Value Line betas are reliable. Value Line does not disclose exactly how its betas are calculated. And Value Line does not disclose any measures of the statistical reliability of those coefficients. Most witnesses in my experience accept the Value Line betas without questioning their reliability.

Ibbotson Associates, on the other hand, calculates the betas exactly as I believe they should be calculated, performing a linear regression on 60 months of risk premium for a stock (the stock return less the risk-free rate) against 60 months of market risk premium (the rate of return on the S&P 500 composite stock index less the risk-free rate of return). Those are the Ibbotson betas tabulated on Exhibit QGC-3.7 as of June 30, 2001 (the most recent for which I have an Ibbotson report). In addition, Ibbotson includes in its reports measures of the statistical reliability of its betas.

Q. Please explain the measure of statistical reliability of the betas.

A. The Ibbotson betas are derived from a linear regression, and the "R squared" that I tabulate is a measure of the fraction of the movement in a stock that is explained by movement in the index. An R-squared of 1.00 indicates that the movement in the stock price can be entirely explained by the movement in the

index. Most of the values for R-squared in my table are zero or close to zero, indicating that none, or almost none, of the movement in the stock price is related to movement in the index, that is, in the stock market as a whole. Only one R-squared in the exhibit approaches a value high enough for the beta to be taken seriously. This is the beta for Questar Corp., and the 0.33 value is not encouraging.

Q. What conclusion do you draw from the statistical test?

A. The result of this testing is a very strong confirmation that the beta coefficients for the proxy companies are simply not reliable as a risk measure to be used in the CAPM.

Q. If, despite the evidence that beta coefficients for the proxy companies are not reliable at this time, you were to use the Value Line betas in a CAPM model, what would be your conclusion?

A. Application of the CAPM requires a risk-free rate. I believe the best choice at present is the yield on long-term U.S. government bonds, and that is approximately 5.7%. Next we need an expected return on the "market," I believe the best choice is the expected return on the S&P 500 (Composite) Index.

The most recent yield on the S&P 500 Index is 1.4%. The most recent growth forecast, from IBES, is 14.8%. Simply applying the DCF model by adding the two numbers gives 16.2% as the expected return. This is approximately the same expected return indicated by the yield and expected growth for the Index for several years now. Using the average Value Line beta (from my Exhibit QGC-3.7), I calculate the indicated return as:

$$5.7\% + 0.63 \times (16.2 - 5.7) = 12.3\%.$$

For Questar Corp. alone, using the Value Line beta of 0.70, the indicated return is:

$$5.7\% + 0.70 \times (16.2 - 5.7) = 13.1\%.$$

RISK PREMIUM METHOD

Q. Did you make use of the risk premium method?

A. The CAPM is a version of the risk premium method. The CAPM adds to the risk premium method the use of beta coefficients to translate the expected return on the market to an expected return for a specific stock or set of stocks. The risk premium indicated in my CAPM model is simply 16.2 – 5.7 = 10.5%. Adding the 10.5% to the yield on long-term U.S. government bonds gives 16.2% as the expected return on the market.

Q. If you were to rely on the risk premium from Ibbotson Associates, what result would you reach?

A. The most recent risk premium from the Ibbotson Associates Yearbook for 2001 is 7.4%. Adding this premium to the 5.7% yield on long-term U.S. government bonds gives 13.1% as the expected return on the market.

Q. Is the 13.1% more reliable than the 16.2% figure?

A. No. the Ibbotson premium is simply the average of 76 years of difference between stock returns and bond returns. It is not directly related to investor expectations as of today, as is the 16.2%, and hence it is not as closely related to the capital attraction standard of *Hope* and *Bluefield*.

Q. What is your conclusion from your risk premium analysis?

A. The analysis indicates that the 12.6% cost of equity I derived from my DCF analyses is a conservative figure.

COST OF COMMON EQUITY FOR QUESTAR GAS

Q. What capital structure is Questar Gas using for purposes of determining the

cost of capital in this proceeding?

A. I am informed that it is 52.6% equity and 47.4% debt.

Q. What are the capital structures of your proxy companies?

A. These are set out in Exhibit QGC-3.9. I calculated them from Value Line data for the year 2002. The average is 49% common stock and 51% debt.

Q. How does the equity-to-debt ratio of Questar Gas compare to the average?

A. It is a little higher.

Q. Does the equity-to-debt ratio of Questar Gas indicate that its cost of equity capital is below the 12.6% that you have determined from the set of proxy companies?

A. I believe not. The difference between 52.6% and 49% is very small, and the bond rating for Questar Gas identifies the company as of average risk. A major factor in the determination of bond ratings is the capital structure.

Q. What rate of return on equity is Questar Gas proposing in the present proceeding?

A. That rate is 12.6%, the cost figure I derived from my DCF analysis.

Q. Please explain your conclusion.

A. I believe the risk in Questar Gas, as measured by the bond rating and other risk measures, is very close to the average for the proxy companies, as can be seen from Exhibit QGC-3.2.

Q. Does this complete your prepared direct testimony?

A. Yes, it does.