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THE WEAK FORM EFFICIENT MARKET HYPOTHESIS: AN EMPIRICAL TEST

by

© WILFRED CHOO CHENG TONG

A THESIS

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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research, for acceptance, a thesis entitled THE WEAK FORM EFFICIENT MARKET HYPOTHESIS: AN EMPIRICAL TEST submitted by WILFRED CHOO C. TONG in partial fulfilment of the requirements for the degree of Master of Business Administration.

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ABSTRACT

The focal point of this study is the investigation of the weakly efficient market hypothesis. This study also proposes to examine the risk associated with the investment strategies under consideration.

In order to reach conclusions concerning these two goals it is necessary to analyze the daily closing price series for twenty common stocks listed and traded on the Toronto Stock Exchange.

The study examines the profitability of the "naive" filtering, filtering around an average long position and the buy-and-hold policy.

The treatment of various parts of the thesis is briefly outlined in the introductory chapter where the sequence of the chapters is also indicated.

ACKNOWLEDGEMENTS

I would like to express sincere gratitude to my supervisor, Professor Seha M. Tinic, whose supervision and critical comments greatly improved the quality of the thesis. My thanks also go to Professor Steve Beveridge. His constant willingness to lend assistance and his encouragement are much appreciated. I would also like to extend my gratitude to Dr. E. Nordbrock for serving on the committee.

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CHAPTER I

INTRODUCTION

Purpose and Scope of the Study

This thesis deals with the analysis of the weakly efficient market hypothesis[1] where the hypothesis postulates that current security prices "fully reflect" information on economic benefits implied by historical price sequences.

Lately, empirical studies of the efficient market hypothesis have employed direct testing of various trading rules. This involves the measurement of profit which provides a meaningful yardstick to gauge the performances of various trading rules and the buy-and-hold policy. One such study is the work of Fama and Blume[2]. Their filter tests uncovered evidence of persistent positive dependence in a series of common stock price changes[3]. These systematic tendencies may or may not be consistent with the weak submartingale efficient market hypothesis.

Financial analysts and Economists share divergent views

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1 Note: we are concerned with the allocational efficiency of the stock market.

2 E.F. Fama and M.E. Blume, "Filter Rules and Stock Market Trading", Journal of Business, Vol. 39, No. 1 (January, 1966), p. 226-241.

3 Ibid., p. 238.

regarding the possibility of floor traders' profitability taking advantage of these systematic dependencies[4]. Some regard these dependencies as economically "meaningless"[5]. Others argue the opposite point of view. In this respect, Fama and Blume's findings has been inconclusive. The weaknesses of their analysis are as follows: (1) their analysis assumes that traders follow the filter rule literally, and (2) their analysis fails to compare the riskiness of returns generated by the trading rules with the risk of the buy-and-hold policy.

This raises an important question as to whether these dependencies are economically meaningful. That is, can floor traders operate simple or multi-investment trading strategy based on short-term price changes that may on the average outperform the simple buy-and-hold policy?

The purpose of this thesis is to analyze the possible economic significance of positive price dependencies in common stock prices. Briefly outlined, the directions of this investigation are:

(1) to present a discussion of the weak efficient market hypothesis of security price behavior,

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4 S. Smidt, "A New Look at the Random Walk Hypothesis", Journal of Financial and Quantitative Analysis, Vol. 3, No. 3 (September, 1968), p. 245-249.

5 "Meaningless" dependencies imply that the nonrandom elements in the series of price changes are not sufficiently large enough for traders to increase expected gains on the basis of past knowledge of price behavior.

(2) to use the theories of the efficient market model to explain the dynamic behavior of common stock prices,

(3) to review recent literature on the weak efficient market hypothesis, and

(4) to present empirical evidence of the actual price behavior of twenty individual securities listed and traded on the Toronto Stock Exchange. This necessitates consideration of the performance of several different investment strategies; namely, the buy-and-hold, the "naive" filtering technique and a strategy of filtering around an average long position.

The comparative results of this research support the conclusion hat price behavior in major stock exchanges conforms to the weak form of the efficient market hypothesis. Since the investigation deals only with past daily closing price series, the result of this work bears no relevance to the semi-strong and strong form of the efficient market hypothesis.

An exposition of the efficient market hypothesis is presented in Chapter II, which also reviews the martingale, the submartingale and the random walk models. Chapter III presents a survey of recent literature on the weak efficient market hypothesis.

In Chapter IV, topics relating to data and methodology are discussed. The empirical results are reported and analyzed in Chapter V and conclusions and implications of the findings are drawn. Finally, Chapter VI presents a summary of the study.

CHAPTER II

SOME THEORETICAL BACKGROUND

In this chapter an attempt is made to elucidate in a unified way the basic concept of the efficient market hypothesis. This necessitates consideration of several different mathematical models.

This chapter includes two major parts: (1) a discussion and characterization of the efficient market hypothesis, and (2) a description of the efficient market models.

The Efficient Market Hypothesis vs Technical Analysis

In recent years, a hypothesis called "random walk" (later more broadly known as the theory of efficient markets) has arisen that challenges the concepts of traditional security analysis. The weak efficient market theorists contend that current prices "fully reflect" information on the economic benefits implied by historical price sequences. This suggests that historical price and volume data for securities contain no pertinent information which can be invariably used to earn a trading profit above that which could be achieved with a naive buy-and-hold investment strategy.

In contrast with this viewpoint technical analysts allege that past patterns of price behavior in individual securities tend to occur in the future. These patterns allow prediction of probable price trends; and insight into the patterns of price trends may assist in realizing superior earnings. In statistical language, technical analysts maintain that successive price changes in individual securities are dependent, and these dependencies are economically meaningful.

Market Mechanism and the Efficient Market Hypothesis

In order to provide a further comparison of the efficient market hypothesis with technical analysis, it is necessary to relate them to the functioning of capital markets and to identify the manner in which these theories differ.

Supporters of the efficient market hypothesis contend that major stock exchanges such as the New York Stock Exchange and the Toronto Stock Exchange are good examples of efficient markets. They argue that in these exchanges the forces of free competition among the many, rational and intelligent participants lead to equilibrium where actual prices of individual securities incorporate information about events that have occurred in the past and events which the market anticipates in the future. If the Toronto Stock Exchange is, in fact, an efficient market, then at any point in time, the actual price of a secruity is a good estimate of its intrinsic value.

The difficulties involved in measuring the intrinsic value of a security under conditions of uncertainty create a situation where, more often than not, market participants cannot agree on the true value of a security. This disagreement results in a host of discrepancies between actual prices and intrinsic values. Proponents of the efficient market hypothesis insist that the actions of many competing participants should, on the average, cause the actual price of a security to fluctuate randomly about its intrinsic value. On the other hand, technical analysts contend that the differential between actual prices and intrinsic values is systematically induced. Thus a knowledge of price dependencies should assist stock traders in better predicting the path on which actual prices will move toward the intrinsic values.

Evidently the intrinsic value of a security itself is not fixed, but can vary with time as a result of new economic and political information. However, in an efficient market, competition will again force, on the average, the full effects of new and profitable information on the intrinsic values to be reflected "instantaneously".

It may be appropriate at this point to make a few remarks about the implications of the term "instantaneous adjustment". According to the proponents of the efficient market hypothesis "instantaneous adjustment" of actual prices to new information implies that the frequency of actual prices overadjusting to changes in intrinsic values should equal, on the average, the frequency of those underadjusting. A second implication is that even with the existence of significant time lags in the adjustment of actual prices to new information, such systematic dependencies are not large enough for well-informed traders to earn a competitive return by using their superior knowledge. In accordance with this interpretation, it should not be surprising to find some systematic dependencies in price changes[1].

The Efficient Market Models

Several efficient market models have been used by economists and financial analysts for analyzing the behavior of stock prices. In the following sections, a number of efficient market models will be presented and some properties associated with them will be indicated.

In a perfectly competitive market where there are no transaction costs and information if freely available to all investors at the same time, series of price changes should be perfectly independent. This, however, does not prevail in reality. Indeed, in a real world situation it is logical to expect price dependencies that may result from dependency on the underlying information generation and dissemination process or on the presence of costs of transactions[2]. These costs not only relate to acquisition and processing of information, but also to the "immediate" or delayed execution of tenders that may make efforts to eliminate dependencies uneconomical.

Basically, this interpretation of the efficient market hypothesis suggests that the profits that can be realized by taking

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1 For a detailed discussion on stock price behavior and transaction costs see: R. West and S. Tinic, The Economics of the Stock Market (Praeger Publishers, 1971), p. 170-186.

2 Ibid., p. 176.

advantage of the systematic dependencies in price changes should be at most those needed to attract and maintain capital resources in the process of eliminating them. Smidt[1] contends that it is a violation of this requirement that contradicts the efficient market hypothesis rather than the mere presence of statistical dependencies. Therefore, any observed dependencies should be critically appraised in the direction of the above discussion.

Expected Return Models

Most empirical tests of the weakly efficient market hypothesis have dealt solely with a series of past price changes. These tests are based on two assumptions: firstly, that the condition of market equilibrium can be depicted in terms of expected returns; and secondly, that meaningful economic information is immediately used in the establishment of equilibrium expected returns. Together these assumptions imply the impossibility of trading techniques utilizing past price information to secure expected profits or returns above those of the equilibrium expected returns.

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1 S. Smidt, "A New Look at the Random Walk Hypothesis".

The general formula for all such expected return models may be mathematically expressed as[1]:

$$E(\tilde{P}_{t+1}^{(j)}|\Phi_t) = [1 + E(\tilde{r}_{t+1}^{(j)}|\Phi_t)]P_t^{(j)} \qquad (2.1)$$

where E - Expectation Operator,

$P_t^{(j)}$ - Price of security j at time t ,

$P_{t+1}^{(j)}$ - Price of security j at time t+1 ,

Φ_t - Symbol for whatever set of information is considered to be "fully reflected" in price $P_t^{(j)}$,

$\tilde{r}_{t+1}^{(j)} = \frac{\tilde{P}_{t+1}^{(j)} - P_t^{(j)}}{P_t^{(j)}}$ - One period percentage return, and

~ - tildes indicates a random variable.

It should be pointed out that the term $E(\tilde{r}_{t+1}^{(j)}|\Phi_t)$ implies that profitable economic information, Φ_t , is fully used in the determination of the equilibrium expected returns. Using $Z_{t+1}^{(j)}$ as the difference between the observed price and the expected value of security, j , the assumptions underlying the expected return model assert that the expected value of $Z_{t+1}^{(j)}$ with respect to the appropriate economic information set, Φ_t , must be equal to zero.[2] That is:

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[1] E.F. Fama, "Efficient Capital Markets: A Review of Theory and Empirical Work", Journal of Finance, Vol. 25, No. 2 (May, 1970), p. 383-417.

[2] Ibid., p. 384.

$$E(\tilde{Z}^{(j)}_{t+1} | \phi_t) = 0 \qquad (2.2)$$

where

$$Z^{(j)}_{t+1} = P^{(j)}_{t+1} - E(P^{(j)}_{t+1} | \phi_t)$$

and $Z^{(j)}_{t+1}$ denotes the excess market value of security j at time t+1 .

Having presented a brief discussion on the expected return model, it may be in order at this point to consider the martingale and random walk models. These are special cases of the expected return model.

A Simple Martingale Formuation for Stock Price Behavior

Today a favourite academic model of security price behavior in competitive and efficient markets is the martingale formulation. In equation 2.1, the martingale model assumes that for all t and information ϕ_t ,

$$E(\tilde{P}^{(j)}_{t+1} | \phi_t) = P^{(j)}_t \qquad (2.3)$$

where E – Expectation Operator,

$P^{(j)}_{t+1}$ – Stock price for security j at time t+1 ,

$P^{(j)}_{t+1}$ – Stock price for security j at time t ,

~ – tildes indicating a random variable, and

ϕ_t - symbol for the relevant set of information considered to be "fully reflected" in price $p_t^{(j)}$.

Or equivalently[1],

$$E(\tilde{r}_{t+1}^{(j)} | \phi_t) = 0 \qquad (2.4)$$

and $r_{t+1}^{(j)}$ is, by definition, the one-period percentage return. Equation 2.3 states that the price sequence for security j follows a martingale with respect to information ϕ_t, if the expected value of the next period's price for security j, as evaluated on the basis of the information ϕ_t, is equal to the current price.

Three forms of the martingale model may be distinguished: (1) the weak form; (2) the semistrong form; and (3) the strong form. The weak form of the martingale model asserts that current prices fully reflect information of economic values as implied by the historical sequence of prices. In other words investors cannot hope to enhance their stock selecting abilities by knowing the history of successive price changes and the results of trading rules based on this form of information.

Finally, the weak martingale model can be defined as:

$$E(\tilde{r}_{t+1}^{(j)} | r_t^{(j)}, r_{t-1}^{(j)}, \ldots, r_{t-n}^{(j)}) = r_t^{(j)} \qquad (2.5)$$

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1 Ibid., p. 385-388.

and

$$\phi_t = (r_t^{(j)}, r_{t-1}^{(j)}, \ldots, r_{t-n}^{(j)}) .$$

Equation 2.5 states that for security j , the price series follows a weak martingale if the expected value of the change in the price of a security, one-period ahead, projected on the basis of past price changes, $r_t^{(j)}, r_{t-1}^{(j)}, \ldots, r_{t-n}^{(j)}$, equals $r_t^{(j)}$.

If the inequality of equation 2.3 holds, then the price sequences of security j conforms to a weak submartingale. Symbolically, the submartingale can be written as[1]:

$$E(\tilde{p}_{t+1}^{(j)} | p_t^{(j)}, p_{t-1}^{(j)}, \ldots, p_{t-n}^{(j)}) > p_t^{(j)} . \qquad (2.6)$$

Equation 2.6 is another form of the fundamental dynamic equation for stock price behavior in an efficient market and indicates that the submartingale model does not require the strict independence and invariant distribution of successive price changes.

Since the submartingale has been reviewed briefly above, a few words may be said about its empirical implications. The positive conditional expectation of the submartingale as expressed in equation 2.6 implies that any simple or complex mechanical trading rule strategies based on information of past price sequences cannot on the

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1 Jack C. Francis, Investment Analysis and Management (McGraw-Hill, 1972), p. 565-566.

average outperform a naive buy-and-hold policy in terms of greater expected returns or risk-adjusted returns.

The submartingale model is interesting because it is found to describe empirical data well[1]. For example, Fama and Blume[2] have illustrated that filter rules or any modified filter techniques will not profitable even if market prices follow a submartingale sequence. However, while the precise degree of positive dependencies which would constitute a contradiction to the submartingale model is difficult to evaluate, it has never been subjected to "close" scrutiny. In the absence of a detailed examination, it is almost impossible to make generalizations on the economic importance, if any, of the positive dependencies in price changes such as those which appeared in Fama and Blume's empirical studies[3]. This aspect of the problem is scrutinized in this study.

A Random Walk Formulation for Stock Price Behavior

Another widely studied hypothesis of security price behavior in speculative market is the random walk model[4]. It is commonly

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1 See B. Mandelbrot, "Forecasts of Future Prices, Unbiased Market and Martingale Models", Journal of Business, Vol. 39 (January, 1966).

2 See E.F. Fama and M.E. Blume, "Filter Rules and Stock Market Trading", p. 226.

3 Ibid., p. 232.

4 E.F. Fama, "Efficient Capital Markets: A Review of Theory and Empirical Work", p. 388-390.

expressed as:

$$f(\tilde{r}_{t+1}^{(j)}|\phi_t) = f(\tilde{r}_{t+1}^{(j)}) \qquad (2.7)$$

where r_{t+1} - the One period percentage return,

ϕ_t - Symbol for the relevant information set,

$\sim$ - tildes indicates a random variable,

and: $f(\tilde{r}_{t+1}|\phi_t)$ is, by definition, the conditional distribution of an independent random variable, and $f(\tilde{r}_{t+1}^{(j)})$ defines the marginal probability distribution of an independent random variable.

Equation 2.7 indicates that the random walk mechanism basically assumes that returns (or price changes) are random variables, and they are independently and identically distributed.

Alternatively, the random walk hypothesis states that prices of stock in period $t+1$ (denoted by $P_{t+1}^{(j)}$) equal prices in period t (denoted by $P_t^{(j)}$) plus white noise (u_{t+1}). Mathematically:

$$P_{t+1}^{(j)} = P_t^{(j)} + u_{t+1} \qquad (2.8)$$

In equation 2.8, the series of stock price, P_t, is a strict random walk if u_t and u_{t-n}, $n \neq 0$, are independent. If the condition for strict random walk is satisfied and, in addition, the u_t are identically and normally distributed, then P_t is a Wiener process[1]. Finally, if u_t and u_{t-n}, $n \neq 0$, are just uncorrelated, a second order martingale occurs.

Economic implications of the random walk hypothesis run counter to the arguments of technical analysts for the model implies that past values of absolute stock market prices contain no pertinent information as a guide for predicting future prices. The random walk model has been supported by statistical studies. For, example, Fama[2] demonstrates that some common stock log price relatives are serially uncorrelated. Despite is empirical success, the random walk model has been partly discredited on a theoretical basis due to its excess restriction by Mandelbrot[3], who has illustrated that mechancial rules will not be profitable even if market prices follow only a submartingale sequence.

In the next chapter, a survey of recent literature on the weak form efficient market hypothesis is presented.

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1 A Weiner process is a stochastic process which is used to describe the highly irregular motion of microscopic particles suspended in a liquid.

2 Ibid., p. 396.

3 B. Mandelbrot, "Forecasts of Future Prices, Unbiased Market and Martingale Models", p. 242-255.

CHAPTER III

SURVEY OF LITERATURE

Introduction

Before presenting the methodology and the results of this study, some results obtained by other investigators will be briefly cited. The intent here is not to provide a comprehensive review or discussion of all available literature, but to sketch a framework in which the present study can be put in perspective.

Empirical testing of the weak submartingale hypothesis has involved two approaches. The earliest and once predominant method involves the testing of the independence of stock price changes over time[1]. The second and more popular method involves the direct evaluation of various trading rules[2]. A detailed description of these tests follows.

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1 Extensive results on the weak form tests come from the random walk literature. In early literature, discussion of the efficient market hypothesis was commonly labelled the random walk hypothesis. See E.F. Fama, "The Behavior of Stock Market Prices", Journal of Business, Vol. 38 (January, 1965).

2 See S. Sidney Alexander, "Price Movements in Speculative Markets: Trends or Random Walks, No. 2", Industrial Management Review, Vol. V No. 2 (Spring, 1964), p. 26-46.

Serial Correlation Tests

Some of the earliest statistical studies on security price behavior were carried out by Fama[1]. In his comprehensive study Fama observed that price changes in securities tend to occur independently. He cited the presence of superior analysts in the stock market as the main reason for market efficiency[2]. Fama determined the autocorrelation coefficients for thirty securities of the Dow Jones Industrial Average.

Essentially, autocorrelation coefficients provide a measure of the linear relationship between the security price, in time t, and its value τ periods earlier. The autocorrelation coefficient is computed according to the formula[3]:

$$r_t = \frac{Cov(u_t, u_{t-\tau})}{\sigma^2(u_t)} \tag{3.1}$$

where u_t - value of a random variable in time t,

$u_{t-\tau}$ - value of a random variable in time $t-\tau$, and

$\sigma^2(u_t)$ - variance of random variable (u_t).

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1 E.F. Fama, "The Behavior of Stock Market Prices", p. 68-84.

2 Ibid., p. 68-73.

3 Ibid., p. 69-73.

In Fama's studies, u_t is defined as the change in log price of a given security from the end of the day $t-1$ to the end of the day t. The standard error of the autocorrelation coefficient is approximated by[1]:

$$\sigma(\rho_t) \approx [1/(n-1)]^{\frac{1}{2}} \quad . \tag{3.2}$$

Fama's result are presented in Table 1. Examination of the autocorrelation figures in Table 1 immediately reveals that most of the estimated coefficients are not statistically different from zero. However, a closer examination of Table 1 shows that for daily returns, eleven of the serial correlations are more than twice their estimated error Fama remarked that this slight deviation from a perfect correlation condition should not be considered a contradiction of the weak form of the efficient market hypothesis. He contended that with a large sample size of 1,200 to 1,700 observations per stock, one should not be particularly concerned with finding "significant" deviations from zero covariance.

Table 1 also discloses an interesting feature concerning the signs of the serial correlations. Of the thirty correlation coefficients for the daily differences, twenty-three are positive, while for the four- and nine-day differences, twenty-one and twenty-four, respectively, are negative. Again, Fama argued that agreement in sign among the coefficients for the different securities is not necessarily evidence

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1 <u>Ibid</u>., p. 69

TABLE I

First-Order Serial Correlation Coefficients for One-, Four, Nine-, and Sixteen-Day Changes in Log_e Price

Stock	Differencing Interval (Days) One	Four	Nine	Sixteen
Allied Chemical	.017	.029	-.091	-.118
Aloca	.118*	.095	-.112	-.044
American Can	-.087*	-.124*	-.060	.031
A.T. & T.	-.039	-.010	-.009	-.003
American Tobacco	.111*	-.175*	.033	.007
Anaconda	.067*	-.068	-.125	.202
Bethlehem Steel	.013	-.122	-.148	.112
Chrysler	.012	.060	-.026	.040
Du Pont	.013	.069	-0.43	-.055
Eastman Kodak	.025	-.006	-.053	-.023
General Electric	.011	.020	-.004	.000
General Foods	.061*	-.005	-.140	-.098
General Motors	-.004	-.128*	.009	-.028
Goodyear	-.123*	.001	-.037	.033
International Harvester	-.017	-.068	-.244*	.116
International Nickel	.096*	.038	.124	.041
International Paper	.046	.060	-.004	-.010
Johns Manville	.006	-.068	-.002	.002
Owens Illinois	-.021	-.006	.003	-.022
Procter & Gamble	.099*	-.006	-.098	.076
Sears	.097*	-.070	-.113	.041
Standard Oil (Calif.)	.025	-.143*	-.046	.040
Standard Oil (N.J.)	.008	-.109	-.082	-.121
Swift & Co.	-.004	-.072	.118	-.197
Texaco	.094*	-.053	.04[illegible]	-.178
Union Carbide	.107*	.049	-.101	.124
United Aircraft	.014	-.190*	-.192*	-.040
U.S. Steel	.040	-.006	-.056	.236*
Westinghouse	-.027	-.097	-.137	.067
Woolworth	.028	-.033	-.112	.040

* Coefficient is twice its computed standard error.

Source: E.F. Fama, "Efficient Capical Markets: A Review of Theory and Empirical Work", reprinted in Elements of Investment: Selected Readings by H.K. Wu and Alan J. Zakon p. 120, Table 7.1.

of consistent patterns of dependence[1] because price changes for different securities are related to the behavior of a "market" component common to all securities.

Runs Tests of Price Series

While the serial correlation tests appear to support the weak efficient market hypothesis, correlation coefficients have an undesirable property; that is, they may be dominated by a few observations. In order to avoid this weakness, Fama applied the runs tests to observe the signs rather than the sizes of successive price changes to examine if the runs tended to persist[2].

A run is defined as a sequence of price changes with the same sign. For example, a positive run of length t_i is a sequence of i consecutive positive price changes succeedded by either zero or negative changes. If a price trend exists, the total number of runs should be less, and the average length of a run longer, than those in a random series.

Table 2 shows Fama's estimated total expected and actual numbers of runs for each stock for one-, four-, nine-, and sixteen-day price changes. An examination of Table 2 immediately indicates that,

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1 Ibid., p. 74-80.

2 Ibid., p. 81-85.

TABLE 2

Total Actual and Expected Numbers of Runs for One-, Four-, Nine-, and Sixteen-Day Differencing Intervals

Stock	Daily		Four-Day		Nine-Day		Sixteen-Day	
	Actual	Expected	Actual	Expected	Actual	Expected	Actual	Expected
Allied Chemical	683	713.4	160	162.1	71	71.3	39	38.6
Alcoa	601	670.7	151	153.7	61	66.9	41	[illegible]
American Can	730	755.5	169	172.4	71	73.2	48	43.9
A.T. & T.	657	688.4	165	155.9	66	70.3	34	37.1
American Tobacco	700	747.4	178	172.5	69	72.9	41	40.6
Anaconda	635	680.1	166	160.4	68	66.0	36	37.8
Bethlehem Stell	709	719.7	163	159.3	80	71.8	41	42.2
Chrysler	927	932.1	223	221 6	100	96.9	54	53.5
Du Pont	67[illegible]	694.7	160	161.9	78	71.8	43	39.4
Eastman Kodak	678	679.0	154	160.1	70	70.1	43	40.3
General Electric	918	956.3	225	224.7	101	96.9	51	51.8
General Foods	799	825.1	135	191.4	81	75.8	43	40 5
General Motors	832	868.3	202	205.2	83	85.8	44	46.9
Goodyear	681	672.0	151	157.6	60	65.2	36	36.3
International Harvester	720	713.2	139	164.2	84	72.6	40	37.8
International Nickel	704	712.6	163	164.0	68	70.5	34	37.6
International Paper	762	826.0	190	193.9	80	82.8	51	46.9
Johns Manville	685	699.1	173	160.0	64	69.4	39	40.4
Owens Illinois	713	743.3	171	168.6	69	73.3	36	39.2

TABLE 2 (Cont'd)

	Daily		Four-Day		Nine-Day		Sixteen-Day	
	Actual	Expected	Actual	Expected	Actual	Expected	Actual	Expected
Procter & Gamble	826	858.9	180	190.6	66	81.2	40	42.9
Sears	700	748.1	167	172.8	66	70.6	40	34.8
Standard Oil (Calif.)	972	979.0	237	228.4	97	98.6	59	54.3
Standard Oil (N.J.)	688	704.0	159	159.2	69	68.7	29	37.0
Swift & Co.	878	877.6	209	197.3	85	83.8	50	47.8
Texaco	600	654.2	143	155.2	57	63.4	29	35.6
Union Carbide	595	620.9	142	150.5	67	66.7	36	35.1
United Aircraft	661	699.3	172	161.4	77	68.2	45	39.5
U.S. Steel	651	662.0	162	158.3	65	70.3	37	41.2
Westinghouse	829	825.5	198	193.3	87	84.4	41	45.8
Woolworth	847	868.4	193	198.9	78	80.9	48	47.7
Averages	735.1	759.8	175.7	175.8	74.6	75.3	41.6	41.7

Source: E.F. Fama, "The Behavior of Stock Market Prices", p. 75, Table 12.

in general, the actual number of runs are comparable to the numbers expected. This finding suggests that price changes tend to occur randomly.

Table 3 summarizes Fama's estimation of runs by signs[1]. The empirical results contained in Table 3 indicate that the differences between the actual and the expected number of runs by signs are all quite small and of no statictical significance. Furthermore, there is no evidence of important patterns in the signs of the differences.

The above results prompted Fama to conclude that "there is little evidence, either from the serial correlations or from the various runs tests, of any degree of dependence in the daily, four-day, nine-day, and sixteen-day price changes"[2]. Put differently, Fama's findings strongly support the weak form efficient market hypothesis.

Cheng and Deets' Rebalancing Tests

Cheng and Deets[3] used a different approach in the investigation of price dependencies. Specifically, they compared the

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1 E.F. Fama, "Behavior of Stock-Market Prices", p. 79, Table 14.

2 Ibid., p.80

3 Cheng, P.L. and Deets, M.K. "Portfolio Returns and the Random Walks Theory". Journal of Finance, Vol. 26 (March, 1970), p. 11-30.

TABLE 3

Runs Analysis by Sign (Daily Changes)

Stock	Positive			Negative			No Change		
	Actual	Ex-pected	Actual-Expected	Actual	Ex-pected	Actual-Expected	Actual	Ex-pected	Actual-Expected
Allied Chemical	286	290.1	-4.1	294	290.7	3.3	103	102.2	0.8
Alcoa	265	264.4	0.6	262	266.5	-4.5	74	70.1	3.9
American Can	289	290.2	-1.2	285	284.6	0.4	156	155.2	0.8
A.T. & T.	290	291.2	-1.2	285	285.3	-0.3	82	80.5	1.5
American Tobacco	296	300.2	-4.2	295	294.0	1.0	109	105.8	3.2
Anaconda	271	272.9	-1.9	276	278.8	-2.8	88	83.3	4.7
Bethlehem Steel	282	286.4	-4.4	300	294.6	5.4	127	128.0	-1.0
Chrysler	417	414.9	2.1	421	421.1	-0.1	89	91.0	-2.0
Du Pont	293	300.3	-7.3	305	299.2	5.8	74	72.5	1.5
Eastman Kodak	306	308.6	-2.6	312	308.7	3.3	60	60.7	0.7
General Electric	404	404.5	-0.5	401	404.7	-3.7	113	108.8	4.2
General Foods	346	340.8	5.2	320	331.3	-11.3	133	126.9	6.1
General Motors	340	342.7	-2.7	339	340.3	-1.3	153	149.0	4.0
Goodyear	294	391.9	2.1	292	293.0	-1.0	95	96.1	-1.1

TABLE 3 (Cont'd)

Stock	Positive			Negative			No Change		
	Actual	Ex-pected	Actual-Expected	Actual	Ex-pected	Actual-Expected	Actual	Ex-pected	Actual-Expected
International Harvester	303	300.1	2.9	301	298.8	2.2	116	121.1	-5.1
International Nickel	312	307.0	5.0	296	301.9	-5.9	96	95.1	0.9
International Paper	322	330.2	-8.2	338	333.2	4.8	102	98.6	3.4
Johns Manville	293	392.6	0.4	296	293.5	2.5	96	98.9	-2.9
Owens Illinois	297	293.7	3.3	295	291.3	3.8	121	128.1	-7.1
Procter & Gamble	343	346.4	-3.4	342	340.3	1.7	141	139.3	1.7
Sears	291	289.3	1.7	265	271.3	-6.3	144	139.4	4.6
Standard Oil (Calif.)	406	417.9	-11.9	427	416.6	10.4	139	137.5	1.5
Standard Oil (N.J.)	272	277.3	-5.3	281	277.9	3.1	135	132.8	2.2
Swift & Co	354	354.3	-0.3	355	356.9	-1.9	169	166.8	2.2
Texaco	266	265.6	0.4	258	263.6	-5.6	76	70.8	5.2
Union Carbide	266	268.1	-2.1	265	265.6	-0.6	64	61.3	2.7
United Aircraft	281	280.4	0.6	282	282.2	-0.2	98	98.4	-0.4
U.S. Steel	292	293.5	-1.5	296	295.2	0.8	63	62.3	0.7
Westinghouse	359	361.3	-2.3	364	362.1	1.9	106	105.6	0.4
Woolworth	394	348.7	0.3	350	345.9	4.1	148	152.4	-4.4

Source: E.F. Fama, "Behavior of Stock-Market Prices", Journal of Business, Vol. 38 (January, 1965), p. 79, Table 14.

performance of buying-and-holding a portfolio to a strategy of rebalancing a portfolio.

Their strategy requires an investor to rebalance the portfolio at the end of each period by selling off some portion of those securities that have in the past experienced relatively superior returns. These are replaced with securities that have experienced relatively inferior returns. This intricate rule serves to maintain an equal proportion of funds invested in each security at the end of each rebalancing period.

The expected geometric return totals under the buy-and-hold strategy for a portfolio of securities is[1]:

$$E[G^T(BH)] = E[\sum_{i=1}^{n} (\frac{1}{m}) \prod_{j=1}^{n} 1+R_{ij})] \tag{3.3}$$

where E - the expectation operator, and

R_i - the rate of return for security i .

Also $W_{it} = \frac{1}{m}$

where w_{it} is, by definition, the weights of the initial pórportion of funds invested in the i^{th} security. For Cheng and Deets' rebalancing strategy, the expected return is[2]:

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1 Ibid., p. 12.

2 Ibid., p. 13

$$E[G^T(RB)] = E[\prod_{j=1}^{n} (\frac{1}{m} \sum_{i=1}^{n} (1+R_{ij}))] \quad . \tag{3.4}$$

Letting $E(1+R_{ij}) = u_i$, where $i = 1,2,3,\ldots,m$, and $j = 1,2,3,\ldots,n$, the expected return under the buy-and-hold strategy is[1]:

$$E[G^T(BH)] = \frac{1}{m} \sum_{i=1}^{m} u_i^n \tag{3.5}$$

and under the rebalancing strategy, the average return is[2]:

$$E[G^T(RB)] = [\frac{1}{m} \sum_{i=1}^{m} u_i]^n \quad . \tag{3.6}$$

In the same article, Cheng and Deets proved that the superiority of the buy-and-hold over the rebalancing policy may be represented by[3]:

$$S_m^n = \frac{1}{m} [\sum_{i=1}^{m} u_i^n] - [\frac{1}{m} \sum_{i=1}^{m} u_i]^n \tag{3.7}$$

or:

$$S_m^n = [\overline{u^n}] - [\overline{v}]^n \tag{3.8}$$

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1 Ibid., p. 12

2 Ibid.

3 Ibid., p. 15

where:

$$[\overline{v^n}] = \frac{1}{m} [\sum_{i=1}^{m} u_i^n]$$

and:

$$[\bar{v}]^n = [\frac{1}{m} \sum_{i=1}^{m} u_i]^n .$$

Equation 3.8 implies that if the weak submartingale model is a good approximation of stock price behavior, then we should expect:

$$S_m^n \geq 0 \qquad (3.9)$$

and:

$$S_m^{n+1} \geq S_m^n \qquad (3.10)$$

where equation 3.10 implies that S_m^n grows larger as the frequency of rebalancing increases.

Cheng and Deets' results are summarized in Table 4. An examination of Table 4 shows that their findings do not lend support to either of the above assumptions underlying the weak martingale model. For purposes of illustration, in Table 4, for n = 1625, an equal dollar amount invested among thirty stocks at the beginning of 1937 would have increased in value to $9.51 by 1969. However, the same dollar distributed among the thirty stocks under weekly rebalancing (h = 1, n = 1625) would have increased by more than twice its original amount yielding a value of $22.76. Furthermore, Cheng and Deets observed that the returns from the rebalancing strategy are an increasing, rather than a decreasing, function of the rebalancing frequency.

TABLE 4

Return to Buy-and-Hold and Rebalancing Strategies Under Varying Frequencies of Rebalancing (n), for m=6 and m=10; with Decision Horizon H = 1625 Weeks*

H = n·h		m = 6			m = 30		
	h (weeks)	G^T(BH)#	G^T(RB)†	S_6^n	G^T(BH)#	G^T(RB)†	S_{30}
1625	1	$9.514	$19.036	-9.522	$9.514	$22.756	-13.242
812	2	9.873	13.419	-3.546	9.873	14.488	- 4.615
541	3	9.872	14.640	-4.768	9.872	15.249	- 5.377
406	4	9.873	12.580	-2.707	9.873	13.399	- 3.526
325	5	9.514	10.803	-1.289	9.514	10.686	- 1.166
270	6	9.619	11.437	-1.818	9.619	11.966	- 2.347
232	7	9.873	11.312	-1.439	9.873	11.727	- 1.854
203	8	9.873	11.862	-1.989	9.873	12.488	- 2.615
180	9	9.619	12.774	-3.155	9.619	12.414	- 2.795
162	10	9.619	10.561	- .942	9.619	10.305	- .686
108	15	9.619	10.164	- .545	9.619	9.892	- .273
81	20	9.619	10.437	- .818	9.619	10.166	- .547
54	30	9.619	10.283	- .664	9.619	9.922	- .303
40	40	9.310	9.340	- .630	9.310	9.436	- .126
27	60	9.619	10.590	- .971	9.619	10.156	- .537
18	90	9.619	9.753	- .134	9.619	9.356	+ .263

* It is possible that for some combinations of n and h , the product does not result in exactly H=31 years or 1625 weeks. For example, for n=54 and h=30, H is 1620 weeks.

\# G^T(BH) under m=6 and m=30 are identical, since the former represent the arithmetic averages of 5 portfolio returns each consisting of six different securities randomly grouped from the thirty Dow-Jones Industrials.

† When G^T(RB) is given for portfolios of sizes less than the full 30 securities, it represents the arithmetic averate of the smaller portfolio returns. Hence, when m=6, G^T(RB) is the average of five 6 stock portfolios.

Source: Cheng, P.L. and Deets, M.K. "Portfolio Returns and the Random Walk Theory". Journal of Finance Vol. 26 (march, 1970), p.20.

These findings led Cheng and Deets to affirm that:

> the assumption that security price relatives can can be characterized as being mutually stochastically independent random variables is not supported by empirical results[1].

which may be construed to mean that the weak form efficient market hypothesis is a suspect.

In their later article, West and Tinic comment that:

> when the economic version of the random walk hypothesis is considered the fact that the signs of serial correlations depend on the length of the differencing interval should not be regarded as particularly disturbing; nor should the p[illegible] of negative serial correlation for [illegible]ancing intervals be especially s[illegible]

West and Tinic [illegible]d that the negative serial dependencies in Cheng and Deets' [illegible]ies appear to confirm the reversal tendency uncovered by Smi[illegible] and Niederhoffer and Osborne[4]. West and Tinic pointed out that [illegible]e costs (e.g., transaction costs, etc.) involved in purchasing th[illegible] services of market makers encourage the presence of

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1 Ibid., p. 26.

2 R.R. West and S.M. Tinic, "Portfolio Returns and the Random Walk Theory: Comment", The Journal of Finance, Vol. 28, No. 3 (June, 1973), p. 733-741.

3 S. Smidt, "A New Look at theRandom Walk Hypothesis".

4 V. Niederhoffer and M.F. Osborne, "Market-Making and Reversal on the Stock Exchange", Jo[illegible]nal of the American Statistical Association (December, 1966), p[illegible]97-916.

small price dependencies. More importantly, the presence of transaction cost induces the formation of price reversals. Hence negative serial dependencies tend to exaggerate the profitability of a rebalancing strategy, especially with the assumption that transaction costs do not have to be incurred.

In addition, Cheng and Deets' conclusion that the superiority of rebalancing improves with increasing rebalancing frequency is also discounted by West and Tinic. They disclosed that such a rebalancing strategy is in fact impossible because the "market-maker is not ordinarily willing to trade on the terms specified by the previous transaction"[1]. Besides, Cheng and Deets failed to take into account the fact that investors operating a rebalancing strategy would be working with higher direct and indirect costs.

Modified results of the Cheng and Deets study are reported in Table 5. Examination of the differential return figures in Table 5 immediately reveals that when the added costs of the rebalancing strategy were substracted from the incremental returns as indicated in column 6, the buy-and-hold strategy outperformed the rebalancing frequencies in the six-stock portfolio. Similarly, for the thirty stock portfolio, the superiority of the rebalancing strategy disappeared except for one rebalancing frequency.

Thus, West and Tinic's findings acknowledge the fact that

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1 R.R. West and Seha M. Tinic, "Portfolio Returns and the Random Walk Theory: Comment", p. 736.

TABLE 5

Geometric Mean Returns*

m	n (1)	Return from BH (2)	Return from RB (3)	BH - RB (4) (2)-(3)	Incremental Costs of RB (5)	BH - (RB-IC) (6) (4)+(5)
m = 6	1625	.0014	.0018	-.0004	.00106	.00066
	812	.0028	.0032	-.0004	.00112	.00072
	541	.0042	.0050	-.0008	.0018	.00038
	406	.0056	.0063	-.0007	.00124	.00054
	325	.0070	.0083	-.0013	.00130	.00000
	270	.0084	.0091	-.0017	.00136	-.00035
	232	.0099	.0105	-.0006	.00142	.00082
	203	.0113	.0123	-.0010	.00148	.00048
	180	.0127	.0144	-.0017	.00154	-.00016
	162	.0141	.0147	-.0006	.00160	.00100
	108	.0212	.0217	-.0005	.00190	.00140
	81	.0283	.0294	-.0011	.00220	.00110
	54	.0428	.0441	-.0013	.00280	.00150
	40	.0574	.0591	-.0017	.00340	.00170
	27	.0875	.0913	-.0038	.00460	.00080
	18	.1340	.1349	-.0009	.00640	.00550
m = 30	1625	.0014	.0019	-.0005	.00106	.00056
	812	.0028	.0033	-.0005	.00112	.00062
	541	.0042	.0051	-.0009	.00118	.00068
	406	.0056	.0064	-.0008	.00124	.00044
	325	.0070	.0073	-.0003	.00130	.00100
	270	.0084	.0092	-.0008	.00136	.00056
	232	.0099	.0107	-.0008	.00142	.00062
	203	.0113	.0125	-.0012	.00148	.00028
	180	.0127	.0157	-.0030	.00154	-.00146
	162	.0141	.0146	-.0005	.00160	.00110
	108	.0212	.0215	-.0003	.00190	.00160
	81	.0283	.0290	-.0007	.00220	.00150
	54	.0428	.0434	-.0006	.00280	.00220
	40	.0574	.0577	-.0003	.00340	.00310
	27	.0875	.0897	-.0022	.00460	.00240
	18	.1340	.1322	+.0018	.00640	.00460

* { n = no. of rebalancing intervals; m = no. of stocks in portfolio.
BH = Buy and Hold; RB = Rebalancing.

Source: R.R. West and Seha M. Tinic, "Portfolio Returns and the Random Walk Theory: Comment", The Journal of Finance, Vol. 28, No. 3 (June, 1973), p. 737.

the economic version of the weak martingale efficient market hypothesis is a good approximation of security price behavior.

Criticism of Statistical Tests

Despite the massive array of statistical results indicating little evidence of important dependencies, technical analyst view these results with skepticism.

Noting that most of the literature on stock price theory assumes a linear dependence, technical analysts are quick to point out that a linear statistical approach fails to grasp the fundamentals of charting or filtering techniques. They contend that the complex non-linear dependencies upon which their investment guidelines are developed are much too subtle to be detected by linear statistical tests. Besides, statistical studies have uncovered persistent positive and negative correlations and it is difficult to evaluate the degree of serial correlation that would imply the existence of trading rules with substantial expected profits. In an effort to challenge these criticisms levelled against the statistical approach, Alexander[1], and later Fama and Blume[2], directly tested the profitability of various trading rules.

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1 S.S. Alexander, "Price Movement in Speculative Markets: Trends or Random Walks", No. 2, p. 26-46.

2 E.F. Fama and M.E. Blume, " Filter Rules and the Stock-Market Trading", p. 226-241.

Alexander's Filter Tests

Alexander[1] devised the filter technique to measure the performances of various trading rules. He sought to conform or reject the technical analysts' hypothesis, which postulates the existence of meaningful price trends in security price changes, by comparing the returns of a simple buy-and-hold strategy to those of the filter rules.

Alexander's filter technique is a trading rule which attempts to use more sophisticated guidelines in the identification of price movements. Essentially, Alexander developed the filter technique to test the widely-held belief that prices of security adjust gradually to new information.

An x percent filter is defined as follows[2].

> If the daily closing price of a particular security moves up at least x percent buy-and-hold the security until its price moves down at least x percent from a subsequent high, at which time simultaneously sell and go short. The short position is maintained until the daily closing price rises at least x percent above a subsequent low at which time one covers and buys. Moves less than x percent in either direction are ignored.

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1 Alexander, "Price Movement in Speculative Markets: Trend or Random Walks", p. 7-26.

2 E.F. Fama and M.E. Blume, "Filter Rules and the Stock-Market Trading", p. 229.

In his earlier article, Alexander[1] reported the results of the filter technique and the buy-and-hold policy for filters ranging in sizes from 5 to 50 percent. The tests covered different time periods from 1897 to 1959 and involved closing "prices" for two indexes: the Dow-Jones Industrials from 1897 to 1929 and the Standard and Poor's Industrials from 1929 to 1959. Alexander's findings as presented in Table 6 readily show that, on the average, filters of different sizes realize substantial profits. In fact, these profits are significantly greater than those of the simple buy-and-hold policy. This instigated Alexander to suspect that trends in speculative stock markets are created once a "move" in price. change is initiated. That is, if the stock market price level has moved up x percent, it is likely to move up more than x percent further before it moves down by x percent.

While Alexander's results appear to refute the weak efficient market hypothesis, Mandelbrot[2] pointed out that the profitability of the filter rules reported by Alexander has been grossly exaggerated due to biases incorporated in Alexander's computations. For instance, in each filter transaction, Alexander assumed that his hypothetical trader could always buy at a price exactly equal to the low plus x percent and sell at the high minus x percent. Mandelbrot argued

1 S.S. Alexander, "Price Movements in Speculative Markets: Trend or Random Walks", Vol. II (May, 1961), p. 7-26.

2 B. Mandelbrot, "Forecasts of Future Prices, Unbiased Markets and 'Martingale' Models".

TABLE 6

Profits From Filters Of Various Sizes Compared With Buy And Hold[(a)]

(1897-1959)[(b)]

Period	5%	6%	8%	10%	12.5%	15%	20%	25%	30%	40%	50%	Buy & Hold
	Filter Size[(c)]											
	Average Move (%)[(d)]											
1897-1914	13.8	15.8	19.8	22.8	30.7	39.6	62.6	62.6	82.5	80.2	97.0	
1914-1929	12.8	14.9	19.7	25.4	33.3	43.0	69.4	115.8	115.8	115.8	115.8	
1929-1959	14.5	16.4	22.3	26.3	31.6	36.1	52.9	72.3	88.9	199.0	291.0	
	Average Profit Per Transaction (%)[(e)] (Before Commissions)											
1897-1914	2.9	3.0	2.7	1.5	3.2	5.4	12.2	4.0	7.7	(9.2)	(15.5)	75.3
1914-1929	2.0	2.2	2.6	3.6	5.2	7.8	16.3	32.5	24.7	9.6	5.7	596.6
1929-1959	3.5	3.6	4.8	4.3	3.9	2.9	6.0	9.8	11.2	43.2	57.3	154.1
	Number of Transactions[(f)]											
1897-1914	117	95	67	53	32	22	12	12	8	7	7	1
1914-1929	112	93	59	40	28	19	10	6	6	6	6	1
1929-1959	274	228	144	113	86	70	40	26	20	8	6	1

TABLE 6 (Cont'd)

Period	Filter Size(c) 5%	6%	8%	10%	12.5%	15%	20%	25%	30%	40%	50%	Buy & Hold
	Average Transactions Per Year											
1897-1914	6.5	5.4	3.8	3.0	1.8	1.2	0.7	0.7	0.4	0.4	0.3	
1914-1929	6.6	6.3	4.0	2.7	1.9	1.3	0.7	0.4	0.4	0.4	0.4	
1929-1959	9.0	7.5	4.7	3.7	2.8	2.3	1.3	0.8	0.6	0.3	0.2	
	Average Profit Per Year (%)(g) (Before Commissions)											
189701914	20.5	17.4	10.5	4.6	5.8	6.6	7.8	2.6	3.2	(3.3)	(3.9)	3.2
1914-1929	15.8	14.7	10.7	10.0	9.9	9.9	10.3	11.1	8.6	3.4	(2.1)	14.1
1929-1959	36.8	30.0	24.5	16.8	11.4	6.9	7.8	8.2	7.0	9.3	8.5	3.0

(Parentheses Signify Losses)

Source: S.S. Alexander, "Price Movements in Sepculative Markets: Trends or Random Walks", Industrial Management Review, Vol. II (May, 1961), p. 25

that due to marketability costs involved, the purchase price will often be somewhat higher than the low plus x percent, while the sale price will frequently be below the high minus x percent.

In his later article, Alexander[1] revised his earlier results to take into account this source of bias. These figures are shown in Table 7. An examination of Table 7 immediately illustrates that while the profitability of the filter technique is drastically reduced, the filter rule returns are still superior in comparison with those of the buy-and-hold policy.

Fama and Blume[2] were not in agreement with Alexander's latest results. In particular they argued that in using price indexes, Alexander failed to capture the effects of dividends. Their argument is supported by a thorough investigation into the effect of dividends[3].

Fama and Blume's Filter Tests

Basically, Fama and Blume applied Alexander's filter technique to series of daily closing prices for each of the thirty industrial securities of the Dow-Jones Industrial Average. A

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1 S.S. Alexander, "Price Movements in Speculative Markets: Trends or Random Walks, No. 2", p. 26-46.

2 E.F. Fama and M.E. Blume, "Filter Rules and Stock-Market Trading", p. 226-241.

3 Ibid., p. 228-242.

TABLE 7

Profits form Filters of Various Sizes Comparied with Buy and Hold[a] (1897-1959)[b]

Before Commissions

Period	5%	6%	8%	10%	12.5%	15%	20%	25%	30%	40%	50%	Buy & Hold
					Average Move[d]							
I	13.8	15.8	19.8	22.8	30.7	39.6	62.6	62.6	66.2	75.8	84.5	
II	12.8	14.9	19.7	25.4	33.3	43.0	74.5	133.0	133.0	133.0	133.0	
IIIa	14.5	16.4	22.3	26.3	31.6	36.1	52.1	66.9	86.3	131.6	204.8	
					Estimated Bias Per Transaction (%) - $\overline{b}$[e]							
	1.0	1.3	1.2	1.3	1.4	1.5	1.7	1.7	1.[illegible]	2.0	2.0	
					Average Profit Per Transaction Long or Short (%) - $\overline{P}$[f]							
I	0.8	0.4	0.4	(1.3)	(0.1)	2.0	7.6	(.7)	(6.6)	(14.4)	(25.7)	75.3
II	(0.2)	(0.5)	0.0	0.8	2.1	4.6	16.2	40.4	31.3	13.4	(10.9)	596.6
IIIa	1.2	0.9	2.1	1.3	0.7	(0.6)	1.0	1.7	4.7	10.2	21.7	154.1
					Average Profit Per Long Transaction (%)[f]							
I	1.4	1.1	1.1	0.0	2.3	5.2	14.3	5.4	0.6	(5.5)	(10.2)	75.3
II	1.7	1.8	3.5	0.0	9.9	16.3	45.2	112.5	96.6	73.8	48.5	596.6
IIIa	1.8	1.5	3.0	2.6	2.3	1.3	4.4	6.7	11.7	22.9	46.2	154.1

TABLE 7 (Cont'd)

Period	Filter Size[c]											Buy & Hold
	5%	6%	8%	10%	12.5%	15%	20%	25%	30%	40%	50%	
					Average Profit Per Short Transaction							
I	0.1	(0.4)	(0.3)	(2.7)	(2.1)	(1.3)	1.2	(6.4)	(13.0)	(22.5)	(38.5)	
II	(1.9)	(2.6)	(3.4)	(4.3)	(5.1)	(6.1)	(7.2)	(7.2)	(12.5)	(26.0)	(46.5)	
IIIa	0.8	0.3	1.1	0.1	(0.9)	(2.5)	(2.4)	(3.0)	(1.8)	(1.3)	1.3	
					Number of Transaction - N[g]							
I	117	95	67	53	32	22	12	12	10	8	5	1
II	112	93	59	40	28	19	9	5	5	5	5	1
IIIa	274	228	144	113	86	70	40	28	20	12	8	1
					Average Transactions Per Year - $\bar{q}$							
I	6.5	5.4	3.8	3.0	1.8	1.2	0.7	0.7	0.6	0.5	0.3	
II	6.6	6.3	4.0	2.7	1.9	1.3	0.6	0.3	0.3	0.3	0.3	
IIIa	9.0	7.5	4.7	3.7	2.8	2.3	1.3	0.9	0.7	0.4	0.3	
					Average Profit Per Year[h]							
I	5.3	2.2	1.5	(3.9)	(1.8)	2.4	5.3	(.5)	(4.0)	(7.5)	(8.5)	3.2
II	(1.3)	(3.1)	0.0	2.2	4.0	6.0	9.4	10.7	8.5	3.8	3.4	14.1
III	11.3	6.9	10.3	4.9	1.9	(1.4)	1.7	1.5	3.3	4.1	6.1	3.0

(Parentheses Signify Losses)

Source: S.S. Alexander, "Price Movements in Speculative Markets: Trends or Random Walks, No. 2", p. 31-32.

comparison of columns (1) and (6) in Table 8 clearly demonstrates that, even ignoring transaction costs, most of the returns from the buy-and-hold policy are comparatively larger than the returns from the filter technique.

Fama and Blume also pointed out that Alexander's latest computations incorporated two biases[1]. Firstly, under the buy-and-hold policy, the total profit should be the price change for the time period plus any dividends that have been paid. Secondly, in a short sale, borrowers of the securities are required to reimburse the lender for any dividends that are paid while the short position is active. It is clear that the adjustment for dividends should reduce the return of the filter technique relative to the buy-and-hold strategy. This was clearly demonstrated in their filter tests.

Fama and Blume also estimated the average return per security earned by each of the different filters. These figures are reported in Table 9. An examination of the average returns for each filter in Table 9 clearly illustrates that when brokerage fees are included, none of the filters consistently produce larger returns than those of the buy-and-hold policy. While filters between 12 and 25 percent yield positive average returns per security after commissions, these are small when compared to .0986 (the average return for all securities under a buy-and-hold policy).

However, a closer examination of Fama and Blume's estimated

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1 Ibid., p. 228.

TABLE 8

Nominal Annual Rates of Return by Company: Averaged Over All Filters

Security	Average Returns Adj. for Divds.		Breakdown of Col. (1)		Average Returns	Buy and Hold Returns Not Adj. for Comm.		Profitable Filters/ Total Filters: Adj. for Divds.	
	Not adj. for Comm. (1)	Adj. for Comm. (2)	Long (3)	Short (4)	Not Adj. for Divds. or Comm. (5)	Adj. for Divds. (6)	Not Adj. for Divds. (7)	Not Adj. for Comm. (8)	Adj. for Comm. (9)
Allied Chemical	−.0079	−.2371	.0486	−.1453	−.0221	.0712	.0384	9/23	4/23
Alcoa	.0664	−.1388	.0744	.0627	.0643	−.0064	−.0224	13/24	4/24
American Can	−.0489	−.3022	.0052	−.1347	−.0639	.0507	.0061	9/22	6/22
Amer Tel & Tel	.1410	.0581	.2156	−.0727	.1221	.1824	.1484	21/21	17/21
Amer. Tobacco	1095	−.0491	.1706	−.0724	.0814	.1704	.1307	18/23	12/23
Anaconda	−.0170	−.3091	.3098	−.1069	−.0255	.0540	.0125	8/23	4/23
Beth. Steel	−.0459	−.3214	−.0100	−.1282	−.0733	.0283	−.0266	7/23	3/23
Chrysler	−.0609	−.3695	−.0598	−.0643	−.0645	.0017	−.0311	8/23	2/23
Du Pont	.0512	−.0164	.1135	−.0603	.0431	.0889	.0348	20/22	12/22
Eastman Kodak	.0757	−.0649	.1786	−.1761	.0653	.1756	.1555	21/22	12/22
General Electric	−.0125	−.1963	.0394	−.0179	−.0237	.0576	.0285	9/23	1/23
General Foods	.1740	.0103	.2780	−.0621	.1607	.2509	.2283	23/23	12/23
General Motors	−.0581	−.3420	.0337	−.1868	−.0708	.0956	.0500	7/21	1/21
Goodyear	−.0583	−.3501	.0179	−.1942	−.0731	.0843	.0467	10/23	2/23
Int. Harvester	−.0274	−.3474	.0120	−.2624	−.0410	.1677	.1192	7/21	6/21
Int. Nickel	.0776	−.0843	.1517	−.0895	.0632	.1395	.1104	20/22	7/22
Int. Paper	.0167	−.1654	.0356	−.0178	.0026	.0193	−.0238	13/23	2/23

TABLE 8 (Cont'd)

Security	Average Returns Adj. for Divds.		Breakdown of Col. (1)		Average Returns	Buy and Hold Returns Not Adj. for Comm.		Profitable Filters/ Total Filters: Adj. for Divds.	
	Not Adj. for Comm. (1)	Adj. for Comm. (2)	Long (3)	Short (4)	Not Adj. for Divds. or Comm. (5)	Adj. for Divds. (6)	Not Adj. for Divds. (7)	Not Adj. for Comm. (8)	Adj. for Comm. (9)
Johns Manville	-.0576	-.3577	.0157	-.2302	-.0707	.0878	.0497	7/23	5/22
Owens Illinois	.0056	-.1584	.0763	-.1401	-.0010	.0958	.0679	12/22	10/22
Procter & Gamble	.1847	.0480	.2336	-.0459	.1720	.2193	.1966	23/23	15/22
Sears	.1903	.0069	.2772	-.2014	.1735	.2396	.2154	22/22	16/22
Std. Oil (Calif.)	-.07[illegible]	-.2405	.0018	-.1941	-.0915	.0748	.0302	3/22	0/22
Std. Oil (N.J.)	-.0818	-.3020	-.0314	-.1670	-.0963	.0432	-.0033	2/22	0/22
Swift & Co.	-.0542	-.3793	-.0028	-.2098	-.0623	.0553	.0095	4/22	1/22
Texaco	.0605	-.1516	.1828	-.3054	.0410	.1710	.1349	16/20	4/20
Union Carbide	.0649	-.0339	.0909	-.0031	.0533	.0421	.0133	18/23	9/23
United Aircraft	-.1117	-.4478	-.0459	-.1500	-.1166	-.0578	.0066	1/24	0/24
U.S. Steel	.0264	-.1622	.0467	-.0433	.0135	.0303	-.0087	18/24	7/24
Westinghouse	-.0186	-.2804	.0177	-.1164	-.0305	.0610	.0338	9/24	7/24
Woolworth	.0414	-.1491	.1296	-.2158	.0267	.1482	.1080	16/22	10/22
Average	.0185	-.1978	.0822	-.1297	.0032	.0986	.0620	12.5/22.5	6.4/22.5

Source: E.F. Fama and M.E. Blume, "Filter Rules and Stock-Market Trading", Journal of Business, Vol. 39, No. 1 (January, 1966), p. 238, Table 2.

returns unadjusted [illegible]ons in column (3) of Table 9 indicates the presence [illegible] possi[illegible]nificant" amounts of positive dependence in price chang[illegible] Mor[illegible]ecisely, for three filter sizes, 0.5, 1.0 and 1.5 percent [illegible]he a[illegible]age returns per security on long position are greater than [illegible]erage return from buy-and-hold (.0986).

These re[illegible]s suggest that for any price changes (x) greater than or equal t[illegible] 1.5 percent, when the price level of a security moves up x percent [illegible] greater, the conditional probability that it will move up x perc[illegible] further before it moves down [illegible]rcent is greater than the unconditional probability. Mathematically:

$$P[(P_{t+1} [illegible] \,|\, (P_t)\uparrow] > P[(P_{t+1})\uparrow] \qquad (3.1)$$

where P_t - Price of a security at time t,

P_{t+1} - Price of a security at time $t+1$, and

$\uparrow$ - Symbol indicating an upward price movement.

Whether or not these dependencies are economically 'meaningful' undoubtedly depends upon the capability of floor traders[1] to profitably exploit these dependencies in order to increase substantially the expected returns for the filter technique. Fama and Blume analyzed two possible methods. The first method involves the floor trader's

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1 A floor trader is one who owns a seat in the Exchange and trades for his own account. Therefore, he is not required to pay any brokerage fees.

TABLE 9

Nominal Annual Rates of Return by Filter: Averaged Over All Components

	Average Return Per Security		Breakdown of Average Return Per Security Before Commissions			
	Before Commissions (1)	After Commissions (2)	Long (3)	Short (4)	No. of Profitable Securities Per Filter (5)	Total Transactions (6)
0.005	.1152	-1.0359	.2089	.0097	27/30	12,514
.010	.0547	- .7494	.1444	-.0518	20/30	8,660
.015	.0277	- .5614	.1143	-.0813	17/30	6,270
.020	.0023	- .4515	.0872	-.1131	16/30	4,784
.025	-.0156	- .3732	.0702	-.1378	13/30	3,750
.030	-.0169	- .3049	.0683	-.1413	14/30	2,994
.035	-.0081	- .2438	.0734	-.1317	13/30	2,438
.040	.0008	- .1950	.0779	-.1330	14/30	2,013
.045	-.0117	- .1813	.0635	-.1484	14/30	1,720
.050	-.0188	- .1662	.0567	-.1600	13/30	1,484
.060	.0128	- .0939	.0800	-.1189	18/30	1,071
.070	.0083	- .0744	.0706	-.1338	16/30	828
.080	.0167	- .0495	.0758	-.1267	15/30	653
.090	.0193	- .0358	.0765	-.1155	17/30	539
.100	.0298	- .0143	.0817	-.1002	19/30	435
.120	.0528	.0231	.0958	-.0881	21/30	289

TABLE 9 (Cont'd)

	Average Return Per Security		Breakdown of Average Return Per Security Before Commissions			
	Before Commissions (1)	After Commissions (2)	Long (3)	Short (4)	No. of Profitable Securities Per Filter (5)	Total Transactions (6)
.140	.0391	.0142	.0853	-.1108	19/30	224
.160	.0421	.0230	.0835	-.1709	17/30	172
.180	.0360	.0196	.0725	-.1620	17/30	139
.200	.0428	.0298	.0718	-.1583	20/30	110
.250	.0269	.0171	.0609	-.1955	15/29	73
.300	-.0054	-.0142	.0182	-.2264	12/26	51
.400	-.0273	-.0347	-.0095	-.0965	7/16	21
0.500	-.2142	-.2295	-.0466	-.1676	0/4	4

*Cols. (1) and (2) show the average returns per security provided by each of the different filters. The figures in col. (2) are adjusted for both dividends and commissions while those in col. (1) are adjusted only for dividends. The general formula, in the notation of the Notes to Table 1, is

$$R_i = \sum_{i=1}^{30} R_i^{(j)}/F_i$$

where $R_i^{(j)}$ is the return from filter i when applied to security j, and F_i is the number of securities that had at least one complete transaction under filter i. R^i is considered zero for security j if the ith filter resulted in no computed transactions.

Source: E.F. Fama and M.E. Blume, "Filter Rule and Stock-Market trading", Journal of Business, Vol. 39, No. 1 (January, 1966) p. 239, Table 3.

operation of a 0.5 percent filter, opening and closing long and short positions whenever such actions are triggered by the filter rule. A second possible method requires his investment on the long position for a 0.5 percent filter.

While the above mentioned filter strategies yield positive returns, the average returns for each of the modified strategies minus the clearinghouse fees are found to be less than those for the buy-and-hold policy. In addition, Fama and Blume maintained that funds would be idle for a very large proportion of the time when operating a mechanical rule.

On the basis of the foregoing analysis, Fama and Blume conclude that these dependencies are of no economic value to floor traders. However, this issue, i.e., the economic aspects of the positive dependencies remains a vexing problem.

Fama and Blume's approach has been criticised for the extreme degree of rigidity incorporated in their studies. Evidently, one such criticism concerns the assumption that the hypothetical traders follow the filter rule literally. Obviously, this assumption is inadequate and misleading. For purposes of illustration, suppose that a floor trader wishes to take advantage of the filter rule. He could "trade around" the average long position for a 0.5 percent filter. When the filter rule signals a long position, he would invest his funds in the stock. However, when the filter signals a short position, he would decrease his position to zero shares. While the "zero" position is active, the floor trader could invest his funds in short-term money markets[1]. If, in addition, the hypothetical trader wishes to take advantage of the buy-and-hold policy, he would commit half of his funds by buying-and-holding a particular security. Hereafter, this multi-investment strategy will be referred to as the average long position strategy.

In addition to the above criticism, S. Smidt also pointed out that a comparison between two investment policies must consider the risks involved. Smidt speculated that there is likely to be less variation in returns from a policy of trading around an average long position than from a buy-and-hold policy, although returns from the former strategy will probably be less than those for the buy-and-hold strategy. This reasoning stems from the fact that when a floor trader operates an average long position strategy, the returns are realized from different sources[2]. On the other hand, the return from a buy-and-hold policy is entirely from one source and is likely to be quite variable. Smidt's proposal is retained in this investigation.

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1 S. Smidt, "A New Look at the Random Walk Hypothesis", p. 251-253.

2 "sources" here represents returns from the long position in stock, the short-term money market, and the filter trading rule.

CHAPTER IV

METHODOLOGY

Introduction

Before proceeding with the comparison of the various investment strategies in Chapter V, it is instructive to look first at the methods involved in the calculation of the respective annual geometric mean returns on which comparisons will be based. This chapter discusses the methodology. It begins by reviewing the basic data and proceeds to discuss the technical aspects of approximately the geometric average returns.

Description of Data

In order to test the research hypothesis, daily closing price series for twenty stocks listed and traded on the Toronto Stock Exchange were studied. The daily closing price series are quoted from the Globe and Mail[1]. When there was no trading in a particular stock for any of the trading days, either the average of the bid and ask price or the bid or ask price was used.

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1 "The Toronto Stock Exchange: Daily Closing Price Quotation", Globe and Mail, 1970-71.

Initially, thirty securities were selected, but in the process of data collection, several of the issues were dropped because of incomplete data. This reduced the sample size to twenty securities.

The study covers the period from the beginning of January, 1970 to the end of December, 1971. This randomly selected period happens to include a bearish and a bullish market condition[1].

Each security has 253 observations for 1970 and 254 observations for 1974; a total of 10,394 quotations for the twenty securities. These raw data are reported in Appendix 1.

Classification of Securities

In this research, the securities examined are either mining or industrial stocks. On the basis of this distinction, the twenty securities are divided into two equal samples. Sample I contains mainly mining issues[2]. Generally speaking, mining stocks tend to exhibit large price fluctuations. Sample II comprises of relatively stable industrial stocks that incline to resist large fluctuation of price changes.

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1 The Toronto Stock Exchange (TSE) Index for 1970 was (January) 186 to (November) 164 and for 1971 from (January) 174 to (December) 182.

2 Three industrial securities are included in Sample I: Abitibi, Hand Chemical and Van Ness. Actually these securities should have not been included in the sample.

The categorization of securities into two sample is advantageous from the analytical aspects of this study. That is, this arrangement prevents analysis of the empirical results from being obscured or dominated by the possible few extreme and unusual observations that may be present in the price series of Sample I.

While it is beyond the scope of this study to treat the 'price volatility' factor in greater detail, it must be pointed out that by means of statistical techniques that measure the magnitude of price fluctuation of individual price series, it is possible to further classify the securities within a sample into subsamples.

Calculation of the Annual Geometric Mean Return

The hypothesis that investors cannot significantly increase expected returns by using mechanical rules is tested by the application of the simple buy-and-hold, the filter rule and the average long position policies to the twenty randomly selected securities.

In this section, we have endeavored to develop the fundamental methods involved in calculating the annual geometric mean returns. A detailed treatment of the filter technique is presented first. The procedure is almost identical for the other two investment strategies. With this background, we will indicate the necessary changes that are required to compute the returns of buy-and-hold and the average long position strategies.

In the preceding chapter what is known as the filter technique has been briefly introduced. For purposes of calculating the returns from this strategy it is imperative to have a clear understanding of the technical aspects of its operation. An exposition of this is given below[1].

In our application of the filter rule, the data is allowed to decide whether the first position taken up will be long or short. An initial position is taken up as soon as there is an advance or a decline (whichever occurs first) where the total price change equals or exceeds the x percent filter.

The daily closing price on the day a position is opened defines a reference price. If the filter transaction is long, the reference price represents a peak, or a trough, if the transaction is short.

For each subsequent trading day, we are required to determine whether the current position should be closed. For purposes of clarification, suppose the current position is long (short). It is fundamental to check whether the current price is x percent below (above) the reference peak (trough) price. If the current position is not to be closed, then we are required to examine whether the reference price must be revised. In a long position, this will be necessary when the current price exceeds the reference (peak) price so that a new peak is attained whereas in a short position, a new trough will be defined

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1 See E.F. Fama and M.E. Blume, "Filter Rules and Stock-Market Trading", p. 234-235.

when the current price is below the reference price.

The calculation of the filter geometric mean return requires, as a starting point, the general formula[1]:

$$\overset{*}{R}_i^{(j)} = \sqrt[N_i^{(j)}]{(1+\overset{*}{r}_{t1}^{(j)})^{n_{t1}^{(j)}} (1+\overset{*}{r}_{t2}^{(j)})^{n_{t2}^{(j)}}, \ldots, (1+\overset{*}{r}_{ti}^{(j)})^{n_{ti}^{(j)}}} - 1 \qquad (4.1)$$

where $\overset{*}{R}_i^{(j)}$ - The geometric mean return for the filter technique with daily compounding provided by filter i when applied to security j ,

$\overset{*}{r}_{ti}^{(j)}$ - The rate of return with daily compounding on transaction t for filter i when applied to security j ,

$n_{ti}^{(j)}$ - The duration in terms of total trading days of transaction t for filter i when applied to security j ,

$N_i^{(j)}$ - Total number of trading days during which position were open under filter i when applied to security j . Thus:

$$N_i^{(j)} = \sum_{t=1}^{T_i^{(j)}} n_{ti}^{(j)}$$

where $T_i^{(j)}$ is the total number of transactions initiated by filter i for security j .

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1 J.C. Francis, Investment Analysis and Management, p. 388-389.

In calculating the annual geometric mean returns, the daily closing price series for each security is adjusted for dividend. This is achieved by adding the amount of dividends to the closing price on ex-dividend days. This adjustment is necessary in order to prevent the filter from being triggered simply because on ex-dividend data the stock's price dips. For one security, Canadian Tires a stock split occurs during the period when the filter position was open. This necessitated that the price of this security subsequent to the split be adjusted upward by the correct split factor until the trading period terminated.

Finally, it must be noted here that the returns computed for each strategy cover exactly the same time period. This is made possible by restricting the calculation of the buy-and-hold returns to the investment period which contains only complete filter transactions.

Equation 4.1 may be rewritten as:

$$\overset{*}{R}{}_{i}^{(j)} = \left\{ \prod_{t=1}^{T_i^{(j)}} [1+\overset{*}{r}{}_{ti}^{(j)}]^{n_{ti}^{(j)}} \right\}^{\frac{1}{N_i^{(j)}}} - 1 \qquad (4.2)$$

The term $(1+\overset{*}{r}{}_{ti}^{(j)})$ is commonly known as the "link relative". Under the filter technique, the "link relative" adjusted for dividends for the long position is calculated according to the formula:

$$[1+\overset{*}{r}{}_{ti}^{(j)}]^{n_{ti}^{(j)}} = \frac{P_{ti}^{(j)} + D_{ti}^{(j)} + C_{ti}^{(j)}}{P_{ti}^{(j)}} \qquad (4.3)$$

where $P_{ti}^{(j)}$ - The beginning closing price of security j for the day on which transaction t for filter i was initiated,

$D_{ti}^{(j)}$ - Any dividends paid on transaction t of filter i, when applied to security j, and

$C_{ti}^{(j)}$ - Capital gain or loss on transaction t of filter i when applied to security j. Symbolically,

$$C_{ti}^{(j)} = P_{t+n,i}^{(j)} - P_{ti}^{(j)}$$

where $P_{t+n,i}^{(j)}$ - The ending closing daily price for transaction t of filter i when applied to security j.

Substituting $C_{ti}^{(j)}$ with $(P_{t+n,i}^{(j)} - P_{ti}^{(j)})$ into equation 4.3 clearly indicates that the "link relative" for the long position is the ending closing price, $P_{t+n,i}^{(j)}$, plus any dividends paid, $D_{ti}^{(j)}$, divided by the opening price, $P_{ti}^{(j)}$.

In a short sale, however, trader sell securities which are not owned and borrow a similar number of those securities to deliver to the purchaser. Hence the "link relative" for a short sale may be calculated as:

$$[1+\overset{*}{r}{}_{ti}^{(j)}]^{n_{ti}^{(j)}} = \frac{P_{ti}^{(j)} + S_{ti}^{(j)}}{P_{ti}^{(j)}} \tag{4.4}$$

where $P_{ti}^{(j)}$ - Selling price on transaction t for filter i when applied to security j, and

$S_{ti}^{(j)}$ - Capital gain or loss on transaction t of filter i when applied to security j . Mathematically,

$$S_{ti}^{(j)} = P_{ti}^{(j)} - (P_{t+n,i}^{(j)} + \bar{D}_{ti}^{(j)})$$

where $P_{t+n,i}^{(j)}$ - Buying price to cover the short position on transaction t , of filter i when applied to security j .

The rationale behind short selling is that the short seller hopes or anticipates that the price of a security will decline so that when he purchases securities to return to the lender, he can hope to do so at a lower price, thus earning profits. Since borrowers of security are generally obliged to reimburse the lender for any dividends paid whilst the short position is active, the dividend term is included as a liability in equation 4.4.

By substituting all the estimated $\overset{*}{r}_{ti}^{(j)}$ values into equation 4.2, annual geometric mean return for the filter technique is obtained. These figures are presented in Appendix 1. The value of $\overset{*}{R}_{i}^{(j)}$ represents the amount an investor would have made or lost if he invested an equal dollar amount on each t transaction of filter i when applied to security j for the period during which active positions are open under the filter rule.

Analogously, the procedure outlined above is used in computing the returns for the buy-and-hold policy. However, some fundamental changes are essential and description follows.

The annual geometric mean return for the buy-and-hold policy is constructed according to the formula:

$$R_i^{(j)} = \left\{ \sum_{t=1}^{T_i^{(j)}} [1+r_{ti}^{(j)}]^{n_{ti}^{(j)}} \right\}^{\frac{1}{N_i^{(j)}}} - 1 \qquad (4.5)$$

where $R_i^{(j)}$ - The annual geometric mean return for the buy-and-hold policy.

A few words may be in order regarding the indirect technique involved in estimating the rates of return, $r_{ti}^{(j)}$, for the buy-and-hold policy. If the corresponding filter rule transaction is long, then the buy-and-hold returns equal that of the filter rule returns. Symbolically,

$$\overset{*}{r}{}_{ti}^{(j)} = r_{ti}^{(j)} . \qquad (4.6)$$

On the other hand, if the corresponding filter rule transaction is short, then the positive return realized in a short sale represents the negative rate of return for the buy-and-hold policy. Mathematically,

$$\overset{*}{r}{}_{ti}^{(j)} = -r_{ti}^{(j)} . \qquad (4.7)$$

Equation 4.6 is logical because a short sale operates in a manner opposite to the buy-and-hold policy. For clarification purposes, we may recollect that positive profits in a short sale are possible only if $P^{(j)}_{t+n,i} < P^{(j)}_{ti}$. Alternately, in the case of a buy-and-hold policy, positive earnings can only be realized if $P^{(j)}_{t+n,i} > P^{(j)}_{ti}$.

The foregoing procedure for calculating the buy-and-hold rates of return is essential for two important reasons. Firstly, such a methodology insures that the buy-and-hold policy covers exactly the same time periods under the filter technique. That is, for each security j and filter size i, the buy-and-hold returns are calculated for the period during which all filter transactions are complete. Secondly, the procedure ensures that the buy-and-hold returns are calculated on the same ground as the filter rule returns. Therefore, multiple buy-and-hold figures are required for each security. This is shown in Appendix 1.

Before concluding this chapter, a description of the technique used in calculating the annual geometric mean return for the average long position policy is in order. The average long position annual geometric return may be calculated as:

$$\overset{**}{R}{}_i^{(j)} = \left\{ \prod_{t=1}^{T_i^{(j)}} (1+\overset{**}{r}{}_{ti}^{(j)})^{n_{ti}^{(j)}} \right\}^{\frac{1}{N_i^{(j)}}} - 1 \qquad (4.8)$$

and $\overset{**}{R}{}_i^{(j)}$ defines the annual geometric mean return under the average long position policy.

It ma [illegible] again that the average long position policy is a mo[illegible]que. In particular, the long position retu[illegible]oth strategies, i.e.:

$$r^{*(j)}_{ti} = r^{**(j)}_{ti} \qquad (4.9)$$

However, if the corresponding filter signals a short position, the modified filter technique requires a trader to liquidate his investment in stocks to zero shares and to channel some funds into short-term money markets. In this case, the rate of returns for the average long position policy may be calculated as:

$$r^{**}_{ti} = \frac{r_{C.L}}{365} \qquad (4.10)$$

where $r_{C.L}$ is the weekly average call-loan rate[1].

It is self-evident that the calculations involved are iterative in nature. Appendix 2 presents the FORTRAN program employed in calculating the annual geometric mean return for the filter rule, the buy-and-hold and the average long position strategies.

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1 Bank of Canada, "Capital Markets and Interest Rates", Bank of Canada Review (January 1971-72).

CHAPTER V

RESULTS

Introduction

In this chapter the results of the methodology are analyzed with respect to (1) returns on individual stocks, (2) average returns and (3) returns on individual filter sizes.

For each of the individual securities, the annual geometric mean returns have been calculated for the buy-and-hold policy, the filter technique and the average long position policy. Appendix 3 presents estimates of $R_i^{(j)}$, $\overset{*}{R}{}_i^{(j)}$, $\overset{**}{R}{}_i^{(j)}$ and $\overset{***}{R}{}_i^{(j)}$ for twelve different filter sizes ranging from 0.5 to 7.0 percent. The first six tables of Appendix 3 contain geometric mean returns calculated for the investment period of January, 1970 to December, 1970. The next siz tables consist of annual returns calculated for the later periods, i.e., January, 1971 to December, 1971.

In the discussion of the efficient market hypothesis in Chapters II and III, it was stated that if the weak submartingale hypothesis is a good representative of stock price behavior, then, *ceteris paribus*, we should expect, on the average:

$$R_i^{(j)} \geq \overset{*}{R}{}_i^{(j)} \qquad (5.1)$$

$$R_i^{(j)} \quad \overset{**}{R}{}_i^{(j)} \quad \overset{***}{R}{}_i^{(j)} \qquad (5.2)$$

where $R_i^{(j)}$ - The annual geometric mean return under the buy-and-hold policy for security j,

$\overset{*}{R}{}_i^{(j)}$ - The annual geometric mean return under the filter technique for security j,

$\overset{**}{R}{}_i^{(j)}$ - The annual geometric mean return under the average long position policy for security j, and

$\overset{***}{R}{}_i^{(j)}$ - The annual geometric mean return under the average long position policy for security j adjusted for clearinghouse fees.

Equations 5.1 and 5.2 together imply that, holding all other variables constant, the buy-and-hold policy should consistently outperform any of the trading policies.

An examination of the annual geometric mean returns adjusted for dividends (Appendix 3) discloses that for nearly all securities, the buy-and-hold returns are comparatively superior to those for the filter technique and the average long position policy. For purposes of illustration, Table 3.1 shows that for a 0.5 percent filter, only four of the twenty filter rule returns and average long position returns respectively, are better than those for the corresponding returns under the buy-and-hold policy.

A careful examination of Appendix 3 reveals another aspect.

For both investment periods, it is evident from Appendix 3 that the buy-and hold returns are consistently superior to those for the corresponding trading rule returns. That is, irrespective of the 'type' of market condition prevailing in the stock market, i.e., whether the market conditions is 'bearish' or 'bullish' the performance of the buy and-hold policy exceeds that of the trading rules.

The upshot is that the results point to the fact that the weak submartingale hypothesis is a valid model for stock price behavior. This conclusion should be regarded as tentative, however, until further evidence is available from closer scrutiny of the geometric mean return.

Analysis of Results by Security

In this section an attempt is made to evaluate the performance of the various investment strategies in greater detail. For this purpose the annual returns averaged over the twelve filters for the filter technique have been estimated. These figures are shown in Table 10 along with the corresponding average long position and buy-and-hold returns.

Letting $\overset{*}{R}{}_i^{(j)}$ denote the average annual return for the filter technique when applied to security j , $\bar{\overset{*}{R}}$ may be calculated as:

$$\bar{\overset{*}{R}}{}_i^{(j)} = \sum_{i=1}^{12} \frac{\overset{*}{R}{}_i^{(j)}}{12} . \tag{5.3}$$

Similarly, the average annual returns per filter for the average long position (adjusted and unadjusted for clearing house fees)[1] and the buy-and-hold policies may be calculated according to equation 5.3.

It may bear pointing out at this juncture that the average geometric mean return under the filter technique is the return which would have been incurred by investing an equal dollar amount in every filter and transaction for each individual security.

Again, if the weak submartingale hypothesis is valid, then all other things being equal, the following results should hold:

$$\bar{R}_i^{(j)} \geq \bar{\overset{*}{R}}_i^{(j)} \tag{5.4}$$

and

$$\bar{R}_i^{(j)} \geq \bar{\overset{**}{R}}_i^{(j)} \geq \bar{\overset{***}{R}}_i^{(j)} . \tag{5.5}$$

Examining the average annual return figures in Table 10 immediately illustrates that, on the average, the percentage buy-and-hold are comparatively and consistently superior to those of the trading rule returns. On the basis of this observation, the author will go so far as to suggest that the assumptions underlying the submartingale hypothesis seems to be supported by the empirical findings of this study.

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[1] Note: Returns for the long position of the average long position policy are adjusted, by assuming that the floor trader has to pay 0.1 percent of the returns for each complete long position transaction, i.e.:

$$(\text{adjusted}) \overset{***}{r}{}_{ti}^{(j)} = \overset{**}{r}{}_{ti}^{(j)} - \left|(0.1)(\overset{**}{r}{}_{ti}^{(j)})\right| .$$

TABLE 10

Geometric Mean Return by Company: Averaged Over All Filters

Cols. / Sample I	1970 (1) $R_i^{(j)}$	1970 (2) $\bar{R}_i^{*(j)}$	1970 (3) $\overline{R}_i^{**(j)}$	1970 (4)# $\overline{R}_i^{***(j)}$	1971 (5) $\bar{R}_i^{(j)}$	1971 (6) $\bar{R}_i^{*(j)}$	1971 (7) $\overline{R}_i^{**(j)}$	1971 (8) $\overline{R}_i^{***(j)}$
Abitibi	-.001746	-.002608	-.001969	-.002338	-.000825	-.002271	-.001149	-.001462
Acme G.	-.002538	-.009519	-.003631	-.004457	-.003637	-.017811	-.006877	-.008569
Armore	-.001426	-.010437	-.004519	-.005208	-.000078	-.010603	-.004817	-.005869
Broul R.	-.001795	-.014893	-.009398	-.010522	-.000027	-.022001	-.010329	-.011575
Carrier	-.004362	-.002031*	-.001901*	-.002306	.000544	-.005459	-.002535	-.003334
Discovery	-.001364	-.008925	-.005794	-.006527	-.001732	-.025080	-.015808	-.017890
Grand Roy	-.003035	-.006392	-.005041	-.006123	-.004383	-.010679	-.007282	-.009325
Hand C.	-.002839	-.007956	-.005678	-.006684	-.000534	-.012193	-.006583	-.007799
Van Ness.	-.004928	-.007387	-.005337	-.006928	.000359	-.005684	-.002624	-.003736
West Mine	-.000078	-.000381	-.000023*	-.000308	-.001750	-.001679*	-.001635*	-.001936
Sample II								
Alcan	-.000590	-.000190*	-.000158*	-.000318*	-.001384	-.000546*	-.000873*	-.001109*
Alta G.T.	.001019	-.000219	.000507	.000339	.000010	-.000484	-.000178	-.000296
CD Sugars	-.000311	-.001896*	-.000855	-.001031	.000015	-.000868	-.000274	-.000416
**C. Hydro	-	-	-	-	-.001159	-.000462*	-.000504*	-.000686*
C. Tires	.000444	-.003504	-.001134	-.001134	.001266	-.000685	.000383	.000082

TABLE 10 (Cont'd)

Cols. / Sample I	1970 (1) $\overline{R}_i^{(j)}$	(2) $\overline{\overset{*}{R}}_i^{(j)}$	(3) $\overline{\overset{**}{R}}_i^{(j)}$	(4)# $\overline{\overset{***}{R}}_i^{(j)}$	1971 (5) $\overline{R}_i^{(j)}$	(6) $\overline{\overset{*}{R}}_i^{(j)}$	(7) $\overline{\overset{**}{R}}_i^{(j)}$	(8) $\overline{\overset{***}{R}}_i^{(j)}$
G.L. Powers	-.001481	-.002392	-.002017	-.002352	.000000	-.000974	-.000306	-.000410
Hudson B.	-.001411	.000017*	-.000445*	-.000659*	.000683	.000736*	.000796*	.000644
Imperial	.000365	-.001161	-.000278	-.000644	.002031	-.000015	.001092	.000892
Maritime	.000506	-.006798	-.002407	-.002739	.000447	-.000637	-.000058	-.000184
Rothman	-.002119	-.000221*	-.000842*	-.001299*	.000774	-.001026*	-.000058	-.000438
**Shaw Pipe	-.002051	-.003684	-.002533	-.003239	-	-	-	-

* -Asterisks indicate either, $\overline{\overset{*}{R}}_i^{(j)} > \overline{\overset{*}{R}}_i^{(j)}$, or $\overline{\overset{**}{R}}_i^{(j)} > \overline{R}_i^{(j)}$, or $\overline{\overset{***}{R}}_i^{(j)} > \overline{R}_i^{(j)}$ . .

** - Data missing for one period

\# = Adjusted for clearinghouse fees, i.e., (adjusted) $\overline{\overset{***}{r}}_i^{(j)} = \overset{***}{r}_i^{(j)} - (0.1)(\overset{***}{r}_i)^{(j)}$.

Starting with a closer comparison between the buy-and-hold policy and the filter technique, is observed on the basis of columns (1) and (2) in Table 10 that, except for the five percentage returns indicated by asterisks, all other returns for the filter rule are inferior to those for the buy-and-hold policy. Similarly, a comparison of columns (5) and (6) shows that only four of the twenty filter rule returns are better than the buy-and-hold returns. Another striking fact about the result is that the filter rule returns are predominantly negative for both investment periods whereas, in 1970, four of the buy-and-hold returns are positive and in 1971, buy-and-hold returns for eleven stocks are positive. These results not only acknowledge the fact that the filter technique cannot consistently earn more than what could be achieved from a naive buy-and-hold policy, but also reveal the fact that it performed poorly under the standard of average returns.

Columns (1) and (3) in Table 10 indicate that only five of the twenty average long position returns exceed those for the corresponding buy-and-hold percentage returns. Similarly, on the basis of a comparison between columns (5) and (7) in Table 10, it may be observed that with the exception of the percentage returns for four securities (Hydro, West Mine, Alcan and Hudson Bay), all other average long position returns are inferior to the corresponding values of the buy-and-hold returns. Furthermore, with the adjustment for clearing-house fees, only two of the twenty average returns from a policy of filtering around the average long position are superior to those from the buy-and-hold policy.

The conclusion that can be drawn from the above comparisons concerning the modified filter technique is that none of the above analyses seem to indicate that any special modification of the filter technique can consistently outperform a naive buy-and-hold policy at least on an expected return basis.

The Means Test

While the buy-and-hold returns are found to differ from those of the trading rule returns, it is difficult at this point to make a generalization on the significance, if any, of the difference between the means. In order to determine this, the t-test has been applied to the series of differences between the buy-and-hold returns and each of the trading rule returns.

The t-statistic is constructed according to the formula[1]:

$$t = \frac{\overline{\delta}}{[\sigma(\delta)/\sqrt{n}]} \qquad (5.6)$$

where $\overline{\delta}$ defines the mean of the differences and $\sigma(\delta)$ is the standard deviation of the differences. The estimated values for

1 W. Mendenhall and R.L. Scheaffer, Mathematical Statistics with Applications (Duxbury Press, 1973), p. 343-345.

TABLE 11

Differences Between the Mean Buy-and-Hold Returns and the Trading Rules Returns

Cols. / Security	(1) $\bar{R}_i^{(j)} - \bar{R}_i^{*(j)}$	(2) $R_i^{(j)} - \bar{R}_i^{**(j)}$
Alcan	-.000400	-.000432
Alta G.T.	.001238	.000512
CD. Sugars	.001585	.000544
C. Tires	.003948	.001578
G.L. Powers	.000961	.000536
Hudson B.	-.001428	-.000966
Imperial	.001526	.000643
Maritime	.006304	.002913
Rothman	-.001898	-.001277
Shaw Pipe	.001633	.000482
Alcan	.000838	.002257
Alta G.T.	.000494	.000188
CD. Sugars	.000883	.000289
C. Hydro	-.000697	-.000655
C. Tires	.001951	.000883
G.L. Powers	.000974	.000306
Hudson B.	-.000053	-.000113
Imperial	.002181	.000939
Maritime	.001084	.000505
Rothman	.001800	.000832
Mean Diff=$\bar{\delta}$	.001057	.000498
Std Dev=$\sigma(\delta)$	.001843	.000989
$t(\delta)=\bar{\delta}/[\sigma(\delta)/\sqrt{n}]$	2.564910	2.263630

δ, $\bar{\delta}$, $\sigma(\delta)$ and the t-statistics are presented in Table 11.

The values of the computed t-statistics[1] are $t_1 = 2.56491$ and $t_2 = 2.26363$ with $(n-1) = 19$ degrees of freedom (d.f.). Given d.f. = 19 for a 5 percent level of significance, the critical value of $t_{\alpha=.05}$ is :

$$P(t > 1.729 | d.f.=19) = .05$$

and for a 1 percent level of significance, the critical value of $t_{\alpha=.01}$ is:

$$P(t > 2.539 | d.f.=19) = .01 .$$

A comparison of the t_1-value and the critical $t_{\alpha=.05}$ value reveals that $t_1 > t_{\alpha=.05}$, i.e., the computed t_1-value is marginally significant even at the 1 percent level and is significant at the 5 percent level.

Similarly, it is observed that the t_2-value is also significant at the 1 percent level. This evidence is considered strong enough to conclude that the differences between the buy-and-hold mean returns and each of the trading rule mean returns are significant. Moreover, the positive t-values imply that the returns from the buy-

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1 Security in Sample I is deliberately excluded in the estimation of the t-statistic because it may contain several extreme and unusual returns which may tend to obscure the general results.

TABLE 12

Difference Between the Buy-and-Hold and the Trading Rule Returns 1970-71

Filter Size	0.0050		0.0100	
Security	$R_i^{(j)}-R_i^{*(j)}$	$R_i^{(j)}-R_i^{**(j)}$	$R_i^{(j)}-R_i^{*(j)}$	$R_i^{(j)}-R_i^{**(j)}$
Alcan	-.000715	-.000450	-.000204	.000000
Alta G.T.	.000542	.000389	.000717	.000454
CD. Sugars	.001754	.001004	.001772	.000944
C. Tires	.004165	.001597	.003516	.001246
G.L. Powers	.003171	.002221	.003196	.002011
Hudson B.	-.002389	-.001296	-.001626	-.001059
Imperial	.002481	.000966	.002638	.001333
Maritime	.009095	.005424	.008219	.004730
Rothman	.001247	.001212	-.000727	.000051
Shaw Pipe	.002749	.002000	.001594	.001154
Alcan	-.001758	-.000853	-.000293	-.000177
Alta G.T.	-.000475	-.000377	-.000101	-.000104
CD. Sugars	.001682	.000906	.000198	-.000006
C. Hydro	.000286	.000133	-.000065	-.000040
C. Tires	.002857	.001335	.002668	.001226
G.L. Powers	.002159	.001232	.000881	.000404
Hudson B.	-.001055	-.000918	-.000945	-.000685
Imperial	.001252	.000348	.000902	.000248
Maritime	.002397	.001248	.002631	.001352
Rothman	.004007	.002121	.003202	.001598
Mean Diff= $\bar{\delta}$	.001644	.000898	.001409	.000734
Std Dev= $\sigma(\delta)$	.002560	.001491	.002221	.001239
$t(\delta)=\bar{\delta}/[\sigma(\delta)/\sqrt{n}]$	2.884000	1.57544	2.818000	2.649820

TABLE 13

Difference Between the Buy-and-Hold and the Trading Rule Returns

Filter Size	0.0150		0.0200	
Security	$R_i^{(j)}-\overset{*}{R}_i^{(j)}$	$R_i^{(j)}-\overset{**}{R}_i^{(j)}$	$R_i^{(j)}-\overset{*}{R}_i^{(j)}$	$R_i^{(j)}-\overset{**}{R}_i^{(j)}$
Alcan	-.001329	-.000825	-.001255	-.000780
Alta G.T.	.001633	.000711	.000966	.000378
C.D. Sugars	.001803	.000909	.001847	.000212
C. Tires	.003877	.001311	.003816	.001274
G.L. Powers	.002598	.001585	.000531	.000274
Hudson B.	-.000869	-.000867	-.000026	-.000302
Imperial	.002324	.001090	.002159	.001003
Maritime	.007868	.004496	.005741	.003022
Rothman	-.000182	-.000241	-.000584	-.000547
Shaw Pipe	.003594	.001587	.003581	.000238
Alcan	-.000339	-.000221	-.000607	-.000393
Alta G.T.	-.000197	-.000165	.000069	-.000042
C.D. Sugars	.000137	.000026	-.000019	-.000102
C. Hydro	.000246	.001505	-.001136	-.000637
C. Tires	.002801	.001323	.002733	.001270
G.L. Powers	.000523	.000092	.000376	.000001
Hudson B.	-.000636	-.000487	-.000659	-.000474
Imperial	.001617	.000651	.002756	.001278
Maritime	.002362	.001180	.001686	.000790
Rothman	.003076	.001508	.002835	.001289
Mean Diff= $\bar{\delta}$	.0011913	.000666	.001228	.000387
Std Dev= $\sigma(\delta)$	.0015760	.001191	.0019140	.000929
$t(\delta)=\bar{\delta}/[\sigma(\delta)/\sqrt{n}]$	3.4037000	2.466670	2.8558100	1.935000

TABLE 14

Difference Between the Buy-and-Hold and the Trading Rule Returns

Filter Size	0.0250		0.0300	
Security	$R_i^{(j)} - \bar{R}_i^{*(j)}$	$R_i^{(j)} - R_i^{**(j)}$	$R_i^{(j)} - \bar{R}_i^{*(j)}$	$R_i^{(j)} - R_i^{**(j)}$
Alcan	-.000770	-.000520	.000148	-.000031
Alta G.T.	.001073	.000440	.001332	.000841
CD. Sugars	.000836	.000006	.001103	.000007
C. Tires	-.003727	.001715	.004083	.001946
G.L. Powers	-.000428	-.000229	.000035	-.000014
Hudson B.	-.000595	-.000457	-.002215	-.001376
Imperial	.001749	.000751	.002279	.001028
Maritime	.007374	.003814	.007259	.002505
Rothman	-.003498	-.002568	-.003953	-.002402
Shaw Pipe	.002729	-.000201	.001282	.000617
Alcan	-.000861	-.000524	-.001788	-.001068
Alta G.T.	.000241	.000058	-.000824	.000283
CD. Sugars	-.000059	-.000095	.000617	.000228
C. Hydro	-.000287	-.000212	-.000384	-.000788
C. Tires	.002017	.000889	.001822	.000795
G.L. Powers	.000392	.000141	.001882	.000384
Hudson B.	.000282	.000399	-.000356	-.000258
Imperial	.002386	.001111	.002534	.001192
Maritime	.000606	.000243	.000865	.000363
Rothman	.001108	.000326	.000051	-.000222
Mean Diff=$\bar{\delta}$	.000696	.000254	.000738	.000202
Std Dev=$\sigma(\delta)$	.002090	.001188	.002347	.001109
$t(\delta)=\bar{\delta}/[\sigma(\delta)/\sqrt{n}]$	1.480850	.958491	1.419230	.814840

TABLE 15

Difference Between the Buy-and-Hold and the Trading Rule Returns

Filter Size	0.0350		0.0400	
Security	$R_i^{(j)}-\overset{*}{R}_j^{(j)}$	$R_i^{(j)}-\overset{**}{R}_i^{(j)}$	$R_i^{(j)}-\overset{*}{R}_i^{(j)}$	$R_i^{(j)}-\overset{**}{R}_i^{(j)}$
Alcan	.000309	.000048	-.000585	-.000320
Alta G.T.	.001040	.000381	.000205	.000126
CD. Sugars	.002146	.000311	.002521	.001159
C. Tires	.003123	.001440	.003700	.001722
G.L. Powers	.001264	.001264	.003562	.000228
Hudson B.	-.001750	-.001103	-.001604	.000985
Imperial	.002087	.000921	.000699	.000187
Maritime	.007414	.002260	.006147	.002189
Rothman	-.004145	.002489	-.004069	-.002458
Shaw Pipe	.000773	.000325	.000538	.000185
Alcan	-.001593	-.000598	-.001265	-.000756
Alta G.T.	-.000251	-.000183	.001032	.000473
CD. Sugars	.000362	.000102	.001249	.000549
C. Hydro	-.001838	-.001011	-.001481	-.000824
C. Tires	.001265	.000520	.001989	.000909
G.L. Powers	.000910	.000425	.001740	.000394
Hudson B.	-.000410	-.000279	.000511	.000200
Imperial	.002537	.001363	.002585	.001403
Maritime	.000704	.000287	.000483	.000133
Rothman	.001489	.000618	.000405	.000324
Mean Diff=$\bar{\delta}$	.000771	.000212	.000929	.000242
Std Dev=$\sigma(\delta)$	.002331	.001059	.002224	.001027
$t(\delta)=\bar{\delta}/[\sigma(\delta)/\sqrt{n}]$	1.484230	.895692	1.869210	1.061400

TABLE 16

Difference Between the Buy-and-Hold and the Trading Rule Returns

Filter Size	0.0450		0.0500	
Security	$R_i^{(j)}-R_i^{*(j)}$	$R_i^{(j)}-R_i^{**(j)}$	$R_i^{(j)}-R_i^{*(j)}$	$R_i^{(j)}-R_i^{**(j)}$
Alcan	-.000676	-.000508	-.000454	-.000579
Alta G.T.	.000337	.000059	.002325	.001011
CD sugars	.001539	.000580	.002229	.000909
C. Tires	.004470	.002088	.003993	.001815
G.L. Powers	-.000500	-.000327	-.000103	-.000025
Hudson B.	-.000899	-.000617	-.002342	-.000395
Imperial	.001029	.000356	.001351	.000419
Maritime	.005853	.002879	.003346	.001622
Rothman	-.003446	-.002159	-.001543	-.001300
Shaw Pipe	.002086	.000674	.000825	.000023
Alcan	-.000549	.000383	.000007	-.000081
Alta G.T.	.001382	.000643	.001244	-.000979
CD. Sugars	.001037	.001426	-.000439	-.000353
C. Hydro	-.000865	.001011	-.000362	.000907
C. Tires	.000924	.000384	.001099	.000476
G.L. Powers	.000573	.000001	.002199	-.000780
Hudson B.	.000581	.000247	.000765	.000093
Imperial	.002290	.001057	.002002	.000921
Maritime	.000525	.000204	.000140	.000285
Rothman	.000709	.000395	.001172	.000523
Mean Diff=$\bar{\delta}$	.000820	.000299	.000858	.000089
Std Dev=$\sigma(\delta)$	.001969	.001084	.001569	.000906
$t(\delta)=\bar{\delta}/[\sigma(\delta)/\sqrt{n}]$	1.863600	1.246250	2.451430	.449500

TABLE 17

Difference Between the Buy-and-Hold and the Trading Rule Returns

Filter Size,	0.0600		0.0700	
Security	$R_i^{(j)}-\overset{*}{R}_i^{(j)}$	$R_i^{(j)}-\overset{**}{R}_i^{(j)}$	$R_i^{(j)}-\overset{*}{R}_i^{(j)}$	$R_i^{(j)}-\overset{**}{R}_i^{(j)}$
Alcan	-.000564	-.001008	-.000909	-.000142
Alta G.T.	-.002767	.001233	.001913	.000841
CD. Sugars	.000449	.000076	.001025	.000424
C. Tires	.003864	.000908	.003908	.001868
G.L. Powers	.000391	.000125	.000177	.000022
Hudson B.	.001168	-.001217	-.001416	-.000912
Imperial	-.000003	-.000223	.000045	-.000113
Maritime	.004937	-.000940	.002388	.001072
Rothman	-.001063	-.001014	-.000304	-.000633
Shaw Pipe	.001239	-.000010	.000611	.000303
Alcan	.000035	-.000049	-.001051	-.000665
Alta G.T.	.001078	.000498	.001225	.000565
CD. Sugars	.001928	.000530	.001744	.000675
C. Hydro	-.000627	-.001022	-.001286	-.001412
C. Tires	.000966	.000417	.002259	.001046
G.L. Powers	.000141	.000275	-.000148	-.000137
Hudson B.	.000696	.000313	.001086	.000505
Imperial	.002664	.001236	.001827	.000463
Maritime	.000443	.000181	.000290	-.000241
Rothman	.001846	.000485	.000988	.000304
Mean Diff= $\bar{\delta}$	.000841	.000012	.000724	.000161
Std Dev= $\sigma(\delta)$	.001700	.000745	.001326	.000771
$t(\delta)=\bar{\delta}/[\sigma(\delta)/\sqrt{n}]$	2.213150	.100000	2.496550	.947058

and-hold policy are significantly larger than those from each of the filter policies.

While the analysis outlined above seems to favour the weak martingale hypothesis, it could be argued that for some levels of the filter, the trading rule strategies may consistently earn significantly more than the buy-and-hold policy. The t-test may be applied to the series of differences between the buy-and-hold returns and each of the trading rule returns to ascertain whether the observed differences are statistically significant.

Calculated values of δ, $\bar{\delta}$, $\sigma(\delta)$ and the t-statistics are shown in Tables 12-17. However, let us concern ourselves with the computed t-values summarized in Table 18.

Examining the t-values in column (1) in Table 18, it can be seen that all of the t-values are significant at the 10 percent level. Furthermore, the t-values for the 0.5, 1.0, 1.5 and 2.0 percent filters are significant at the 1 percent level. These observations imply that the differences of the percentage mean returns between the two investment strategies are significant.

The positive t-values for all filters point to the fact that the returns under the buy-and-hold policy consistently exceed those under the filter technique. However, an examination of column (2) in Table 18 immediately shows that only two of the twelve t-values are statistically significant at the 1 percent level. The t-values for the 1.5 and 2.0 percent filters are statistically significant at the 5 percent and 10 percent levels, respectively. These observations

TABLE 18

A Summary of the Computed t-Values

Columns Filter Sizes	(1) $R_i^{(j)} - R_i^{*(j)}$	(2) $R_i^{(j)} - R_i^{**(j)}$
0.0050	2.88400***	2.99333***
0.0100	2.81800***	2.[illegible]4982***
0.0150	3.40370***	2.46667**
0.0200	2.85581***	1.93500*
0.0250	1.48085*	0.95849
0.0300	1.41923*	0.81480
0.0350	1.48423*	0.89569
0.0400	1.86921*	1.06140
0.0450	1.86360*	1.24625
0.0500	2.45143**	0.49500
0.0600	2.21315**	0.10000
0.0700	2.49655**	0.94705

* Significant at the 10 percent level.

** Significant at the 5 percent level.

*** Significant at the 1 percent level.

strongly suggest that for small filters ranging from 0.5 to 2.0, the percentage average long position returns are significantly smaller than the corresponding values of the buy-and-hold policy. However, for filter sizes equal or greater than 2.5 percent, the computed t-values are not significant even at the 10 percent level. These results suggest that for these filters, the average long position returns are comparable to those for the buy-and-hold policy. It is important to mention here that the average number of transactions for these filters (2.5 percent to 7.0 percent) are very small[1]. Hence, results for these filters are not as reliable as those obtained for the smaller filters (0.5 to 2.0 percent).

The comparative analysis of mean returns in this section points to the conclusion that the research hypothesis (i.e., that current security prices "fully reflect" information of economic benefit as implied by the past sequence of price changes) cannot be refuted.

Analysis of the Geometric Mean Returns by Filters

While the preceding analyses of geometric mean returns appear to favour the buy-and-hold policy, it does not rule out the possibility that trading rules may earn returns superior to those of

---

1 See Appendix 4.

the buy-and-hold policy for some filters in a specific time period. For instance, is it not logical to assume that technical analyst would likely invest in accordance with the guidelines of the average long position strategy when the general stock market condition is anticipated to be bullish[1]. In this manner, technical analysts could hope to maximize earnings by taking full advantage of the presence, if any, of profitable positive systematic dependencies.

This section examines the above proposition by comparing the computed annual average returns earned per security under the filter technique and the average long position policy with the corresponding returns under the buy-and-hold policy for the investment period 1971[2]. However, for the sake of completeness, 1970 annual average returns per security for each investment strategy under consideration are also estimated[3].

Letting $\bar{\overset{*}{R}}_i$ define the filter rule average return per security for a given filter size, the $\bar{\overset{*}{R}}_i$-value may be calculated as:

$$\bar{\overset{*}{R}}_i = \sum_{j=1}^{10} \frac{\overset{*}{R}_i^{(j)}}{10} \qquad (5.7)$$

---

1 A comparison of the average long position policy for the investment period 1970 (bearish market) and 1971 (slightly bullish market) indicates that a policy of filtering around an average long position performs better in a bullish rather than a bearish market condition.

2 These figures are reported in Table 20.

3 See Table 19 for the relevant figures.

Since the investment period covered by each filter is expected to differ for each filter size, the calculation of buy-and-hold returns for each corresponding filter size is required.

Using equation 5.7, the average long positions and the buy-and-hold returns may be calculated. The estimated values of $\overline{\overset{*}{R}}_i$, $\overline{\overset{**}{R}}_i$ and $\overline{\overset{***}{R}}_i$ are tabulated in Tables 19 and 20 along with the corresponding $\overline{R}_i$ values. Basically, $\overline{\overset{*}{R}}_i$ represents the filter technique average return per security which would have resulted from investing an equal dollar amount in every security listed in Sample 2 for a given filter size. If the research hypothesis is valid, then, <u>ceteris paribus</u>, we should observe on the average:

$$\overline{R}_i \geq \overline{\overset{*}{R}}_i \tag{5.8}$$

and

$$\overline{R}_i \geq \overline{\overset{**}{R}}_i \geq \overline{\overset{***}{R}}_i \tag{5.9}$$

where $\overline{R}_i$ - Geometric mean, return averaged over all companies under the buy-and-hold policy,

$\overline{\overset{*}{R}}_i$ - Geometric mean return averaged over all companies under the filter technique for filter i,

$\overline{\overset{**}{R}}_i$ - Geometric mean return averaged over all companies under the average long position policy for filter i, and

$\overline{\overset{***}{R}}_i$ - Geometric mean return, adjusted for clearinghouse fees, averaged over all companies under the average long policy for filter i

Equations 5.8 and 5.9 assert that even for some filters, the trading rule policies cannot persistently outperform a simple buy-and-hold policy.

On the basis of the calculated average geometric returns per security listed in Table 20, one is now able to make two types of comparison. First, one can compare the buy-and-hold returns, $\bar{R}_i$, with those of the filter rule returns, $\bar{\overset{*}{R}}_i$. Second, one can compare the buy-and-hold returns, $\bar{R}_i$, and the corresponding average long position returns for each of the filters.

The first comparison should tell whether the buy-and-hold returns and the filter returns, as revealed by the $\bar{R}_i$ and $\bar{\overset{*}{R}}_i$ measures, are still as evenly spread in favour of the buy-and-hold policy as was indicated by the $\bar{R}_i^{(j)}$ and $\bar{\overset{*}{R}}_i^{(j)}$ measures, or whether for some filters the filter returns are consistently larger than the corresponding buy-and-hold returns. The second type of comparison, that between the average long position returns, $\bar{\overset{**}{R}}_i$, and the buy-and-hold returns, $\bar{R}_i$, should indicate whether or not a modified multi-investment filter strategy enjoys relatively superior earnings for some filters.

Beginning with comparisons between the buy-and-hold returns, $\bar{R}_i$, and the filter rule returns, $\bar{\overset{*}{R}}_i$, we observe, on the basis of columns (1) and (2) in Table 20, that the filter rule returns for all filter sizes are consistently inferior to those for the buy-and-hold policy. The salient point is that the filter returns are all negative whereas the corresponding buy-and-hold returns are positive. These

TABLE 19

Returns by Filters: Averaged Over All Companies (Sample 2, 1970)

Columns / Filter Size	*(1) $\overline{R_i}$	(2) $\overset{*}{R_i}$	(3) $\overset{**}{R_i}$	#(4) $\overset{***}{R_i}$	(5) $\sigma(R_i)$	(6) $\sigma(\overset{*}{R_i})$	(7) $\sigma(\overset{**}{R_i})$	(8) $\sigma(\overset{***}{R_i})$
0.005	-.000395	-.002605	-.002025	-.002258	.001100	.002851	.002154	.002047
0.010	-.000393	-.002252	-.001274	-.001845	.001114	.002396	.001571	.001692
0.015	-.000374	-.002304	-.001298	-.001747	.001162	.002220	.001427	.001627
0.020	-.000368	-.002022	-.000844	-.001184	.001157	.002002	.000961	.001064
0.025	-.000469	-.001802	-.000744	-.001029	.001317	.002444	.001235	.001115
0.030	-.000491	-.001606	-.000784	-.001100	.001370	.002373	.001032	.001219
0.035	-.000562	-.001888	-.000835	-.001026	.001338	.002366	.001045	.000977
0.040	-.000681	-.001823	-.000871	-.001368	.001301	.002435	.001057	.001156
0.045	-.000734	-.001703	-.001030	-.001291	.001169	.002200	.001125	.001247
0.050	-.000728	-.001712	-.000988	-.001223	.001071	.001589	.000910	.001006
0.060	-.001291	-.001939	-.000836	-.001012	.001247	.001687	.000720	.000803
0.070	-.001010	-.001556	-.000935	-.001122	.000803	.001178	.000739	.000810

* See this chapter for notation explanation.

\# See footnote in Table 20 for explanation.

TABLE 20

Returns by Filters: Averaged Over All Companies (Sample 2, 1971)

Columns / Filter Size	(1) $\overline{R}_i$ *	(2) $\overline{\overset{*}{R}}_i$	(3) $\overline{\overset{**}{R}}_i$	# (4) $\overline{\overset{***}{R}}_i$	(5) $\sigma(R_i)$	(6) $\sigma(\overset{*}{R}_i)$	(7) $\sigma(\overset{**}{R}_i)$	(8) $\sigma(\overset{***}{R}_i)$
0.005	.000440	-.000637	.000129	-.000516	.001025	.001537	.001187	.001046
0.010	.000462	-.000430	.000070	-.000246	.000906	.001277	.000915	.000982
0.015	.000428	-.000531	.000029	-.000251	.000874	.001131	.000596	.000704
0.020	.000399	-.000404	.000101	-.000145	.000919	.001019	.000598	.000647
0.025	.000406	-.000103	.000174	-.000034	.000930	.000470	.000481	.000469
0.030	.000271	-.000219	.000180	.000016	.000976	.000587	.000436	.000466
0.035	.000228	-.000089	.000139	.000034	.000988	.000662	.000476	.000472
0.040	.000152	-.000565	.000129	-.000250	.001121	.000658	.000547	.000527
0.045	.000187	-.000475	.000001	-.000220	.001131	.000524	.000890	.000710
0.050	.000104	-.000805	-.000162	-.000279	.001168	.000933	.000863	.000862
0.060	.000062	-.000855	-.000170	-.000269	.001180	.000925	.000783	.000781
0.070	.000009	-.000640	-.000101	-.000192	.001276	.001076	.000843	.000834

* See this chapter for notation explanation.

Note: The returns for the long position are adjusted by deducting 0.1 percent of the return realized on each complete transaction, i.e.:

$$\text{(adjusted)} = \overset{***}{r}{}^{(j)}_{ti} = \overset{**}{r}{}^{(j)}_{ti} - |(0.1)(\overset{**}{r}{}^{(j)}_{ti})|.$$

findings acknowledge the fact that even for some filters the filter technique could not earn superior average return than the returns that could be realized from a buy-and-hold policy.

A close look at columns (1) and (3) in Table 20 reveals that without exception, the buy-and-hold policy has a consistently higher average percentage return than any of the corresponding average long position returns. Moreover, if the average long position returns were adjusted for the clearinghouse fees which floor traders have to pay (approximately 0.1 percent on each complete transaction is used, i.e., purchase plus sales or sales plus purchases), the earnings for the average long position are drastically reduced. This is evident from a comparison of the returns between (3) and (4) of Table 20. In fact, except for the 0.03 and 0.035 percent filters, the observed returns for all other filters are negative. On the basis of these results, it is safe to assume that further modification of the trading rule is unlikely to produce better returns than those from a naive buy-and-hold strategy.

While the analysis outlined above appears to support the weak submartingale hypothesis, it must be pointed out that comparison on mean returns alone is not sufficiently valid, because the analysis ignores the risk factor. To take risk into consideration, supplementary measures of variability such as the variance or standard deviation of a distribution are required. Since the study is concerned with the distributions of $\bar{R}_i$, $\bar{\overset{*}{R}}_i$ and $\bar{\overset{**}{R}}_i$, standard deviation is a good surrogate for the measurement of risk.

Hence

$$\sigma(\overset{*}{R}_i) = \sqrt{\sum_{j=1}^{n} \frac{(\overset{*}{R}_i - \overset{*}{R}_i)^2}{n-1}} \qquad (5.10)$$

where $j = 1, 2, \ldots, n$

$n = 10$

and $\sigma(\overset{*}{R}_i)$ is, by definition, the standard deviation of returns generated by the filter technique for a given filter size. The values of $\sigma(R_i)$ for the buy-and-hold policy are shown in Table 17 along with the corresponding values for the trading rule policies.

A comparison between columns (5) and (7) in Table 20 immediately reveals that the variability of returns calculated for the buy-and-hold policy are generally higher than those for the average long position policy. It is also higher than for many larger filters. This result is not altogether surprising. In fact Smidt anticipated such a result. Columns (5) and (7) in Table 20 illustrate that except for the 0.5 and 1.0 percent filters, the variability of returns for all other filters on the average long position are uniformly smaller than those for the buy-and-hold.

This points to a serious issue. That is, since $\sigma(R_i)$ is greater than $\sigma(\overset{**}{R}_i)$, the constraint (all other things being equal) implicit in all the preceding analysis becomes invalid. In order to maintain economic rationale it is essential to make explicit adjustment for the different degrees of risk in comparing the returns of the buy-and-hold policy to those of the average long position policy.

Otherwise, comparison of the absolute mean returns alone will tend to be biased against the average long position policy.

One way of adjusting for risk is to divide the mean return by the standard deviation to obtain the risk-adjusted return or the reciprocal of the coefficient of variation ν:

$$\nu(R_i) = \frac{\bar{R}_i}{\sigma(R_i)} \qquad (5.11)$$

and $\nu(R_i)$ defines the risk-adjusted return for the buy-and-hold policy.

Using the method described above, the risk-adjusted return for the filter trading rule and the buy-and-hold policies were calculated. Figures for the risk-adjusted returns are tabulated in columns (1) to (3) of Table 21.

Columns (1) and (3) in Table 21 show that most of the risk-adjusted returns of buy-and-hold are uniformly larger than those of the policy of trading around the trend. It may be noted that only two of the eight risk-adjusted returns for the average long position policy is marginally superior to the corresponding buy-and-hold return. Thus, through the appropriate use of risk-adjusted returns, a less ambiguous basis for inferring the superiority of performance between any set of investment strategies is obtained. The results acknowledge that even with an adjustment for the risk factor, the average long position policy remains consistently inferior in comparison with the simple buy-and-hold policy.

TABLE 21

Risk-Adjusted Geometric Mean Return Averaged Over All Companies (Sample 2, 1971)

Columns Filter Size	(1) $\nu(R_i)$	(2) $\nu(\overset{*}{R}_i)$	(3) $\nu(\overset{**}{R}_i)$
.005	.429268	-.414443	.108677
.010	.509934	-.474614	.076503
.015	.489702	-.469915	.048657
.020	.434167	-.396467	.168896
.025	.436559	-.219149	.361746
.030	.277664	-.373083	.412840
.035	.230769	-.134441	.292016
.040	.135592	-.807143	-.235831
.045	.165340	-.537078	-.001123
.050	.089041	-.862808	-.187717
.060	.077500	-.924324	-.217113
.070	.007053	-.598131	-.119810

$\nu(R_i)$ - Reciprocal of coefficient of variation or risk adjusted return under the buy-and-hold strategy.

$\nu(\overset{*}{R}_i)$ - Risk-adjusted return under the filter technique averaged over all companies for filter i.

$\nu(\overset{**}{R}_i)$ - Risk-adjusted return under the average long position policy.

Before concluding this section, it must be mentioned that the analyses ignore other costs involved in operating a mechanical rule. For example, floor traders operating filter technique will have to pay for the costs required in the acquisition and analysis of information. Furthermore, floor traders will have to forego alternative uses of their capital and time. Obviously, if we had taken these costs into consideration, the superiority of the buy-and-hold policy would have been even more emphasized relative to filtering strategy. Given the results of the analysis, it may be concluded that with respect to the performance of the average long position strategy, the stock price behavior on the Toronto Stock Exchange is remarkably close to that described by the weak form efficient market hypothesis of stock price bahavior.

CHAPTER VI

CONCLUSION

Summary

The two main objectives of this study were an exposition of the theoretical background regarding the efficient market hypothesis and an investigation into the weak submartingale model.

The underlying theoretical discussion was presented in Chapters I and II. The study was placed in a large framework by sketching the role of price dependencies in an efficient market hypothesis. It was mentioned that only belatedly has the submartingale model received the attention it would appear to deserve. Then, an attempt was made to clarify the nature of the weak form of the efficient market hypothesis.

Several studies by other investigators were briefly summarized in Chapter III. The objective of this chapter was to develop a broad theoretical framework which would put the study in perspective. The ascertainment of a definite risk-return relationship permitted a more detailed study of the weak form of the efficient market hypothesis.

The technical aspects of each investment strategy were discussed. These and other topics relating to data and methodology were dealt with in Chapter IV.

Since the results of the analyses were presented in Chapter V, it may be pointed out here that the empirical evidence appears to lend support to the weak form of efficient market hypothesis. Several technical problems were encountered and dealt with in the same chapter.

Conclusion

Before turning to the implications of the analysis, a few words may be said about the resulting conclusions on the basis of the results. One such conclusion is that the presence of nonrandom elements in individual price series are not significantly large enough for traders to profitably exploit them in order to increase expected profits above those that could be realized from a naive buy-and-hold policy. The presence of a small price trend in the analysis may be due to the existence of transaction costs, i.e., the exchange costs, marketability costs and other costs. Obviously these dependencies are economically "meaningless".

A second conclusion that could be drawn from the findings of this study refers to the performance of complex multi-investment strategies vs. a simple buy-and-hold policy. Although the variabilities of the average long position returns are uniformly smaller (with the exception of the .005 and .01 percent filters) than those for the buy-and-hold policy, it does not compensate substantially for the poor returns. The risk-adjusted return measures reflect that the buy-and-hold policy remains superior to the multi-investment trading rule strategy.

A final conclusion is that price series of mining securities tend to exhibit large negative price dependencies over time. Whether these dependencies are systematically induced or due to the presence of the few and unusual observations in the mine's price series remains unresolved. This problem is beyond the scope of the study.

Some Implications of the Analysis

This study is not so much concerned with statistical properties of price changes which have developed historically and exist now but with the testing of the submartingale hypothesis through direct evaluation of the various trading rules. Therefore the implications of the analysis are important to stock investors in critically formulating and evaluating the benefits and costs of various investment policies.

The claims of chartists or technical analysts that patterns of price series could be used to increase expected returns are found to be illegitimate. This implies that the charting and filtering techniques are of no real value to rank and file investors. Only the clairvoyant could hope to predict with certainty. Undoubtedly technical analysts are not clairvoyant analysts.

A second implication of the findings is that on the average and at any point in time, the current market price of a security is a good estimate of its intrinsic value. Therefore, rank and file investors should not concern themselves with the possibilities of securities being excessively over-priced or under-priced.

It may bear pointing out again that the analysis has been performed mainly for industrial securities; therefore, any conclusions and implications derived from it apply, strictly speaking, only to these types of securities. It is tempting, however, and would not appear altogether unreasonable, to extend the implications to other types of securities. Statements concerning mining issues are, however, much more tentative.

Possibilities for Further Research

The comments of this section will be restricted to the immediate topic of the negative dependencies-profits relationships for mining stock price series. This study has uncovered evidence indicating that over-time, price series of mining stocks tend to exhibit large negative dependencies on price changes. Whether these dependencies are due to the few and unusual observations or are systematically produced remains a vexing problem. If the latter is true, then the possibility of floor traders profitably exploiting the negative dependencies in price changes is not altogether rejected for these issues. For instance, investors may find it profitable to operate a reverse filter technique for mining stocks. A reverse filter technique dictates buy and sell tenders opposite to that of the filter-technique. That is, if the filter signals a long position, the investor should go short and if the corresponding filter signals a short position, the investor should go long.

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APPENDIX 1

List of Daily Closing Price Series

DAILY CLOSING PRICE SERIES FOR ABITIBI.
1970.

0.1250000E 02	0.1287500E 02	0.1237500E 02	0.1212500E 02	0.1225500E 02	[illegible]	[illegible]
0.1200000E 02	0.1200000E 02	0.1212500E 02	0.1187500E 02	0.1237500E 02	[illegible]	[illegible]
0.1275000E 02	0.1262500E 02	0.1287500E 02	0.1237500E 02	0.1250000E 02	[illegible]	[illegible]
0.1225000E 02	0.1212500E 02	0.1237500E 02	0.1212500E 02	0.1237500E 02	[illegible]	[illegible]
0.1275000E 02	0.1262500E 02	0.1275000E 02	0.1250000E 02	0.1262500E 02	[illegible]	[illegible]
0.1275000E 02	0.1262500E 02	0.1250000E 02	0.1225000E 02	0.1250000E 02	[illegible]	[illegible]
0.1262500E 02	0.1262500E 02	0.1262500E 02	0.1262500E 02	0.1237500E 02	[illegible]	[illegible]
0.1187500E 02	0.1137500E 02	0.1137500E 02	0.1112500E 02	0.1112500E 02	[illegible]	[illegible]
0.1100000E 02	0.1100000E 02	[illegible]	0.1087500E 02	0.1137500E 02	[illegible]	[illegible]
0.1150000E 02	0.1125000E 02	0.1162500E 02	0.1187500E 02	[illegible]	[illegible]	[illegible]
0.1150000E 02	0.1162500E 02	0.1137500E 02	0.1125000E 02	0.1137500E 02	[illegible]	[illegible]
0.1062500E 02	0.1025000E 02	0.9750000E 01	0.9750000E 01	[illegible]	[illegible]	[illegible]
0.9875000E 01	0.1025000E 02	0.1025000E 02	0.1000000E 02	[illegible]	[illegible]	[illegible]
0.9875000E 01	0.9750000E 01	0.9500000E 01	0.9125000E 01	0.9250000E 01	[illegible]	[illegible]
0.9255000E 01	0.9000000E 01	0.9250000E 01	0.8625000E 01	0.8500000E 01	[illegible]	[illegible]
0.9000000E 01	0.8000000E 01	0.7875000E 01	0.8000000E 01	0.8000000E 01	[illegible]	[illegible]
[illegible]	0.8125000E 01	[illegible]	0.8000000E 01	0.7375000E 01	[illegible]	[illegible]
0.7875000E 01	0.7875000E 01	0.7750000E 01	0.7625000E 01	0.7625000E 01	[illegible]	[illegible]
0.7500000E 01	0.7500000E 01	0.7500000E 01	0.7375000E 01	0.6875000E 01	[illegible]	[illegible]
0.7375000E 01	0.7375000E 01	0.7750000E 01	0.7250000E 01	0.7625000E 01	[illegible]	[illegible]
0.7625000E 01	0.7500000E 01	0.7375000E 01	0.7750000E 01	0.7625000E 01	[illegible]	[illegible]
0.7500000E 01	0.7500000E 01	[illegible]	0.7875000E 01	0.7625000E 01	[illegible]	[illegible]
0.7750000E 01	0.7750000E 01	[illegible]	0.6875000E 01	[illegible]	[illegible]	[illegible]
0.7625000E 01	0.7500000E 01	0.7875000E 01	0.7500000E 01	0.7750000E 01	[illegible]	[illegible]
0.7965000E 01	0.8000000E 01	0.7875000E 01	0.7875000E 01	0.7750000E 01	[illegible]	[illegible]
0.7750000E 01	0.7625000E 01	0.7500000E 01	0.7500000E 01	[illegible]	[illegible]	[illegible]
0.7250000E 01	0.7375000E 01	0.7250000E 01	0.7500000E 01	[illegible]	[illegible]	[illegible]
0.7500000E 01	0.7625000E 01	0.7500000E 01	0.7375000E 01	[illegible]	[illegible]	[illegible]
0.7625000E 01	[illegible]	0.7625000E 01	0.7625000E 01	[illegible]	[illegible]	[illegible]
0.7250000E 01	0.7750000E 01	[illegible]	0.7625000E 01	[illegible]	[illegible]	[illegible]
0.7375000E 01	0.7250000E 01	0.7250000E 01	0.7250000E 01	[illegible]	[illegible]	[illegible]
0.7250000E 01	0.7125000E 01	0.7125000E 01	0.7125000E 01	[illegible]	[illegible]	[illegible]
0.6875000E 01	0.7000000E 01	0.7000000E 01	[illegible]	[illegible]	[illegible]	[illegible]
0.7250000E 01	0.7250000E 01	0.7375000E 01	0.7500000E 01	[illegible]	[illegible]	[illegible]
0.7875000E 01	0.8375000E 01	0.8250000E 01	0.8125000E 01	[illegible]	[illegible]	[illegible]
0.7750000E 01	0.8125000E 01	0.8000000E 01	0.7875000E 01	[illegible]	[illegible]	[illegible]
0.8125000E 01						

DAILY CLOSING PRICE SERIES FOR ACME GAS.
1970.

0.1600000E 02	0.1800000E 02	0.1800000E 02	0.1800000E 02	0.1800000E 02	0.1800000E 02	0.1750000E 02
0.1700000E 02	0.1600000E 02	0.1550000E 02	0.1500000E 02	0.1700000E 02	[illegible]	[illegible]
0.1600000E 02	0.1600000E 02	0.1550000E 02	0.1650000E 02	0.1600000E 02	[illegible]	[illegible]
0.1675000E 02	0.1650000E 02	0.1650000E 02	0.1600000E 02	0.1700000E 02	[illegible]	[illegible]
0.1500000E 02	0.1550000E 02	0.1500000E 02	0.1500000E 02	0.1450000E 02	[illegible]	[illegible]
0.1400000E 02	0.1400000E 02	0.1400000E 02	0.1300000E 02	0.1400000E 02	[illegible]	[illegible]
0.1400000E 02	0.1300000E 02	0.1350000E 02	0.1250000E 02	0.1350000E 02	[illegible]	[illegible]
0.1300000E 02	0.1300000E 02	0.1300000E 02	0.1300000E 02	[illegible]	[illegible]	[illegible]
0.1200000E 02	0.1250000E 02	0.1200000E 02	0.1250000E 02	[illegible]	[illegible]	[illegible]
0.1250000E 02	0.1300000E 02	0.1300000E 02	0.1250000E 02	[illegible]	[illegible]	[illegible]
0.1325000E 02	0.1200000E 02	0.1100000E 02	0.1100000E 02	0.1100000E 02	[illegible]	[illegible]
0.1100000E 02	0.1050000E 02	[illegible]E 02	0.1000000E 02	[illegible]E 01	[illegible]	[illegible]
0.1000000E 02	0.1050000E 02	[illegible]E 02	0.9500000E 01	[illegible]E 01	[illegible]	[illegible]
0.1050000E 02	0.1050000E 02	[illegible]E 02	0.1050000E 02	[illegible]E 02	[illegible]	[illegible]
0.8500000E 01	0.8000000E 01	[illegible]E 01	0.9250000E 01	[illegible]E 01	[illegible]	[illegible]
0.1000000E 02	0.1000000E 02	[illegible]E 01	0.9000000E 01	[illegible]E 01	[illegible]	[illegible]
0.1000000E 02	0.8750000E 01	[illegible]E 01	0.8000000E 01	[illegible]E 01	[illegible]	[illegible]
0.1000000E 02	0.1100000E 02	[illegible]E 02	[illegible]E 02	[illegible]E 02	[illegible]	[illegible]
0.9000000E 01	0.9000000E 01	[illegible]E 02	[illegible]E 01	[illegible]E 01	[illegible]	[illegible]
0.9000000E 01	0.9250000E 01	[illegible]E 01	0.9750000E 01	0.9500000E 01	[illegible]	[illegible]
0.1000000E 02	0.9000000E 01	[illegible]E 01	0.9000000E 01	0.9750000E 01	[illegible]	[illegible]
0.9750000E 01	0.9000000E 01	[illegible]E 01	[illegible]E 01	[illegible]E 01	[illegible]	[illegible]
0.1000000E 02	0.9500000E 01	[illegible]E 02	[illegible]E 01	[illegible]E 01	[illegible]	[illegible]
0.9750000E 01	0.1000000E 02	[illegible]E 01	[illegible]	[illegible]E 01	[illegible]	[illegible]
0.9750000E 01	0.9500000E 01	[illegible]E 01	[illegible]E 01	[illegible]E 01	[illegible]	[illegible]
0.9000000E 01	0.9000000E 01	[illegible]E 01	[illegible]E 01	[illegible]E 01	[illegible]	[illegible]
0.9000000E 01	0.8000000E 01	[illegible]E 01	[illegible]E 01	[illegible]E 01	[illegible]	[illegible]
0.7500000E 01	0.5900000E 01	[illegible]E 01	[illegible]E 01	[illegible]E 01	[illegible]	[illegible]
0.8000000E 01	0.8000000E 01	[illegible]E 01	0.7000000E 01	[illegible]E 01	[illegible]	[illegible]
0.7000000E 01	0.7500000E 01	[illegible]E 01	0.7500000E 01	[illegible]E 01	[illegible]	[illegible]
0.8000000E 01	0.7500000E 01	[illegible]E 01	[illegible]E 01	[illegible]E 01	[illegible]	[illegible]
0.7250000E 01	0.7000000E 01	[illegible]E 01	0.6750000E 01	[illegible]E 01	[illegible]	[illegible]
0.7000000E 01	0.7000000E 01	[illegible]E 01	[illegible]E 01	[illegible]E 01	[illegible]	[illegible]
0.7000000E 01	0.7500000E 01	[illegible]E 01	[illegible]E 01	[illegible]E 01	[illegible]	[illegible]
0.1100000E 02	0.1200000E 02	[illegible]E 02	[illegible]E 01	[illegible]E 01	[illegible]	[illegible]
0.9500000E 01	0.1000000E 02	[illegible]E 02	0.9000000E 01	[illegible]E 01	[illegible]	[illegible]
0.1000000E 02						

DAILY CLOSING PRICE SERIES FOR ALCAN.
1970.

0.2750000E 02	0.2800000E 02	0.2787500E 02	0.2[illegible]17500E 02	0.2775000E 02	0.2750000E 02	0.2712500E 02
0.2700000E 02	0.2725000E 02	0.2687500E 02	0.2700000E 02	0.2700000E 02	0.2675000E 02	0.26[illegible]7500E 02
0.2675000E 02	0.2700000E 02	0.2675000E 02	0.2[illegible]00000E 02	0.2587500E 02	0.2650000E 02	0.2712500E 02
0.2705000E 02	0.2675000E 02	0.2700000E 02	0.2[illegible]25000E 02	0.2[illegible]7500E 02	0.2[illegible]73[illegible]E 02	0.2[illegible]5[illegible]E 02
0.2650000E 02	0.2725000E 02	0.2737500E 02	0.2775000E 02	0.2837500E 02	[illegible]	0.2[illegible]7[illegible]E 02
0.2837500E 02	0.2850000E 02	0.2887500E 02	0.2862500E 02	0.2925000E 02	[illegible]	0.2[illegible]875[illegible]E 02
0.2900000E 02	0.2900000E 02	0.2912500E 02	0.2925000E 02	0.2925000E 02	[illegible]	0.29125[illegible]E 02
0.2912500E 02	0.2887500E 02	0.2900000E 02	0.2875000E 02	0.2[illegible]75[illegible]E 02	[illegible]	0.2[illegible]37[illegible]E 02
0.2800000E 02	0.2925000E 02	0.2837500E 02	0.28[illegible]E 02	0.2[illegible]25[illegible]E 02	[illegible]	[illegible]
0.2875000E 02	0.2862500E 02	0.2800000E 02	0.2912500E 02	[illegible]	0.2[illegible]7[illegible]E 02	[illegible]
0.2900000E 02	0.2862500E 02	0.2875000E 02	0.2862500E 02	0.2[illegible]E 02	[illegible]	[illegible]
0.2787500E 02	0.2775000E 02	0.2675000E 02	0.25[illegible]E 02	0.2[illegible]5[illegible]E 02	[illegible]	[illegible]
0.2400000E 02	0.2475000E 02	0.2487500E 02	0.2375[illegible]E 02	0.23[illegible]E 02	[illegible]	0.2[illegible]17[illegible]E 02
0.2450000E 02	0.2425000E 02	0.2375000E 02	0.2337500E 02	0.23[illegible]E 02	[illegible]	[illegible]
0.2175000E 02	0.2175000E 02	0.2200000E 02	0.21[illegible]E 02	0.2[illegible]475[illegible]E 02	[illegible]	[illegible]
0.2275000E 02	0.2300000E 02	0.2262500E 02	0.2262500E 02	0.2250000E 02	[illegible]	[illegible]
0.2175000E 02	0.2175000E 02	0.2200000E 02	0.2187500E 02	0.2175000E 02	[illegible]	0.2175[illegible]E 02
0.2200000E 02	0.2262500E 02	0.2237500E 02	0.22[illegible]E 02	0.2200000E 02	[illegible]	[illegible]
0.2147500E 02	0.2175000E 02	0.2162500E 02	0.2175000E 02	0.21[illegible]75[illegible]E 02	[illegible]	[illegible]
0.2150000E 02	0.2137500E 02	0.2125000E 02	0.2075000E 02	[illegible]	[illegible]	[illegible]
0.2125000E 02	0.2112500E 02	0.2112500E 02	0.2100000E 02	0.2125[illegible]E 02	[illegible]	[illegible]
0.2050000E 02	0.2050000E 02	0.2112500E 02	0.21[illegible]E 02	0.211[illegible]E 02	[illegible]	[illegible]
0.2062500E 02	0.2050000E 02	0.2075000E 02	0.2062500E 02	[illegible]	[illegible]	[illegible]
0.2062500E 02	0.2050000E 02	0.2100000E 02	0.2162500E 02	0.223[illegible]E 02	[illegible]	[illegible]
0.2262500E 02	0.2262500E 02	0.2250000E 02	0.2225000E 02	0.22[illegible]75[illegible]E 02	[illegible]	[illegible]
0.2225000E 02	0.2200000E 02	0.2212500E 02	0.2237500E 02	0.2212[illegible]E 02	[illegible]	[illegible]
0.2225000E 02	0.2225000E 02	0.2200000E 02	0.22[illegible]75[illegible]E 02	0.2212[illegible]E 02	[illegible]	[illegible]
0.2162500E 02	0.2125000E 02	0.2125000E 02	0.2175000E 02	0.2212[illegible]E 02	[illegible]	[illegible]
0.2250000E 02	0.2200000E 02	0.2175000E 02	0.2200000E 02	[illegible]	[illegible]	[illegible]
0.2150000E 02	0.2175000E 02	0.2150000E 02	0.21[illegible]E 02	0.212[illegible]E 02	[illegible]	0.21[illegible]E 02
0.2075000E 02	0.2062500E 02	0.2075000E 02	0.2117500E 02	0.2112[illegible]E 02	[illegible]	[illegible]
0.2150000E 02	0.2125000E 02	0.2162500E 02	0.2137500E 02	0.2137[illegible]E 02	[illegible]	[illegible]
0.2112500E 02	0.2112500E 02	0.2125000E 02	0.2150000E 02	0.21[illegible]E 02	[illegible]	[illegible]
0.2150000E 02	0.2187500E 02	0.2200000E 02	0.2[illegible]7500E 02	0.21[illegible]E 02	[illegible]	[illegible]
0.2262500E 02	0.2300000E 02	0.2375000E 02	0.2312500E 02	0.22[illegible]75[illegible]E 02	[illegible]	[illegible]
0.2237500E 02	0.2237500E 02	0.2287500E 02	0.23[illegible]E 02	0.2337500E 02	[illegible]	[illegible]
0.2350000E 02						

DAILY CLOSING PRICE SERIES FOR ALBERTA T.G. 1970.

0.3850000E 02	0.3812500E 02	0.3825000E 02	0.3800000E 02	0.3625000E 02	0.3650000E 02	0.3650000E 02
0.3650000E 02	0.3687500E 02	0.3700000E 02	0.3700000E 02	0.3700000E 02	[illegible]	[illegible]
0.3700000E 02	0.3725000E 02	0.3700000E 02	0.3650000E 02	0.3612500E 02	[illegible]	[illegible]
0.3625000E 02	0.3675000E 02	0.3650000E 02	0.3650000E 02	0.3612500E 02	[illegible]	0.3575000E 02
[illegible]	0.3625000E 02	0.3650000E 02	[illegible]	[illegible]	[illegible]	[illegible]
0.3725000E 02	0.3725000E 02	0.3725000E 02	0.3750000E 02	[illegible]	[illegible]	[illegible]
0.3812500E 02	0.3900000E 02	0.3925000E 02	[illegible]	0.3962500E 02	[illegible]	[illegible]
0.4000000E 02	0.4450000E 02	0.3900000E 02	0.3925000E 02	[illegible]	[illegible]	[illegible]
0.3950000E 02	0.3975000E 02	0.4000000E 02	0.4050000E 02	0.4125000E 02	[illegible]	[illegible]
0.4250000E 02	0.4275000E 02	0.4250000E 02	0.4150000E 02	0.4127500E 02	[illegible]	[illegible]
0.4275000E 02	0.4287500E 02	0.4225000E 02	0.4262500E 02	[illegible]	[illegible]	[illegible]
0.4125000E 02	0.4125000E 02	0.4125000E 02	0.4125000E 02	[illegible]	[illegible]	[illegible]
0.3987500E 02	0.4100000E 02	0.4112500E 02	0.4000000E 02	0.3987500E 02	[illegible]	[illegible]
0.4000000E 02	0.3950000E 02	0.3925000E 02	0.3775000E 02	[illegible]	[illegible]	[illegible]
0.3825000E 02	0.3900000E 02	0.3762500E 02	0.3700000E 02	[illegible]	[illegible]	[illegible]
0.3687500E 02	0.3700000E 02	0.3700000E 02	0.3775000E 02	[illegible]	[illegible]	[illegible]
0.3875000E 02	0.3900000E 02	0.3925000E 02	0.3912500E 02	0.3925000E 02	[illegible]	[illegible]
0.4025000E 02	0.4100000E 02	0.4100000E 02	0.4112500E 02	[illegible]	[illegible]	[illegible]
0.4175000E 02	0.4100000E 02	0.4187500E 02	0.4100000E 02	[illegible]	[illegible]	[illegible]
0.4050000E 02	0.4125000E 02	0.4150000E 02	0.4100000E 02	0.4125000E 02	[illegible]	[illegible]
0.4112500E 02	0.4150000E 02	0.4150000E 02	0.4212500E 02	[illegible]	[illegible]	[illegible]
0.4350000E 02	0.4312500E 02	0.4325000E 02	0.4350000E 02	[illegible]	[illegible]	[illegible]
0.4400000E 02	0.4387500E 02	0.4375000E 02	0.4375000E 02	[illegible]	[illegible]	[illegible]
0.4425000E 02	0.4487500E 02	0.4487500E 02	0.4500000E 02	0.4437500E 02	[illegible]	[illegible]
0.4537500E 02	0.4550000E 02	0.4575000E 02	0.4525000E 02	[illegible]	[illegible]	[illegible]
0.4700000E 02	0.4687500E 02	0.4675000E 02	0.4687500E 02	[illegible]	[illegible]	[illegible]
0.4625000E 02	0.4575000E 02	0.4600000E 02	0.4650000E 02	[illegible]	[illegible]	[illegible]
0.4600000E 02	0.4675000E 02	0.4637500E 02	0.4675000E 02	[illegible]	[illegible]	[illegible]
0.4625000E 02	0.4700000E 02	0.4625000E 02	0.4600000E 02	0.4675000E 02	[illegible]	[illegible]
0.4575000E 02	0.4600000E 02	0.4600000E 02	0.4637500E 02	[illegible]	[illegible]	[illegible]
0.4575000E 02	0.4550000E 02	0.4575000E 02	0.4575000E 02	0.4612500E 02	[illegible]	[illegible]
0.4650000E 02	0.4675000E 02	0.4737500E 02	0.4750000E 02	0.4750000E 02	[illegible]	[illegible]
0.4725000E 02	0.4737500E 02	0.4750000E 02	0.4850000E 02	[illegible]	[illegible]	[illegible]
0.4850000E 02	0.4975000E 02	0.4925000E 02	0.4925000E 02	[illegible]	[illegible]	[illegible]
0.4925000E 02	0.4937500E 02	0.4850000E 02	0.4900000E 02	0.4925000E 02	[illegible]	[illegible]
0.4925000E 02	0.4825000E 02	0.4850000E 02	0.4962500E 02	[illegible]	[illegible]	[illegible]
0.4850000E 02						

DAILY CLOSING PRICE SERIES FOR ARMORE,
1970,

0.1700000E 02	0.1900000E 02	0.1800000E 02	0.1800000E 02	0.1800000E 02	0.1750000E 02	0.1800000E 02
0.1800000E 02	0.1850000E 02	0.1750000E 02	0.1750000E 02	0.1700000E 02	0.1725000E 02	0.1700000E 02
0.1700000E 02	0.1700000E 02	0.1700000E 02	0.1700000E 02	0.1700000E 02	0.1700000E 02	0.17[illegible]E 02
0.1650000E 02	0.1600000E 02	0.1650000E 02	0.1675000E 02	0.1750000E 02	0.15[illegible]E 02	0.155[illegible]E 02
0.1600000E 02	0.1550000E 02	0.1600000E 02	0.1550000E 02	0.16[illegible]E 02	0.15[illegible]E 02	0.15[illegible]E 02
0.1500000E 02	0.1500000E 02	0.1525000E 02	0.1500000E 02	0.1452[illegible]E 02	0.15[illegible]E 02	0.155[illegible]E 02
0.1500000E 02	0.1500000E 02	0.1500000E 02	0.1500000E 02	0.15[illegible]E 02	0.15[illegible]E 02	0.1525[illegible]E 02
0.1450000E 02	0.1550000E 02	0.1550000E 02	0.1500000E 02	0.1500000E 02	0.145[illegible]E 02	0.145[illegible]E 02
0.1550000E 02	0.1500000E 02	0.1450000E 02	0.1550000E 02	0.16[illegible]E 02	0.1[illegible]E 02	0.15[illegible]E 02
0.1600000E 02	0.1650000E 02	0.1550000E 02	0.1550000E 02	0.1[illegible]E 02	0.1[illegible]E 02	0.155[illegible]E 02
0.1600000E 02	0.1600000E 02	0.2000000E 02	0.1600000E 02	0.16[illegible]E 02	0.1[illegible]E 02	0.15[illegible]E 02
0.1500000E 02	0.1475000E 02	0.1500000E 02	0.1400000E 02	0.1425000E 02	0.14[illegible]E 02	0.135[illegible]E 02
0.1400000E 02	0.1400000E 02	0.1350000E 02	0.1375000E 02	0.14[illegible]E 02	0.135[illegible]E 02	0.13[illegible]E 02
0.1325000E 02	0.1300000E 02	0.1300000E 02	0.1300000E 02	0.125[illegible]E 02	0.135[illegible]E 02	0.1[illegible]E 02
0.1200000E 02	0.1100000E 02	0.1100000E 02	0.1100000E 02	0.95[illegible]E 01	0.1[illegible]E 02	0.1[illegible]E 02
0.1150000E 02	0.1200000E 02	0.1300000E 02	0.1300000E 02	0.125[illegible]E 02	0.13[illegible]E 02	0.13[illegible]E 02
0.1250000E 02	0.1000000E 02	0.1250000E 02	0.1250000E 02	0.1275000E 02	0.13[illegible]E 02	0.14[illegible]E 02
0.1350000E 02	0.1450000E 02	0.1375000E 02	0.1300000E 02	0.125[illegible]E 02	0.12[illegible]E 02	0.13[illegible]E 02
0.1275000E 02	0.1300000E 02	0.1250000E 02	0.1250000E 02	0.125[illegible]E 02	0.125[illegible]E 02	0.12[illegible]E 02
0.1175000E 02	0.1200000E 02	0.1150000E 02	0.1200000E 02	0.1175000E 02	0.115[illegible]E 02	0.12[illegible]E 02
0.1200000E 02	0.1250000E 02	0.1175000E 02	0.1200000E 02	0.1150000E 02	0.115[illegible]E 02	0.1175[illegible]E 02
0.1150000E 02	0.1200000E 02	0.1225000E 02	0.1225000E 02	0.12[illegible]E 02	0.122[illegible]E 02	0.12[illegible]E 02
0.1250000E 02	0.1200000E 02	0.1250000E 02	0.1350000E 02	0.13[illegible]E 02	0.135[illegible]E 02	0.13[illegible]E 02
0.1400000E 02	0.1400000E 02	0.1400000E 02	0.1400000E 02	0.14[illegible]E 02	0.1475[illegible]E 02	0.145[illegible]E 02
0.1400000E 02	0.1400000E 02	0.1350000E 02	0.1350000E 02	0.13[illegible]E 02	0.135[illegible]E 02	0.13[illegible]E 02
0.1250000E 02	0.1300000E 02	0.1250000E 02	0.1350000E 02	0.1350000E 02	0.1[illegible]E 02	0.1275[illegible]E 02
0.1350000E 02	0.1300000E 02	0.1250000E 02	0.1275000E 02	0.1250000E 02	0.125[illegible]E 02	0.125[illegible]E 02
0.1250000E 02	0.1250000E 02	0.1250000E 02	0.1300000E 02	0.125[illegible]E 02	0.1275[illegible]E 02	0.12[illegible]E 02
0.1250000E 02	0.1250000E 02	0.1300000E 02	0.1300000E 02	0.1250000E 02	0.13[illegible]E 02	0.12[illegible]E 02
0.1250000E 02	0.1275000E 02	0.1200000E 02	0.1275000E 02	0.12[illegible]E 02	0.[illegible]E 02	0.12[illegible]E 02
0.1250000E 02	0.1250000E 02	0.1225000E 02	0.1250000E 02	0.125[illegible]E 02	0.125[illegible]E 02	0.12[illegible]E 02
0.1250000E 02	0.1250000E 02	0.1250000E 02	0.1250000E 02	0.1275[illegible]E 02	0.125[illegible]E 02	0.13[illegible]E 02
0.1250000E 02	0.1200000E 02	0.1250000E 02	0.1200000E 02	0.12[illegible]E 02	0.125[illegible]E 02	0.125[illegible]E 02
0.1250000E 02	0.1200000E 02	0.1200000E 02	0.1250000E 02	0.12[illegible]E 02	0.125[illegible]E 02	0.12[illegible]E 02
0.1200000E 02	0.1300000E 02	0.1325000E 02	0.1250000E 02	0.13[illegible]E 02	0.125[illegible]E 02	0.1[illegible]E 02
0.125[illegible]E 02	0.1300000E 02	0.1375000E 02	0.1325000E 02	0.1325000E 02	0.14[illegible]E 02	0.135[illegible]E 02
0.1300000E 02						

DAILY CLOSING PRICE SERIES FOR BROUL REEF.
1970.

0.3500000E 02	0.3700000E 02	0.3800000E 02	0.3700000E 02	0.3700000E 02	0.3600000E 02	0.3500000E 02
0.3600000E 02	0.3600000E 02	0.3400000E 02	0.3500000E 02	0.3500000E 02	0.3700000E 02	0.3700000E 02
0.3600000E 02	0.3600000E 02	0.3500000E 02	0.3550000E 02	0.3600000E 02	[illegible]	[illegible]
0.3500000E 02	0.3400000E 02	0.3500000E 02	0.3500000E 02	0.3450000E 02	[illegible]	[illegible]
0.3575000E 02	0.3500000E 02	0.3500000E 02	0.3500000E 02	0.3400000E 02	[illegible]	[illegible]
0.3325000E 02	0.3425000E 02	0.3300000E 02	0.3275000E 02	0.3300000E 02	[illegible]	[illegible]
0.3200000E 02	0.3250000E 02	0.3200000E 02	0.3150000E 02	0.3150000E 02	[illegible]	[illegible]
0.3350000E 02	0.3200000E 02	0.3100000E 02	0.3200000E 02	0.3150000E 02	[illegible]	[illegible]
0.3100000E 02	0.3100000E 02	0.3000000E 02	0.3250000E 02	0.3200000E 02	[illegible]	[illegible]
0.3300000E 02	0.2950000E 02	0.3100000E 02	[illegible]	[illegible]	[illegible]	[illegible]
0.3250000E 02	0.3300000E 02	0.3300000E 02	[illegible]	0.3000000E 02	[illegible]	[illegible]
0.2900000E 02	0.2900000E 02	0.2950000E 02	[illegible]	[illegible]	[illegible]	[illegible]
0.2900000E 02	0.2650000E 02	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
0.2750000E 02	0.2750000E 02	0.2750000E 02	0.2500000E 02	0.2700000E 02	[illegible]	[illegible]
0.2200000E 02	0.2100000E 02	0.2500000E 02	0.2200000E 02	0.2200000E 02	[illegible]	[illegible]
0.2350000E 02	0.2400000E 02	0.2300000E 02	0.2400000E 02	[illegible]	[illegible]	[illegible]
0.2200000E 02	0.2200000E 02	0.2200000E 02	[illegible]	[illegible]	[illegible]	[illegible]
0.2100000E 02	0.2300000E 02	0.2200000E 02	[illegible]	[illegible]	[illegible]	[illegible]
0.2150000E 02	0.2200000E 02	0.2175000E 02	[illegible]	[illegible]	[illegible]	[illegible]
0.2175000E 02	0.2175000E 02	0.2175000E 02	[illegible]	[illegible]	[illegible]	[illegible]
0.2250000E 02	0.2150000E 02	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
0.2500000E 02	0.2500000E 02	0.2500000E 02	[illegible]	[illegible]	[illegible]	[illegible]
0.2400000E 02	0.2500000E 02	0.2200000E 02	[illegible]	[illegible]	[illegible]	[illegible]
0.2400000E 02	0.2100000E 02	0.2350000E 02	0.2400000E 02	[illegible]	[illegible]	[illegible]
0.2300000E 02	0.2200000E 02	0.2200000E 02	[illegible]	[illegible]	[illegible]	[illegible]
0.2250000E 02	[illegible]	0.2350000E 02	[illegible]	[illegible]	[illegible]	[illegible]
0.2425000E 02	0.2425000E 02	0.2300000E 02	[illegible]	0.2400000E 02	[illegible]	[illegible]
0.2500000E 02	0.2500000E 02	0.2500000E 02	0.2425000E 02	[illegible]	[illegible]	[illegible]
0.2350000E 02	0.2450000E 02	0.2875000E 02	[illegible]	0.2300000E 02	[illegible]	[illegible]
[illegible]	0.2450000E 02	0.2450000E 02	[illegible]	0.2500000E 02	[illegible]	[illegible]
[illegible]	0.2300000E 02	[illegible]	[illegible]	0.2300000E 02	[illegible]	[illegible]
[illegible]	0.2425000E 02	0.2425000E 02	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	0.2450000E 02	0.2300000E 02	0.2425000E 02	[illegible]	[illegible]	[illegible]
[illegible]	0.2400000E 02	0.2400000E 02	0.2350000E 02	[illegible]	[illegible]	[illegible]
[illegible]	0.2475000E 02	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
0.2425000E 02	0.2500000E 02	0.2500000E 02	0.2500000E 02	0.2500000E 02	[illegible]	[illegible]
0.2400000E 02						

DAILY CLOSING PRICE SERIES FOR CARRIER J.D.
1970.

0.1500000E 02	0.1450000E 02	0.1400000E 02	0.1450000E 02	0.1450000E 02	0.1400000E 02	0.1400000E 02
0.1325000E 02	0.1275000E 02	0.1350000E 02	0.1350000E 02	0.1312500E 02	0.1712500E 02	0.1325500E 02
0.1337500E 02	0.1300000E 02	0.1300000E 02	0.1275000E 02	0.1250000E 02	0.1225000E 02	0.1175000E 02
0.1125000E 02	0.1137500E 02	0.1250000E 02	0.1250000E 02	0.1275000E 02	0.1287500E 02	0.1275000E 02
0.1250000E 02	0.1243500E 02	0.1237500E 02	0.1200000E 02	0.117[illegible]E 02	[illegible]	[illegible]
0.1150000E 02	0.1125000E 02	0.1150000E 02	0.1175000E 02	0.11[illegible]E 02	0.122[illegible]E 02	0.12[illegible]E 02
0.1212500E 02	0.1250000E 02	0.1275000E 02	0.1250000E 02	0.12[illegible]E 02	0.115[illegible]E 02	[illegible]
0.1200000E 02	0.1200000E 02	0.1187500E 02	0.1125000E 02	0.11[illegible]E 02	0.11[illegible]E 02	[illegible]
0.1137500E 02	0.1125000E 02	0.1175000E 02	0.1200000E 02	0.1187500E 02	[illegible]	[illegible]
0.1162500E 02	0.1162500E 02	0.1162500E 02	0.1187500E 02	0.12[illegible]E 02	[illegible]	[illegible]
0.1175000E 02	0.1175000E 02	0.1118800E 02	0.1250000E 02	0.1127500E 02	0.113[illegible]	[illegible]
0.1125000E 02	0.1100000E 02	0.1100000E 02	0.1000000E 02	0.9750000E 01	[illegible]	[illegible]
0.9000000E 01	0.9000000E 01	0.9125000E 01	0.9375000E 01	0.9000000E 01	[illegible]	[illegible]
0.8375000E 01	0.9000000E 01	0.8812000E 01	0.8750000E 01	0.8625000E 01	[illegible]	[illegible]
0.8000000E 01	0.7500000E 01	0.7125000E 01	0.7000000E 01	[illegible]	[illegible]	[illegible]
0.7375000E 01	0.8500000E 01	0.7500000E 01	0.7500000E 01	0.7562000E 01	[illegible]	[illegible]
0.7750000E 01	0.7250000E 01	0.7700000E 01	0.7250000E 01	0.7562000E 01	[illegible]	[illegible]
0.7375000E 01	0.7500000E 01	0.7875000E 01	0.7687000E 01	0.7750000E 01	[illegible]	[illegible]
0.7500000E 01	0.7438000E 01	0.7000000E 01	0.6500000E 01	0.6375000E 01	[illegible]	[illegible]
0.5750000E 01	0.5250000E 01	0.6125000E 01	0.6250000E 01	[illegible]	[illegible]	[illegible]
0.5125000E 01	0.5750000E 01	0.5500000E 01	0.5375000E 01	0.5500000E 01	[illegible]	[illegible]
0.5375000E 01	0.5000000E 01	0.5250000E 01	0.5062000E 01	0.5125[illegible]	[illegible]	[illegible]
0.5500000E 01	0.5438000E 01	0.5500000E 01	0.5750000E 01	0.55[illegible]	[illegible]	[illegible]
0.6250000E 01	0.6250000E 01	0.6125000E 01	0.6125000E 01	0.6175[illegible]	[illegible]	[illegible]
0.6625000E 01	0.6500000E 01	0.6600000E 01	0.6750000E 01	0.6500000E 01	[illegible]	[illegible]
0.5750000E 01	0.6750000E 01	0.6500000E 01	0.6750000E 01	0.6375000E 01	[illegible]	[illegible]
0.6500000E 01	0.6625000E 01	0.6625000E 01	0.6375000E 01	0.65[illegible]	[illegible]	[illegible]
0.6250000E 01	0.5875000E 01	0.6438000E 01	0.6250000E 01	0.6000000E 01	[illegible]	[illegible]
0.6125000E 01	0.6315000E 01	0.6250000E 01	0.6315000E 01	[illegible]	[illegible]	[illegible]
0.6250000E 01	0.6500000E 01	0.6625000E 01	0.6625000E 01	0.6525[illegible]	[illegible]	[illegible]
0.6375000E 01	0.6375000E 01	0.6375000E 01	0.6250000E 01	0.6125[illegible]	[illegible]	[illegible]
0.6000000E 01	0.5750000E 01	0.6000000E 01	0.6000000E 01	0.6125[illegible]	[illegible]	[illegible]
0.6000000E 01	0.6250000E 01	0.6250000E 01	0.6250000E 01	0.62[illegible]	[illegible]	[illegible]
0.5500000E 01	0.5125000E 01	0.5375000E 01	0.5250000E 01	0.5[illegible]	[illegible]	[illegible]
0.5688000E 01	0.5250000E 01	0.5250000E 01	0.5250000E 01	0.5[illegible]	[illegible]	[illegible]
0.4775000E 01	0.4750000E 01	0.4700000E 01	0.4725000E 01	0.4500000E 01	[illegible]	[illegible]
0.5438000E 01						

DAILY CLOSING PRICE SERIES FOR CD.SUGARS, 1970.

0.3700000E 02	0.3675000E 02	0.3675000E 02	0.3650000E 02	0.3650000E 02	0.3600000E 02	0.3700000E 02
0.3662500E 02	0.3662500E 02	0.3650000E 02	0.3650000E 02	0.3650000E 02	0.3587500E 02	0.3587500E 02
0.3587500E 02	0.3587500E 02	0.3575000E 02	0.3500000E 02	0.3475000E 02	0.3425000E 02	0.3375000E 02
0.3412500E 02	0.3500000E 02	0.3550000E 02	0.3550000E 02	0.3550000E 02	0.3500000E 02	0.35[illegible]E 02
0.3575000E 02	0.3562500E 02	0.3500000E 02	0.3562500E 02	0.3425000E 02	0.3462500E 02	0.35[illegible]E 02
0.3550000E 02	0.3525000E 02	0.3550000E 02	0.3512500E 02	0.3600000E 02	0.3625000E 02	0.3625000E 02
0.3650000E 02	0.3550000E 02	0.3500000E 02	0.3650000E 02	0.35[illegible]E 02	0.35[illegible]E 02	0.35[illegible]E 02
0.3550000E 02	0.3512500E 02	0.3475000E 02	0.3475000E 02	0.3450000E 02	0.3450000E 02	0.3450000E 02
0.3450000E 02	0.3450000E 02	0.3450000E 02	0.3450000E 02	0.3487500E 02	0.3475000E 02	0.3475000E 02
0.3475000E 02	0.3487500E 02	0.3400000E 02	0.3425000E 02	0.3443800E 02	0.34[illegible]E 02	0.34[illegible]E 02
0.3475000E 02	0.3500000E 02	0.3475000E 02	0.3475000E 02	0.3550000E 02	0.3512500E 02	0.3387500E 02
0.3500000E 02	0.3550000E 02	0.3500000E 02	0.3500000E 02	0.3550000E 02	0.35[illegible]E 02	0.3475000E 02
0.3475000E 02	0.3200000E 02	0.3543800E 02	0.3500000E 02	0.3400000E 02	0.3587500E 02	0.34[illegible]E 02
0.3400000E 02	0.3400000E 02	0.3350000E 02	0.3375000E 02	0.3250000E 02	0.3[illegible]E 02	0.2[illegible]E 02
0.2800000E 02	0.2625000E 02	0.2900000E 02	0.2862500E 02	0.2850000E 02	0.2[illegible]E 02	0.2812500E 02
0.2200000E 02	0.2800000E 02	0.2900000E 02	0.2900000E 02	0.3[illegible]E 02	0.3[illegible]75[illegible]E 02	0.30[illegible]E 02
0.3100000E 02	0.3050000E 02	0.3100000E 02	0.3150000E 02	0.3250000E 02	0.31[illegible]E 02	0.30[illegible]75[illegible]E 02
0.3062500E 02	0.3062500E 02	0.3050000E 02	0.3100000E 02	0.3150000E 02	0.31[illegible]E 02	0.31[illegible]E 02
0.3100000E 02	0.3075000E 02	0.3075000E 02	0.3200000E 02	0.3187500E 02	0.3162500E 02	0.3175000E 02
0.3175000E 02	0.3175000E 02	0.3200000E 02	0.3125000E 02	0.3187500E 02	0.325[illegible]E 02	0.33[illegible]E 02
0.3250000E 02	0.3200000E 02	0.3187500E 02	0.3187500E 02	0.3187500E 02	0.3175000E 02	0.31[illegible]E 02
0.3075000E 02	0.3125000E 02	0.3200000E 02	0.3187500E 02	0.31312[illegible]E 02	0.3175[illegible]E 02	0.317[illegible]E 02
0.3125000E 02	0.3100000E 02	0.3100000E 02	0.3162500E 02	0.3037500E 02	0.3[illegible]E 02	0.30[illegible]E 02
0.2987500E 02	0.3000000E 02	0.3000000E 02	0.3075000E 02	0.3050000E 02	0.3075000E 02	0.3050000E 02
0.3000000E 02	0.3000000E 02	0.3050000E 02	0.3025000E 02	0.3[illegible]E 02	0.31[illegible]E 02	0.31[illegible]E 02
0.3050000E 02	0.3037500E 02	0.3025000E 02	0.3025000E 02	0.3025000E 02	0.3075000E 02	0.30[illegible]E 02
0.3068800E 02	0.3068800E 02	0.3068800E 02	0.3062500E 02	0.3[illegible]25[illegible]E 02	0.3012500E 02	0.3025000E 02
0.3000000E 02	0.3000000E 02	0.2975000E 02	0.3000000E 02	0.3[illegible]E 02	0.30[illegible]E 02	0.30[illegible]E 02
0.3075000E 02	0.3087500E 02	0.2962500E 02	0.3000000E 02	0.30[illegible]E 02	0.30[illegible]E 02	0.3025000E 02
0.3050000E 02	0.3000000E 02	0.3000000E 02	0.3000000E 02	0.3[illegible]E 02	0.2975000E 02	0.3[illegible]E 02
0.3050000E 02	0.3087500E 02	0.3025000E 02	0.3100000E 02	0.3050000E 02	0.3075000E 02	0.3175000E 02
0.3050000E 02	0.3150000E 02	0.3125000E 02	0.3075000E 02	0.3100000E 02	0.31[illegible]E 02	0.31[illegible]E 02
0.3050000E 02	0.3000000E 02	0.3050000E 02	0.3100000E 02	0.3075000E 02	0.315[illegible]E 02	0.32[illegible]E 02
0.3250000E 02	0.3350000E 02	0.3250000E 02	0.3350000E 02	0.33[illegible]E 02	0.33[illegible]E 02	0.32[illegible]E 02
0.3137500E 02	0.3200000E 02	0.3200000E 02	0.3250000E 02	0.3225000E 02	0.3262500E 02	0.3262500E 02
0.3225000E 02	0.3225000E 02	0.3225000E 02	0.3200000E 02	0.3237500E 02	0.3237500E 02	0.3275000E 02
0.3262500E 02						

DAILY CLOSING PRICE SERIES FOR CDN.TIRES.
1970.

0.7000000E 02	0.7350000E 02	0.7500000E 02	0.7450000E 02	0.7500000E 02	0.7625000E 02	0.7475000E 02
0.7450000E 02	0.7550000E 02	0.7443800E 02	0.7493800E 02	0.7550000E 02	0.7450000E 02	0.7500000E 02
0.7500000E 02	0.7500000E 02	0.7400000E 02	0.7262500E 02	0.7350000E 02	0.72[illegible]E 02	0.7[illegible]E 02
0.7050000E 02	0.7200000E 02	0.7125000E 02	0.7125000E 02	0.7125000E 02	0.72[illegible]E 02	0.725[illegible]E 02
0.7112500E 02	0.7200000E 02	0.7171500E 02	0.7150000E 02	0.7332[illegible]E 02	0.715[illegible]E 02	0.71[illegible]E 02
0.7237500E 02	0.7237500E 02	0.7200000E 02	0.7350000E 02	0.7200000E 02	0.7[illegible]E 02	0.7[illegible]E 02
0.7000000E 02	0.7000000E 02	0.7000000E 02	0.6850000E 02	0.695[illegible]E 02	0.[illegible]E 02	[illegible]
0.6812500E 02	0.6962500E 02	0.6725000E 02	0.6[illegible]E 02	0.6[illegible]E 02	0.71[illegible]E 02	0.7[illegible]E 02
0.7350000E 02	0.7150000E 02	0.7200000E 02	0.7200000E 02	0.7350000E 02	0.7[illegible]E 02	0.7[illegible]E 02
0.7300000E 02	0.7400000E 02	0.7312500E 02	0.7475000E 02	0.7350000E 02	0.7[illegible]25[illegible]E 02	0.7[illegible]E 02
0.7225000E 02	0.7450000E 02	0.7750000E 02	0.7150000E 02	0.71[illegible]E 02	0.714[illegible]E 02	0.7[illegible]E 02
0.7100000E 02	0.7200000E 02	0.6975000E 02	0.7000000E 02	0.7700000E 02	0.[illegible]E 02	0.71[illegible]E 02
0.7025000E 02	0.7[illegible]50000E 02	0.7000000E 02	0.6800000E 02	0.6[illegible]E 02	0.6[illegible]E 02	0.7[illegible]E 02
0.7000000E 02	0.2435400E 02	0.2350000E 02	0.2225000E 02	0.2225000E 02	0.2[illegible]E 02	0.1[illegible]E 02
0.1800000E 02	0.1887500E 02	0.1900000E 02	0.1800000E 02	0.1700000E 02	0.17[illegible]E 02	0.1[illegible]75[illegible]E 02
0.2200000E 02	0.2300000E 02	0.2250000E 02	0.2150000E 02	0.2275000E 02	0.2[illegible]E 02	0.22[illegible]E 02
0.2287500E 02	0.2250000E 02	0.2100000E 02	0.2087500E 02	0.2087500E 02	0.21[illegible]E 02	0.2[illegible]E 02
0.2100000E 02	0.2275000E 02	0.2150000E 02	0.2000000E 02	0.2[illegible]75[illegible]E 02	0.2[illegible]E 02	0.2[illegible]E 02
0.2062500E 02	0.2187500E 02	0.1975000E 02	0.2175000E 02	0.2187500E 02	0.21[illegible]E 02	0.2[illegible]125[illegible]E 02
0.2100000E 02	0.2176000E 02	0.2100000E 02	0.2100000E 02	0.21[illegible]E 02	0.2[illegible]12[illegible]E 02	0.2[illegible]E 02
0.2100000E 02	0.2125000E 02	0.2100000E 02	0.2156300E 02	0.2100000E 02	0.22[illegible]E 02	0.2[illegible]E 02
0.2200000E 02	0.2200000E 02	0.2225000E 02	0.2237500E 02	0.2275000E 02	0.22[illegible]E 02	0.22[illegible]E 02
0.2125000E 02	0.2125000E 02	0.2175000E 02	0.2275000E 02	0.2200000E 02	0.217[illegible]E 02	0.21[illegible]E 02
0.2150000E 02	0.2200000E 02	0.2175000E 02	0.22[illegible]E 02	0.225[illegible]E 02	0.22[illegible]75[illegible]E 02	0.22[illegible]E 02
0.2[illegible]50000E 02	0.2125000E 02	0.2200000E 02	0.2200000E 02	0.2275000E 02	0.2275[illegible]E 02	0.2375[illegible]E 02
0.2487500E 02	0.2400000E 02	0.2400000E 02	0.2375000E 02	0.2425000E 02	0.24[illegible]E 02	0.24[illegible]E 02
0.2400000E 02	0.2425000E 02	0.2400000E 02	0.2425000E 02	0.2425000E 02	0.24[illegible]E 02	0.23[illegible]E 02
0.2450000E 02	0.2550000E 02	0.2400000E 02	0.2450000E 02	0.2450000E 02	0.24[illegible]E 02	0.24[illegible]E 02
0.2487500E 02	0.2500000E 02	0.2500000E 02	0.2487500E 02	0.2512500E 02	0.2[illegible]E 02	0.2[illegible]E 02
0.2487500E 02	0.2500000E 02	0.2481300E 02	0.2487500E 02	0.245[illegible]E 02	0.24[illegible]E 02	0.24[illegible]E 02
0.2368800E 02	0.2425000E 02	0.2500000E 02	0.2425000E 02	0.24[illegible]E 02	0.25[illegible]E 02	0.24[illegible]75[illegible]E 02
0.2525000E 02	0.2500000E 02	0.2505000E 02	0.2462500E 02	0.2473[illegible]E 02	0.2[illegible]75[illegible]E 02	0.2[illegible]E 02
0.2525000E 02	0.2550000E 02	0.2550000E 02	0.2512500E 02	0.2550000E 02	0.2[illegible]E 02	0.2[illegible]25[illegible]E 02
0.2587500E 02	0.2525000E 02	0.2600000E 02	0.27[illegible]E 02	0.2775000E 02	0.2[illegible]E 02	0.2[illegible]E 02
0.2750000E 02	0.2800000E 02	0.2850000E 02	0.2[illegible]E 02	0.2[illegible]E 02	0.2[illegible]E 02	[illegible]
0.2800000E 02	0.2800000E 02	0.2750000E 02	0.2731300E 02	0.2731300E 02	0.2[illegible]125[illegible]E 02	0.2[illegible]E 02
0.2800000E 02						

DAILY CLOSING PRICE SERIES FOR DISCOVERY. 1979.

0.1350000E 03	0.1390000E 03	0.1360000E 03	0.1360000E 03	0.1390000E 03	0.1385000E 03	0.1360000E 03
0.1380000E 03	0.1400000E 03	0.1500000E 03	0.1450000E 03	0.1410000E 03	0.1425000E 03	0.1390000E 03
0.1350000E 03	0.1370000E 03	0.1420000E 03	0.1480000E 03	0.1430000E 03	0.1360000E 03	0.1420000E 03
0.1400000E 03	0.1400000E 03	0.1400000E 03	0.1400000E 03	0.1440000E 03	0.14[illegible] 03	0.1450000E 03
0.1405000E 03	0.1380000E 03	0.1380000E 03	0.1375000E 03	0.1350000E 03	0.1350000E 03	0.136[illegible] 03
0.1350000E 03	0.1350000E 03	0.1300000E 03	0.1300000E 03	0.1250000E 03	0.133[illegible] 03	0.125[illegible] 03
0.1280000E 03	0.1250000E 03	0.1290000E 03	0.1305000E 03	0.1250000E 03	0.130[illegible] 03	0.13[illegible] 03
0.1300000E 03	0.1325000E 03	0.1300000E 03	0.1300000E 03	0.1325000E 03	0.131[illegible] 03	0.1325[illegible] 03
0.1300000E 03	0.1310000E 03	0.1350000E 03	0.1250000E 03	0.1200000E 03	0.13[illegible] 03	0.131[illegible] 03
0.1310000E 03	0.1355000E 03	0.1380000E 03	0.1350000E 03	0.1350000E 03	0.134[illegible] 03	0.14[illegible] 03
0.1400000E 03	0.1440000E 03	0.1450000E 03	0.1450000E 03	0.1420000E 03	0.1[illegible] 03	0.145[illegible] 03
0.1450000E 03	0.1450000E 03	0.1400000E 03	0.1420000E 03	0.1435000E 03	0.13[illegible] 03	0.13[illegible] 03
0.1360000E 03	0.1390000E 03	0.1400000E 03	0.1410000E 03	0.1400000E 03	0.1[illegible] 03	0.13[illegible] 03
0.1350000E 03	0.1430000E 03	0.1360000E 03	0.1370000E 03	0.1350000E 03	0.137[illegible] 03	0.135[illegible] 03
0.1350000E 03	0.1300000E 03	0.1310000E 03	0.1300000E 03	0.1300000E 03	0.13[illegible] 03	0.13[illegible] 03
0.1400000E 03	0.1425000E 03	0.1350000E 03	0.1230000E 03	0.1310000E 03	0.1[illegible] 03	0.13[illegible] 03
0.1300000E 03	0.1300000E 03	0.1250000E 03	0.1315000E 03	0.1300000E 03	0.133[illegible] 03	0.13[illegible] 03
0.1350000E 03	0.1300000E 03	0.1350000E 03	0.1250000E 03	0.1300000E 03	0.1[illegible]0[illegible] 03	0.13[illegible] 03
0.1320000E 03	0.1400000E 03	0.1400000E 03	0.1425000E 03	0.1270000E 03	0.13[illegible] 03	0.14[illegible] 03
0.1410000E 03	0.1410000E 03	0.1360000E 03	0.1360000E 03	0.1360000E 03	0.132[illegible] 03	0.13[illegible] 03
0.1350000E 03	0.1350000E 03	0.1350000E 03	0.1350000E 03	0.1350000E 03	0.1375[illegible] 03	0.1[illegible]5[illegible] 03
0.1350000E 03	0.1350000E 03	0.1300000E 03	0.1375000E 03	0.1375000E 03	0.14[illegible] 03	0.13[illegible] 03
0.1360000E 03	0.1350000E 03	0.1350000E 03	0.1300000E 03	0.1350000E 03	0.13[illegible] 03	0.131[illegible] 03
0.1300000E 03	0.1310000E 03	0.1300000E 03	0.1350000E 03	0.1300000E 03	0.13[illegible] 03	0.13[illegible] 03
0.1325000E 03	0.1325000E 03	0.1350000E 03	0.1340000E 03	0.1310000E 03	0.135[illegible] 03	0.135[illegible] 03
0.1310000E 03	0.1310000E 03	0.1300000E 03	0.1300000E 03	0.1310000E 03	0.1315[illegible] 03	0.13[illegible] 03
0.1330000E 03	0.1300000E 03	0.1250000E 03	0.1340000E 03	0.1300000E 03	0.13[illegible] 03	0.1[illegible] 03
0.1330000E 03	0.1350000E 03	0.1310000E 03	0.1350000E 03	0.1300000E 03	0.1325[illegible] 03	0.1[illegible] 03
0.1295000E 03	0.1275000E 03	0.1300000E 03	0.1250000E 03	0.1225000E 03	0.12[illegible] 03	0.12[illegible] 03
0.1225000E 03	0.1250000E 03	0.1250000E 03	0.1200000E 03	0.1200000E 03	0.12[illegible] 03	0.12[illegible] 03
0.1225000E 03	0.1200000E 03	0.1200000E 03	0.1250000E 03	0.1200000E 03	0.12[illegible] 03	0.12[illegible] 03
0.1175000E 03	0.1175000E 03	0.1200000E 03	0.1150000E 03	0.1150000E 03	0.11[illegible] 03	0.11[illegible] 03
0.1160000E 03	0.1150000E 03	0.1130000E 03	0.1180000E 03	0.1100000E 03	0.115[illegible] 03	0.115[illegible] 03
0.1150000E 03	0.1250000E 03	0.1250000E 03	0.1240000E 03	0.1170000E 03	0.115[illegible] 03	0.11[illegible] 03
0.1150000E 03	0.1175000E 03	0.1170000E 03	0.1050000E 03	0.1[illegible] 03	0.1[illegible]30[illegible] 03	0.12[illegible] 03
0.1135000E 03	0.1120000E 03	0.1125000E 03	0.1050000E 03	0.1125000E 03	0.111[illegible] 03	0.1[illegible]2[illegible] 03
0.1030000E 03						

DAILY CLOSING PRICE SERIES FOR GRANDROY.
1970.

0.4500000E 02	0.4600000E 02	0.4600000E 02	0.4500000E 02	0.4500000E 02	0.4500000E 02	0.4400000E 02
0.4450000E 02	0.4300000E 02	0.4400000E 02	0.4350000E 02	0.4500000E 02	0.5300000E 02	0.5100000E 02
0.5500000E 02	0.5500000E 02	0.5600000E 02	0.5300000E 02	0.5400000E 02	[illegible]	0.5600000E 02
0.5600000E 02	0.5500000E 02	0.5500000E 02	0.5300000E 02	0.5200000E 02	0.5200000E 02	0.5200000E 02
0.5200000E 02	0.5200000E 02	0.5200000E 02	0.5200000E 02	0.5000000E 02	0.5700000E 02	0.5700000E 02
0.5000000E 02	0.5100000E 02	0.4700000E 02	0.4300000E 02	0.4450000E 02	0.4400000E 02	0.4450000E 02
0.4450000E 02	0.4450000E 02	0.4650000E 02	0.4550000E 02	0.4800000E 02	0.4900000E 02	0.4900000E 02
0.5000000E 02	0.5200000E 02	0.5200000E 02	0.5000000E 02	0.5000000E 02	0.4900000E 02	0.5000000E 02
0.4800000E 02	0.4800000E 02	0.4800000E 02	0.4800000E 02	0.5000000E 02	0.4950000E 02	0.5000000E 02
0.5000000E 02	0.5200000E 02	0.5250000E 02	0.5000000E 02	0.5100000E 02	0.5000000E 02	0.4900000E 02
0.4700000E 02	0.4850000E 02	0.4750000E 02	0.4600000E 02	0.4700000E 02	0.4700000E 02	0.4700000E 02
0.4650000E 02	0.4500000E 02	0.4500000E 02	0.4500000E 02	0.4200000E 02	0.4000000E 02	0.4400000E 02
0.4000000E 02	0.4300000E 02	0.4300000E 02	0.4150000E 02	0.4150000E 02	0.3900000E 02	0.4200000E 02
0.3900000E 02	0.3600000E 02	0.3500000E 02	0.3650000E 02	0.2500000E 02	0.3700000E 02	0.3900000E 02
0.3500000E 02	0.3300000E 02	0.3300000E 02	0.3300000E 02	0.2600000E 02	0.3200000E 02	0.3400000E 02
0.3500000E 02	0.3700000E 02	0.3800000E 02	0.3600000E 02	0.3600000E 02	0.3400000E 02	0.3300000E 02
0.3600000E 02	0.3500000E 02	0.3500000E 02	0.3500000E 02	0.3450000E 02	0.3300000E 02	0.3200000E 02
0.3100000E 02	0.3100000E 02	0.3100000E 02	0.3100000E 02	0.3000000E 02	0.3100000E 02	0.3000000E 02
0.3075000E 02	0.2950000E 02	0.3000000E 02	0.3125000E 02	0.2800000E 02	0.2800000E 02	0.2500000E 02
0.2800000E 02	0.2750000E 02	0.2500000E 02	0.2600000E 02	0.2800000E 02	0.2800000E 02	0.2450000E 02
0.2700000E 02	0.2700000E 02	0.2800000E 02	0.2900000E 02	0.2700000E 02	0.2700000E 02	0.2650000E 02
0.2925000E 02	0.2800000E 02	0.2800000E 02	0.2700000E 02	0.2800000E 02	0.2600000E 02	0.2400000E 02
0.2950000E 02	0.2850000E 02	0.2850000E 02	0.2700000E 02	0.2800000E 02	0.2500000E 02	0.2400000E 02
0.2500000E 02	0.2300000E 02	0.2300000E 02	0.2500000E 02	0.2600000E 02	0.3000000E 02	0.3100000E 02
0.2800000E 02	0.2700000E 02	0.2500000E 02	0.2700000E 02	0.2500000E 02	0.2600000E 02	0.2600000E 02
0.2500000E 02	0.2500000E 02	0.2500000E 02	0.2500000E 02	0.2500000E 02	0.2600000E 02	0.2400000E 02
0.2400000E 02	0.2600000E 02	0.2400000E 02	0.2450000E 02	0.2500000E 02	0.2400000E 02	0.2300000E 02
0.2400000E 02	0.2300000E 02	0.2300000E 02	0.2400000E 02	0.2300000E 02	0.2450000E 02	0.2350000E 02
0.2400000E 02	0.2600000E 02	0.2200000E 02	0.2300000E 02	0.2400000E 02	0.2350000E 02	0.2350000E 02
0.2400000E 02	0.2500000E 02	0.2800000E 02	0.2900000E 02	0.2500000E 02	0.2400000E 02	0.2200000E 02
0.2725000E 02	0.2650000E 02	0.2650000E 02	0.2600000E 02	0.2600000E 02	0.2500000E 02	0.2400000E 02
0.2500000E 02	0.2400000E 02	0.2350000E 02	0.2300000E 02	0.2350000E 02	0.2200000E 02	0.2200000E 02
0.2200000E 02	0.2200000E 02	0.2150000E 02	0.2100000E 02	0.2100000E 02	0.2200000E 02	0.2300000E 02
0.2300000E 02	0.2350000E 02	0.2300000E 02	0.2300000E 02	0.2250000E 02	0.2150000E 02	0.2200000E 02
0.2100000E 02	0.2750000E 02	0.2700000E 02	0.2000000E 02	0.2150000E 02	0.2000000E 02	0.2200000E 02
0.2000000E 02	0.2000000E 02	0.1950000E 02	0.2200000E 02	0.2250000E 02	0.2200000E 02	0.2400000E 02
0.2400000E 02						

DAILY CLOSING PRICE SERIES FOR G.L.POWER. 1970.

0.18000000E 02	0.18000000E 02	0.18000000E 02	0.18000000E 02	0.23000000E 02	0.17875000E 02	0.17125000E 02
0.17125000E 02	0.17875000E 02	0.17875000E 02	0.17500000E 02	0.17625000E 02	0.17625000E 02	0.17625000E 02
0.17750000E 02	0.17750000E 02	0.17500000E 02	0.17687000E 02	0.17500000E 02	0.17250000E 02	0.17375000E 02
0.17438000E 02	0.17375000E 02	0.17375000E 02	0.17250000E 02	0.17125000E 02	0.17375000E 02	0.172[illegible]E 02
0.17125000E 02	0.17250000E 02	0.17700000E 02	0.17375000E 02	0.17750000E 02	0.172[illegible]E 02	0.172[illegible]E 02
0.17125000E 02	0.17000000E 02	0.16625000E 02	0.16875000E 02	0.16500000E 02	0.165[illegible]E 02	0.16[illegible]E 02
0.16250000E 02	0.16375000E 02	0.16375000E 02	0.165[illegible]E 02	0.16500000E 02	0.16375000E 02	0.1612[illegible]E 02
0.16375000E 02	0.16250000E 02	0.16375000E 02	0.16[illegible]E 02	0.15750000E 02	0.152[illegible]E 02	0.162[illegible]E 02
0.16000000E 02	0.16250000E 02	0.16250000E 02	0.165[illegible]E 02	0.16500000E 02	0.16[illegible]E 02	0.165[illegible]E 02
0.16500000E 02	0.16750000E 02	0.17000000E 02	0.17000000E 02	0.17750000E 02	0.177[illegible]E 02	0.17625000E 02
0.17375000E 02	0.17750000E 02	0.17250000E 02	0.17250000E 02	0.17625000E 02	0.17[illegible]E 02	0.17[illegible]E 02
0.17625000E 02	0.17500000E 02	0.17500000E 02	0.17250000E 02	0.16875000E 02	0.175[illegible]E 02	0.165[illegible]E 02
0.16125000E 02	0.16500000E 02	0.16000000E 02	0.16[illegible]E 02	0.16500000E 02	0.16625000E 02	0.165[illegible]E 02
0.16250000E 02	0.16000000E 02	0.16000000E 02	0.16375000E 02	0.16[illegible]E 02	0.16312[illegible]E 02	0.1625[illegible]E 02
0.16250000E 02	0.15500000E 02	0.15500000E 02	0.15000000E 02	0.15[illegible]E 02	0.155[illegible]E 02	0.15275[illegible]E 02
0.15500000E 02	0.16500000E 02	0.16500000E 02	0.16000000E 02	0.15625000E 02	0.16[illegible]E 02	0.1562[illegible]E 02
0.15750000E 02	0.15625000E 02	0.15500000E 02	0.15750000E 02	0.1575[illegible]E 02	0.1573[illegible]E 02	0.1575[illegible]E 02
0.15625000E 02	0.15750000E 02	0.15750000E 02	0.15625000E 02	0.155[illegible]E 02	0.155[illegible]E 02	0.155[illegible]E 02
0.15500000E 02	0.15500000E 02	0.15500000E 02	0.15625000E 02	0.15625000E 02	0.1575[illegible]E 02	0.16250000E 02
0.16250000E 02	0.16250000E 02	0.16250000E 02	0.16500000E 02	0.16500000E 02	0.165[illegible]E 02	0.16[illegible]E 02
0.16625000E 02	0.16313000E 02	0.16250000E 02	0.16500000E 02	0.16250000E 02	0.16375[illegible]E 02	0.16375000E 02
0.16375000E 02	0.16000000E 02	0.16375000E 02	0.16125000E 02	0.16375000E 02	0.1625[illegible]E 02	0.16125[illegible]E 02
0.16250000E 02	0.15000000E 02	0.16125000E 02	0.16125000E 02	0.16125000E 02	0.1625[illegible]E 02	0.16[illegible]E 02
0.16250000E 02	0.15750000E 02	0.15500000E 02	0.15250000E 02	0.15250000E 02	0.15[illegible]E 02	0.15[illegible]E 02
0.15000000E 02	0.15250000E 02	0.15250000E 02	0.15000000E 02	0.15000000E 02	0.15[illegible]E 02	0.15[illegible]E 02
0.15250000E 02	0.15375000E 02	0.16000000E 02	0.16000000E 02	0.15375000E 02	0.15875[illegible]E 02	0.15513[illegible]E 02
0.15750000E 02	0.15500000E 02	0.15750000E 02	0.15750000E 02	0.15625000E 02	0.15875[illegible]E 02	0.1575[illegible]E 02
0.15750000E 02	0.15875000E 02	0.16000000E 02	0.16250000E 02	0.16000000E 02	0.16[illegible]75[illegible]E 02	0.161[illegible]E 02
0.16000000E 02	0.16250000E 02	0.16250000E 02	0.16000000E 02	0.16[illegible]E 02	0.161[illegible]E 02	0.16125[illegible]E 02
0.16125000E 02	0.16125000E 02	0.16000000E 02	0.15750000E 02	0.157[illegible]E 02	0.16[illegible]E 02	0.1575[illegible]E 02
0.16000000E 02	0.15875000E 02	0.15875000E 02	0.15750000E 02	0.15875000E 02	0.15[illegible]75[illegible]E 02	0.15[illegible]75[illegible]E 02
0.16000000E 02	0.16250000E 02	0.16250000E 02	0.16375000E 02	0.16500000E 02	0.165[illegible]E 02	0.16375[illegible]E 02
0.16250000E 02	0.16250000E 02	0.16500000E 02	0.16500000E 02	0.17[illegible]E 02	0.17[illegible]E 02	0.17375000E 02
0.17375000E 02	0.17625000E 02	0.17750000E 02	0.17625000E 02	0.17625000E 02	0.175[illegible]E 02	0.17[illegible]E 02
0.17750000E 02	0.17750000E 02	0.17750000E 02	0.17625000E 02	0.17875000E 02	0.17[illegible]E 02	0.18[illegible]E 02
0.18000000E 02	0.18125000E 02	0.18125000E 02	0.18125000E 02	0.18313300E 02	0.18[illegible]E 02	0.18000000E 02
0.17875000E 02						

DAILY CLOSING PRICE SERIES FOR HAND CHEMICAL.
1970.

0.1225000E 02	0.1287500E 02	0.1275000E 02	0.1292500E 02	0.1225000E 02	0.1200000E 02	0.1150000E 02
0.1200000E 02	0.1200000E 02	0.1150000E 02	0.1175000E 02	0.1187500E 02	0.1162500E 02	0.1162500E 02
0.1150000E 02	0.1175000E 02	0.1150000E 02	0.1337500E 02	0.1050000E 02	0.9000000E 01	0.9250000E 01
0.1050000E 02	0.1062500E 02	0.1050000E 02	0.1100000E 02	0.1140000E 02	0.1100000E 02	0.1287500E 02
0.1250000E 02	0.1275000E 02	0.1287500E 02	0.1281200E 02	0.1281200E 02	0.1275000E 02	0.12[illegible]E 02
0.1250000E 02	0.1275000E 02	0.1275000E 02	0.1275000E 02	0.1275000E 02	0.1294000E 02	0.125[illegible]E 02
0.1293800E 02	0.1250000E 02	0.1250000E 02	0.1250000E 02	0.1250000E 02	0.1225000E 02	0.1237500E 02
0.1200000E 02	0.1250000E 02	0.1300000E 02	0.1375000E 02	0.1300000E 02	0.13[illegible]E 02	0.1275[illegible]E 02
0.1325000E 02	0.1300000E 02	0.1200000E 02	0.1175000E 02	0.1150000E 02	0.1156[illegible]E 02	0.1137500E 02
0.1137500E 02	0.1150000E 02	0.1197800E 02	0.11[illegible]E 02	0.1131500E 02	0.1062500E 02	0.1150000E 02
0.1125000E 02	0.1100000E 02	0.1100000E 02	0.1150000E 02	0.1287500E 02	0.1[illegible]E 02	0.1375[illegible]E 02
0.1350000E 02	0.1325000E 02	0.1250000E 02	0.1200000E 02	0.1212500E 02	0.1120000E 02	0.1000000E 02
0.1025000E 02	0.1050000E 02	0.1050000E 02	0.1350000E 02	0.1000000E 02	0.9[illegible]E 01	0.1000000E 02
0.9812000E 01	0.9812000E 01	0.8750000E 01	0.9000000E 01	0.9000000E 01	0.8[illegible]E 01	[illegible]
0.8250000E 01	0.8250000E 01	0.7500000E 01	0.6000000E 01	0.6000000E 01	0.9000000E 01	[illegible]
0.9000000E 01	0.8750000E 01	0.9000000E 01	0.9375000E 01	0.8750000E 01	0.8[illegible]E 01	0.8438000E 01
[illegible]	0.8125000E 01	0.9125000E 01	0.8562000E 01	0.8562000E 01	0.8875000E 01	0.8475[illegible]E 01
0.8688000E 01	0.8000000E 01	0.7500000E 01	0.6500000E 01	0.7125000E 01	0.7[illegible]E 01	0.6750000E 01
0.6750000E 01	0.6675000E 01	0.6750000E 01	0.6750000E 01	0.7550000E 01	0.6875000E 01	0.6750000E 01
0.6750000E 01	0.7000000E 01	0.6938000E 01	0.6500000E 01	0.6688000E 01	0.6250000E 01	0.6475[illegible]E 01
0.6875000E 01	0.6875000E 01	0.6500000E 01	0.6500000E 01	0.6750000E 01	0.6625000E 01	0.6625000E 01
0.6250000E 01	0.6500000E 01	0.6250000E 01	0.6500000E 01	0.6250000E 01	0.6[illegible]E 01	0.7[illegible]E 01
0.6250000E 01	0.6375000E 01	0.6375000E 01	0.6375000E 01	0.7000000E 01	0.7[illegible]E 01	0.6[illegible]E 01
0.6250000E 01	0.6500000E 01	0.7188000E 01	0.6500000E 01	0.7250000E 01	0.7188000E 01	0.7[illegible]E 01
0.7250000E 01	0.6750000E 01	0.7500000E 01	0.7500000E 01	0.7000000E 01	0.6[illegible]E 01	0.7500000E 01
0.7250000E 01	0.7000000E 01	0.6625000E 01	0.7000000E 01	0.7000000E 01	0.7[illegible]E 01	0.7000000E 01
0.7125000E 01	0.7125000E 01	0.7000000E 01	0.7000000E 01	0.7125000E 01	0.6750000E 01	0.7125000E 01
0.7250000E 01	0.7250000E 01	0.7250000E 01	0.7000000E 01	0.7250000E 01	0.6750000E 01	0.7175000E 01
0.7315000E 01	0.7250000E 01	0.7250000E 01	0.7000000E 01	0.7000000E 01	0.6875000E 01	0.6750000E 01
0.6500000E 01	0.6750000E 01	0.6750000E 01	0.6750000E 01	0.6750000E 01	0.6[illegible]E 01	0.6500000E 01
0.6750000E 01	0.7000000E 01	0.7000000E 01	0.7000000E 01	0.7000000E 01	0.7[illegible]E 01	0.7000000E 01
0.6750000E 01	0.6375000E 01	0.6875000E 01	0.6750000E 01	0.6500000E 01	0.6625000E 01	0.6563[illegible]E 01
0.6563000E 01	0.6563000E 01	0.6563000E 01	0.6563000E 01	0.6250000E 01	0.6500000E 01	0.65[illegible]E 01
0.6500000E 01	0.6750000E 01	0.6750000E 01	0.6750000E 01	0.6750000E 01	0.6[illegible]E 01	0.6[illegible]E 01
0.6300000E 01	0.6625000E 01	0.6375000E 01	0.6500000E 01	0.6500000E 01	0.6500000E 01	0.6500000E 01
0.6500000E 01	0.6500000E 01	0.6250000E 01	0.6250000E 01	0.6375000E 01	0.6250000E 01	0.6000000E 01
0.6000000E 01						

DAILY CLOSING PRICE SERIES FOR HUDSON BAY. 1970.

0.1937500E 02	0.1950000E 02	0.1950000E 02	0.1950000E 02	0.1975000E 02	0.1925000E 02	0.1962500E 02
0.1975000E 02	0.1987500E 02	0.2000000E 02	0.2062500E 02	0.2150000E 02	0.2175000E 02	0.2162500E 02
0.2150000E 02	0.2150000E 02	0.2125000E 02	0.2100000E 02	0.2075000E 02	0.2075000E 02	0.2125000E 02
0.2162500E 02	0.2150000E 02	0.2150000E 02	0.2175000E 02	0.2200000E 02	0.2187500E 02	0.2187500E 02
0.2118750E 02	0.2137500E 02	0.2187500E 02	0.2375000E 02	0.2162500E 02	0.2062500E 02	0.2[illegible]
0.2050000E 02	0.2125000E 02	0.2075000E 02	0.2150000E 02	0.1975000E 02	0.1950000E 02	0.2000000E 02
0.1987500E 02	0.1975000E 02	0.1975000E 02	0.1925000E 02	0.1937500E 02	0.1950000E 02	0.2012500E 02
0.2000000E 02	0.2000000E 02	0.1975000E 02	0.1962500E 02	0.1925000E 02	0.1950000E 02	0.1937500E 02
0.1862500E 02	0.1862500E 02	0.1850000E 02	0.1925000E 02	0.1825000E 02	0.1837500E 02	0.1[illegible]
0.1800000E 02	0.1800000E 02	0.1887500E 02	0.1875000E 02	0.1850000E 02	0.1762500E 02	0.1[illegible]
0.1862500E 02	0.1825000E 02	0.1837500E 02	0.1850000E 02	0.1850000E 02	0.1650000E 02	0.1[illegible]
0.1850000E 02	0.1825000E 02	0.1816100E 02	0.1750000E 02	0.1712500E 02	0.1737500E 02	0.1575000E 02
0.1675000E 02	0.1675000E 02	0.1550000E 02	0.1575000E 02	0.1562500E 02	0.1562500E 02	0.1525000E 02
0.1525000E 02	0.1537500E 02	0.1518500E 02	0.1500000E 02	0.1350000E 02	0.1287500E 02	0.1362500E 02
0.1325000E 02	0.1275000E 02	0.1275000E 02	0.1250000E 02	0.1250000E 02	0.1250000E 02	0.1375000E 02
0.1275000E 02	0.1237500E 02	0.1225000E 02	0.1237500E 02	0.1337500E 02	0.1275000E 02	0.1262500E 02
0.1250000E 02	0.1237500E 02	0.1200000E 02	0.1212500E 02	0.1162500E 02	0.12[illegible]	0.1175000E 02
0.1175000E 02	0.1225000E 02	0.1225000E 02	0.1182500E 02	0.1157500E 02	0.1187500E 02	0.1187500E 02
0.1187500E 02	0.1175000E 02	0.1212500E 02	0.1225000E 02	0.1225000E 02	0.1225000E 02	0.12[illegible]
0.1300000E 02	0.1312500E 02	0.1325000E 02	0.1350000E 02	0.1375000E 02	0.1362500E 02	0.13[illegible]
0.1337500E 02	0.1325000E 02	0.1325000E 02	0.1375000E 02	0.1337500E 02	0.1412500E 02	0.1425000E 02
0.1437500E 02	0.1437500E 02	0.1450000E 02	0.1437500E 02	0.1412500E 02	0.1412500E 02	0.14[illegible]
0.1400000E 02	0.1400000E 02	0.1412500E 02	0.1412500E 02	0.1425000E 02	0.1425000E 02	0.1[illegible]
0.1425000E 02	0.1425000E 02	0.1412500E 02	0.1450000E 02	0.1450000E 02	0.1450000E 02	0.145[illegible]
0.1450000E 02	0.1450000E 02	0.1450000E 02	0.1500000E 02	0.1537500E 02	0.1525000E 02	0.1487500E 02
0.1400000E 02	0.1512500E 02	0.1500000E 02	0.1500000E 02	0.1500000E 02	0.1500000E 02	0.1475000E 02
0.1512500E 02	0.1500000E 02	0.1487500E 02	0.1487500E 02	0.1475000E 02	0.1387500E 02	0.14[illegible]
0.1387500E 02	0.1434500E 02	0.1450000E 02	0.1450000E 02	0.1450000E 02	0.1462500E 02	0.14[illegible]
0.1450000E 02	0.1487500E 02	0.14[illegible]	0.1400000E 02	0.1400000E 02	0.1412500E 02	0.1412500E 02
0.1412500E 02	0.1412500E 02	0.1412500E 02	0.1387500E 02	0.1400000E 02	0.1412500E 02	0.1425000E 02
0.1462500E 02	0.1475000E 02	0.1475000E 02	0.1500000E 02	0.1512500E 02	0.15[illegible]	0.1512500E 02
0.1500000E 02	0.1475000E 02	0.1475000E 02	0.1450000E 02	0.1425000E 02	0.1387500E 02	0.1412500E 02
0.1437500E 02	0.1450000E 02	0.1462500E 02	0.1475000E 02	0.1487500E 02	0.1512500E 02	0.1512500E 02
0.1512500E 02	0.1512500E 02	0.1512500E 02	0.1512500E 02	0.1500000E 02	0.1512500E 02	0.1512[illegible]
0.1512500E 02	0.1500000E 02	0.1500000E 02	0.1500000E 02	0.1500000E 02	0.15[illegible]	0.1[illegible]
0.1487500E 02	0.1500000E 02	0.1500000E 02	0.1500000E 02	0.1475000E 02	0.1500000E 02	0.1487500E 02
0.1487500E 02						

DAILY CLOSING PRICE SERIES FOR IMPERIAL OIL.
1970.

0.1737500E 02	0.1787500E 02	0.1800000E 02	0.1775000E 02	0.1750000E 02	0.1725000E 02	0.1737500E 02
0.1775000E 02	0.1787500E 02	0.1837500E 02	0.2062500E 02	0.2162500E 02	0.2[illegible]50000E 02	0.2100000E 02
0.2162500E 02	0.2175000E 02	0.2112500E 02	0.2037500E 02	0.2175000E 02	0.215[illegible]E 02	0.22[illegible]E 02
0.2100000E 02	0.2112500E 02	0.2175000E 02	0.2125000E 02	0.2137500E 02	0.2125[illegible]E 02	0.21[illegible]75[illegible]E 02
0.2[illegible]75000E 02	0.2125000E 02	0.2087500E 02	0.2[illegible]87500E 02	0.2[illegible]75[illegible]E 02	[illegible]	0.21[illegible]E 02
0.2075000E 02	0.2087500E 02	0.2075000E 02	0.2062500E 02	0.2[illegible]87500E 02	0.21[illegible]5[illegible]E 02	0.2112500E 02
0.2062500E 02	0.2075000E 02	0.2100000E 02	0.2100000E 02	0.2[illegible]87500E 02	0.2[illegible]625[illegible]E 02	0.2[illegible]5[illegible]E 02
0.2100000E 02	0.2087500E 02	0.2087500E 02	0.2162500E 02	0.2[illegible]75[illegible]E 02	0.21[illegible]E 02	0.2[illegible]375[illegible]E 02
0.2087500E 02	0.2087500E 02	0.2075000E 02	0.2100000E 02	0.2200000E 02	0.21[illegible]75[illegible]E 02	0.2[illegible]E 02
0.2200000E 02	0.2225000E 02	0.2187500E 02	0.2200000E 02	0.2212500E 02	0.21[illegible]75[illegible]E 02	0.215[illegible]E 02
0.2037500E 02	0.20[illegible]E 02	0.2025000E 02	0.1912500E 02	0.19[illegible]E 02	0.1[illegible]E 02	0.1[illegible]125[illegible]E 02
0.1912500E 02	0.1900000E 02	0.1887500E 02	0.1862500E 02	0.1862500E 02	0.1[illegible]50[illegible]E 02	0.1[illegible]7[illegible]E 02
0.1887500E 02	0.1900000E 02	0.1[illegible]87500E 02	0.1850000E 02	0.1[illegible]25[illegible]E 02	0.1[illegible]E 02	0.1[illegible]E 02
0.1812500E 02	0.1800000E 02	0.1787500E 02	0.1762500E 02	0.17[illegible]E 02	0.1[illegible]750[illegible]E 02	0.1737500E 02
0.1750000E 02	0.1737500E 02	0.1800000E 02	0.1712500E 02	0.15[illegible]E 02	0.1[illegible]E 02	0.1512500E 02
0.1587500E 02	0.1658000E 02	0.1612500E 02	0.15[illegible]000E 02	0.1537500E 02	0.1[illegible]7[illegible]E 02	0.157[illegible]E 02
0.1637500E 02	0.16[illegible]E 02	0.1587500E 02	0.1587500E 02	0.1575000E 02	0.1[illegible]E 02	0.1[illegible]5[illegible]E 02
0.1700000E 02	0.1675000E 02	0.1612500E 02	0.1575000E 02	0.1562500E 02	0.1537500E 02	0.155[illegible]E 02
0.1587500E 02	0.1512500E 02	0.1512500E 02	0.1512500E 02	0.15[illegible]E 02	0.1[illegible]E 02	0.14625[illegible]E 02
0.1462500E 02	0.1500000E 02	0.1475000E 02	0.1487500E 02	0.1562500E 02	[illegible]	0.1[illegible]E 02
0.1625000E 02	0.1650000E 02	0.1650000E 02	0.1675000E 02	0.167[illegible]E 02	0.1[illegible]25[illegible]E 02	0.1[illegible]E 02
0.1575000E 02	0.1712500E 02	0.1725000E 02	0.1700000E 02	0.1712500E 02	0.1[illegible]75[illegible]E 02	0.17[illegible]E 02
0.1700000E 02	0.1700000E 02	0.1712500E 02	0.1700000E 02	0.1700000E 02	0.1[illegible]75[illegible]E 02	0.1[illegible]E 02
0.1687500E 02	0.1700000E 02	0.1762500E 02	0.1775000E 02	0.177[illegible]E 02	0.177[illegible]E 02	0.1[illegible]375[illegible]E 02
0.1787500E 02	0.1750000E 02	0.1800000E 02	0.1787500E 02	0.1850000E 02	0.1[illegible]75[illegible]E 02	0.1[illegible]75[illegible]E 02
0.1825000E 02	0.1800000E 02	0.1800000E 02	0.1775000E 02	0.17[illegible]E 02	0.17[illegible]5[illegible]E 02	0.1[illegible]375[illegible]E 02
0.1800000E 02	0.1787500E 02	0.1787500E 02	0.1812500E 02	0.1787500E 02	0.1[illegible]125[illegible]E 02	0.1[illegible]E 02
0.1837500E 02	0.1862500E 02	0.1875000E 02	0.1900000E 02	0.19[illegible]75[illegible]E 02	0.1[illegible]5[illegible]E 02	0.1[illegible]5[illegible]E 02
0.1900000E 02	0.1925000E 02	0.1875000E 02	0.1900000E 02	0.1887500E 02	0.1[illegible]7[illegible]E 02	0.1[illegible]25[illegible]E 02
0.1900000E 02	0.1875000E 02	0.1875000E 02	0.1875000E 02	0.1875000E 02	0.1[illegible]7[illegible]E 02	0.1[illegible]75[illegible]E 02
0.1850000E 02	0.1850000E 02	0.1837500E 02	0.1850000E 02	0.1837500E 02	0.1[illegible]E 02	0.1[illegible]5[illegible]E 02
0.1875000E 02	0.1875000E 02	0.1875000E 02	0.1850000E 02	0.1[illegible]37500E 02	0.1[illegible]5[illegible]E 02	0.2[illegible]4[illegible]E 02
0.1850000E 02	0.1837500E 02	0.1850000E 02	0.1850000E 02	0.1[illegible]75[illegible]E 02	0.19[illegible]E 02	0.1[illegible]5[illegible]E 02
0.1987500E 02	0.1962500E 02	0.1962500E 02	0.1962500E 02	0.197[illegible]E 02	0.1[illegible]E 02	0.1[illegible]75[illegible]E 02
0.1950000E 02	0.1937500E 02	0.1975000E 02	0.1875000E 02	0.2[illegible]12500E 02	0.2[illegible]E 02	0.2[illegible]E 02
0.1987500E 02	0.1975000E 02	0.1987500E 02	0.2[illegible]E 02	0.2[illegible]E 02	0.19[illegible]7[illegible]E 02	
0.2200000E 02						

DAILY CLOSING PRICE SERIES FOR MARITIME.
1970.

0.1625000E 02	0.1606300E 02	0.1606300E 02	0.1650000E 02	0.1550000E 02	0.1587500E 02	0.1775000E 02
0.1550000E 02	0.1512500E 02	0.1537500E 02	0.1575000E 02	0.1525000E 02	0.1550000E 02	0.1500000E 02
0.1537500E 02	0.1550000E 02	0.1525000E 02	0.1550000E 02	0.1550000E 02	0.1550000E 02	0.1550000E 02
0.1550000E 02	0.1575000E 02	0.1587500E 02	0.1550000E 02	0.1587500E 02	0.1587500E 02	0.1575000E 02
0.1787500E 02	0.1625000E 02	0.1650000E 02	0.1650000E 02	0.1650000E 02	0.1625[illegible] 02	0.15[illegible] 02
0.1625000E 02	0.1625000E 02	0.1600000E 02	0.1700000E 02	0.1637500E 02	0.1675[illegible] 02	0.17[illegible] 02
0.1700000E 02	0.1662500E 02	0.1612500E 02	0.1662500E 02	0.1675000E 02	0.1[illegible] 02	0.1625[illegible] 02
0.1630499E 02	0.1525000E 02	0.1600000E 02	0.1525000E 02	0.1600000E 02	0.1600[illegible] 02	0.1[illegible] 02
0.1600000E 02	0.1600000E 02	0.1612500E 02	0.1612500E 02	0.1612500E 02	0.15[illegible] 02	0.15[illegible] 02
0.1550000E 02	0.1587500E 02	0.1593800E 02	0.1587500E 02	0.1587500E 02	0.157[illegible] 02	0.1512[illegible] 02
0.1600000E 02	0.1575000E 02	0.1575000E 02	0.1600000E 02	0.1575000E 02	0.1525[illegible] 02	0.152[illegible] 02
0.1525000E 02	0.1625000E 02	0.1600000E 02	0.1575000E 02	0.1562500E 02	0.1[illegible] 02	0.15[illegible] 02
0.1600000E 02	0.1612500E 02	0.1600000E 02	0.1575000E 02	0.1600000E 02	0.1[illegible] 02	0.1[illegible] 02
0.1525000E 02	0.1587500E 02	0.1587500E 02	0.1575000E 02	0.1550000E 02	0.152[illegible] 02	0.1[illegible] 02
0.1575000E 02	0.1568700E 02	0.1575000E 02	0.1550000E 02	0.1575000E 02	0.15[illegible] 02	0.1[illegible] 02
0.1525000E 02	0.1525000E 02	0.1537500E 02	0.1525000E 02	0.1537500E 02	0.15[illegible] 02	0.1537[illegible] 02
0.1550000E 02	0.1525000E 02	0.1550000E 02	0.1587500E 02	0.15[illegible] 02	0.1637[illegible] 02	0.1[illegible] 02
0.1612500E 02	0.1612500E 02	0.1575000E 02	0.1637500E 02	0.1612500E 02	0.161[illegible] 02	0.151[illegible] 02
0.1612500E 02	0.1675000E 02	0.1600000E 02	0.1637500E 02	0.1543[illegible] 02	0.16[illegible] 02	0.15[illegible] 02
0.1637500E 02	0.1600000E 02	0.1625000E 02	0.1600000E 02	0.1600000E 02	0.1575[illegible] 02	0.16[illegible] 02
0.1618500E 02	0.1600000E 02	0.1600000E 02	0.1625000E 02	0.1625000E 02	0.16[illegible] 02	0.162[illegible] 02
0.1625000E 02	0.1625000E 02	0.1625000E 02	0.1600000E 02	0.1600000E 02	0.1[illegible] 02	0.1[illegible] 02
0.1600000E 02	0.1600000E 02	0.1612500E 02	0.1612500E 02	0.1600000E 02	0.1[illegible] 02	0.1587[illegible] 02
0.1575000E 02	0.1575000E 02	0.1575000E 02	0.1587500E 02	0.1587500E 02	0.15[illegible] 02	0.157[illegible] 02
0.1583600E 02	0.1575000E 02	0.1587500E 02	0.1587500E 02	0.1587500E 02	0.16[illegible] 02	0.157[illegible] 02
0.1575000E 02	0.1575000E 02	0.1600000E 02	0.1600000E 02	0.1587500E 02	0.16[illegible] 02	0.1612[illegible] 02
0.1575000E 02	0.1600000E 02	0.1600000E 02	0.1625000E 02	0.1625000E 02	0.1[illegible] 02	0.1637[illegible] 02
0.1637500E 02	0.1650000E 02	0.1650000E 02	0.1650000E 02	0.1637500E 02	0.1637[illegible] 02	0.16[illegible] 02
0.1650000E 02	0.1625000E 02	0.1612500E 02	0.1687500E 02	0.1662500E 02	0.166[illegible] 02	0.17[illegible] 02
0.1625000E 02	0.1712500E 02	0.1687500E 02	0.1750000E 02	0.1675000E 02	0.17[illegible] 02	0.17[illegible] 02
0.1700000E 02	0.1712500E 02	0.1800000E 02	0.18[illegible] 02	0.17[illegible] 02	0.17[illegible] 02	0.17[illegible] 02
0.1750000E 02	0.1750000E 02	0.1775000E 02	0.1775000E 02	0.18[illegible] 02	0.1[illegible] 02	0.1[illegible] 02
0.1800000E 02	0.1812500E 02	0.1800000E 02	0.1837500E 02	0.18[illegible] 02	0.1[illegible] 02	0.1[illegible] 02
0.1850000E 02	0.1850000E 02	0.1850000E 02	0.1887500E 02	0.18[illegible] 02	0.1[illegible] 02	0.1[illegible] 02
0.1900000E 02	0.1900000E 02	0.1900000E 02	0.1900000E 02	0.19[illegible] 02	0.19[illegible] 02	0.1[illegible] 02
0.1900000E 02	0.1887500E 02	0.1875000E 02	0.1975000E 02	0.1993[illegible] 02	0.1[illegible] 02	0.1[illegible] 02
0.1887500E 02						

DAILY CLOSING PRICE SERIES FOR ROTHMAN CDA.
1970.

0.1950000E 02	0.1950000E 02	0.1950000E 02	0.1950000E 02	0.2000000E 02	0.1975000E 02	0.1950000E 02
0.1950000E 02	0.1962500E 02	0.1937500E 02	0.1937500E 02	0.1987500E 02	0.1962500E 02	0.1975000E 02
0.1975000E 02	0.1900000E 02	0.1975000E 02	0.1900000E 02	0.1926300E 02	0.1925000E 02	[illegible]
0.1800000E 02	0.1800000E 02	0.1800000E 02	0.1875000E 02	0.1837500E 02	[illegible]	[illegible]
0.1900000E 02	0.1850000E 02	0.1900000E 02	0.1875000E 02	[illegible]	[illegible]	[illegible]
0.1900000E 02	0.1900000E 02	0.1937500E 02	0.1950000E 02	[illegible]	[illegible]	[illegible]
0.1925000E 02	0.1900000E 02	0.1925000E 02	0.1925000E 02	0.1900000E 02	[illegible]	[illegible]
0.1912500E 02	0.1900000E 02	0.1925000E 02	0.1875000E 02	0.1883000E 02	[illegible]	[illegible]
0.1850000E 02	0.1825000E 02	0.1675000E 02	0.1800000E 02	0.1837500E 02	[illegible]	[illegible]
0.1837500E 02	0.1825000E 02	0.1812500E 02	0.1812500E 02	0.1825000E 02	[illegible]	[illegible]
[illegible]	0.1837500E 02	0.1818700E 02	0.1750000E 02	0.1750000E 02	[illegible]	[illegible]
0.1700000E 02	0.1700000E 02	0.1700000E 02	0.1700000E 02	[illegible]	[illegible]	[illegible]
0.1600000E 02	0.1600000E 02	0.1600000E 02	0.1600000E 02	[illegible]	[illegible]	[illegible]
0.1550000E 02	0.1550000E 02	0.1625000E 02	0.1587500E 02	[illegible]	[illegible]	[illegible]
0.1550000E 02	0.1525000E 02	0.1550000E 02	0.1525000E 02	0.1537500E 02	[illegible]	[illegible]
0.1025000E 02	0.9500000E 01	0.9375000E 01	0.9125000E 01	0.9250000E 01	[illegible]	[illegible]
0.9000000E 01	[illegible]	0.9500000E 01	0.9500000E 01	0.9625000E 01	[illegible]	[illegible]
0.1000000E 02	0.9750000E 01	0.9750000E 01	0.9750000E 01	0.9750000E 01	[illegible]	[illegible]
0.9500000E 01	0.9750000E 01	0.9750000E 01	0.9683000E 01	0.9500000E 01	[illegible]	[illegible]
0.9100000E 01	0.9625000E 01	0.9775000E 01	0.9500000E 01	0.9375000E 01	[illegible]	[illegible]
0.9250000E 01	0.9250000E 01	0.9250000E 01	0.9500000E 01	0.9250000E 01	[illegible]	[illegible]
[illegible]	0.1100000E 02	0.1175000E 02	0.1100000E 02	[illegible]	[illegible]	[illegible]
0.1025000E 02	0.1012500E 02	0.1025000E 02	0.1012500E 02	0.1012500E 02	[illegible]	[illegible]
0.1000000E 02	0.1000000E 02	0.1000000E 02	[illegible]	0.1037500E 02	[illegible]	[illegible]
0.1100000E 02	0.1187500E 02	0.1175000E 02	0.1150000E 02	[illegible]	[illegible]	[illegible]
0.1175000E 02	0.1162500E 02	0.1150000E 02	0.1150000E 02	[illegible]	[illegible]	[illegible]
0.1175000E 02	0.1175000E 02	0.1162500E 02	0.1162500E 02	[illegible]	[illegible]	[illegible]
0.1137500E 02	0.1125000E 02	0.1125000E 02	0.1137500E 02	[illegible]	[illegible]	[illegible]
0.1352500E 02	0.1387500E 02	0.1325000E 02	0.1325000E 02	[illegible]	[illegible]	[illegible]
0.1300000E 02	0.1225000E 02	0.1250000E 02	[illegible]	[illegible]	[illegible]	[illegible]
0.1250000E 02	[illegible]	0.1225000E 02	0.1287500E 02	0.1275000E 02	[illegible]	[illegible]
0.1237500E 02	0.1225000E 02	[illegible]	0.1225000E 02	[illegible]	[illegible]	[illegible]
0.1168800E 02	0.1137500E 02	0.1162500E 02	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
0.1075000E 02	0.1025000E 02	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	0.1225000E 02	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
0.1250000E 02						

DAILY CLOSING PRICE SERIES FOR SHAW PIPE.
1970.

0.1600000E 02	0.1600000E 02	0.1575000E 02	0.1575000E 02	0.1587500E 02	0.1525000E 02	0.1562500E 02
0.1600000E 02	0.1600000E 02	0.1575000E 02	0.1587500E 02	0.1575000E 02	[illegible]	0.1512500E 02
0.1412500E 02	0.1450000E 02	0.1450000E 02	0.1450000E 02	0.1425000E 02	[illegible]	[illegible]
0.1425000E 02	0.1425000E 02	0.1400000E 02	0.1375000E 02	0.1375000E 02	[illegible]	[illegible]
0.1287500E 02	0.1212500E 02	[illegible]	[illegible]	0.1237500E 02	[illegible]	[illegible]
0.1400000E 02	0.1500000E 02	0.1375000E 02	0.1350000E 02	0.1375000E 02	[illegible]	[illegible]
0.1300000E 02	0.1300000E 02	0.1337500E 02	0.1337500E 02	0.1375000E 02	[illegible]	[illegible]
0.1300000E 02	0.1275000E 02	0.1275000E 02	0.1275000E 02	0.1262500E 02	[illegible]	[illegible]
0.1225000E 02	0.1150000E 02	[illegible]	0.1175000E 02	[illegible]	[illegible]	[illegible]
0.1125000E 02	0.1125000E 02	0.1150000E 02	0.1150000E 02	0.1150000E 02	[illegible]	[illegible]
0.1075000E 02	0.1087500E 02	[illegible]	0.9750000E 01	0.9750000E 01	[illegible]	[illegible]
0.9625000E 01	0.9625000E 01	0.9813000E 01	[illegible]	[illegible]	[illegible]	[illegible]
0.8000000E 01	0.9000000E 01	0.9625000E 01	[illegible]	[illegible]	[illegible]	[illegible]
0.9000000E 01	0.8750000E 01	0.8000000E 01	[illegible]	[illegible]	[illegible]	[illegible]
0.7500000E 01	0.6500000E 01	0.7000000E 01	0.7000000E 01	[illegible]	[illegible]	[illegible]
0.7000000E 01	0.6875000E 01	0.6875000E 01	0.6125000E 01	[illegible]	[illegible]	[illegible]
0.6250000E 01	[illegible]	[illegible]	0.6125000E 01	[illegible]	[illegible]	[illegible]
0.5625000E 01	0.6000000E 01	0.6000000E 01	0.5625000E 01	[illegible]	[illegible]	[illegible]
0.6625000E 01	0.6500000E 01	0.6250000E 01	0.6250000E 01	[illegible]	[illegible]	[illegible]
0.6000000E 01	0.5375000E 01	0.6000000E 01	[illegible]	[illegible]	[illegible]	[illegible]
0.5875000E 01	0.6000000E 01	0.5813000E 01	0.6000000E 01	[illegible]	[illegible]	[illegible]
0.6000000E 01	0.6750000E 01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
0.5750000E 01	[illegible]	0.6500000E 01	0.7125000E 01	[illegible]	[illegible]	[illegible]
0.6500000E 01	0.6750000E 01	0.6750000E 01	0.7000000E 01	0.7250000E 01	[illegible]	[illegible]
0.8250000E 01	0.8125000E 01	0.8125000E 01	[illegible]	0.8375000E 01	[illegible]	[illegible]
0.8875000E 01	0.8500000E 01	0.8500000E 01	[illegible]	0.8500000E 01	[illegible]	[illegible]
0.8000000E 01	0.8375000E 01	0.8000000E 01	[illegible]	0.7750000E 01	[illegible]	[illegible]
0.7875000E 01	0.9000000E 01	0.8875000E 01	[illegible]	[illegible]	[illegible]	[illegible]
0.9000000E 01	0.9000000E 01	0.9125000E 01	[illegible]	[illegible]	[illegible]	[illegible]
0.8875000E 01	0.8750000E 01	0.8750000E 01	[illegible]	[illegible]	[illegible]	[illegible]
0.8750000E 01	0.9250000E 01	0.9000000E 01	0.9250000E 01	0.9125000E 01	[illegible]	[illegible]
0.1012500E 02	0.1012500E 02	0.9750000E 01	0.1000000E 02	[illegible]	[illegible]	[illegible]
0.1000000E 02	[illegible]	0.1000000E 02	0.9750000E 01	0.9750000E 01	[illegible]	[illegible]
0.1025000E 02	0.9375000E 01	0.8750000E 01	0.9500000E 01	[illegible]	[illegible]	[illegible]
0.9750000E 01	0.9375000E 01	0.9875000E 01	0.9750000E 01	0.9750000E 01	[illegible]	[illegible]
0.9750000E 01	0.9625000E 01	0.9625000E 01	[illegible]	[illegible]	[illegible]	[illegible]
0.9625000E 01						

DAILY CLOSING PRICE SERIES FOR VAN NESS. 1979..

0.2250000E 03	0.2300000E 03	0.2450000E 03	0.2500000E 03	0.2450000E 03	0.2400000E 03	0.2300000E 03
0.2350000E 03	0.2350000E 03	0.2350000E 03	0.2750000E 03	0.2650000E 03	0.2350000E 03	0.2400000E 03
0.2250000E 03	0.2150000E 03	0.2250000E 03	0.2150000E 03	0.2100000E 03	0.2000000E 03	0.18[illegible]E 03
0.1850000E 03	0.1750000E 03	0.1700000E 03	0.1750000E 03	0.1800000E 03	0.17[illegible]E 03	0.175[illegible]E 03
0.1775000E 03	0.1900000E 03	0.2050000E 03	0.2100000E 03	0.2150000E 03	0.2[illegible]E 03	0.17[illegible]E 03
0.1900000E 03	0.2150000E 03	0.2400000E 03	0.2000000E 03	0.1800000E 03	0.175[illegible]E 03	0.18[illegible]E 03
0.1820000E 03	0.1600000E 03	0.1900000E 03	0.1750000E 03	0.1750000E 03	0.1750000E 03	0.175[illegible]E 03
0.1750000E 03	0.1700000E 03	0.1700000E 03	0.1650000E 03	0.1750000E 03	0.1[illegible]E 03	0.1[illegible]E 03
0.1550000E 03	0.1550000E 03	0.1500000E 03	0.1500000E 03	0.1550000E 03	0.1500000E 03	0.1[illegible]E 03
0.1550000E 03	0.1550000E 03	0.1500000E 03	0.1500000E 03	0.1500000E 03	0.14[illegible]E 03	0.12[illegible]E 03
0.1650000E 03	0.1770000E 03	0.1600000E 03	0.1550000E 03	0.1500000E 03	0.14[illegible]E 03	[illegible]
0.1500000E 03	0.1500000E 03	0.1500000E 03	0.1500000E 03	0.1250000E 03	0.145[illegible]E 03	[illegible]
0.1250000E 03	0.1250000E 03	0.1250000E 03	0.1100000E 03	0.1450000E 03	0.11[illegible]E 03	[illegible]
0.1100000E 03	0.1000000E 03	0.9500000E 02	0.8700000E 02	0.4500000E 02	[illegible]	[illegible]
0.7500000E 02	0.6500000E 02	0.6500000E 02	0.4000000E 02	0.5000000E 02	[illegible]	[illegible]
0.8500000E 02	0.8700000E 02	0.8600000E 02	0.8300000E 02	0.7400000E 02	0.70[illegible]E 02	0.71[illegible]E 02
0.7700000E 02	0.7100000E 02	0.71[illegible]E 02	0.7400000E 02	0.7100000E 02	0.7[illegible]E 02	[illegible]
0.6500000E 02	0.6750000E 02	0.65[illegible]E 02	0.6500000E 02	0.6250000E 02	[illegible]	[illegible]
0.5500000E 02	0.6250000E 02	0.61[illegible]E 02	0.6000000E 02	0.6000000E 02	[illegible]	[illegible]
0.5000000E 02	0.5500000E 02	0.6000000E 02	0.6300000E 02	0.6100000E 02	[illegible]	[illegible]
0.6000000E 02	0.6000000E 02	0.6000000E 02	0.5500000E 02	0.5700000E 02	0.57[illegible]E 02	[illegible]
0.5700000E 02	0.6000000E 02	0.5500000E 02	0.5000000E 02	0.5000000E 02	0.5[illegible]E 02	[illegible]
0.5400000E 02	0.5000000E 02	0.4500000E 02	0.5500000E 02	0.4500000E 02	0.5[illegible]E 02	[illegible]
0.5500000E 02	0.6000000E 02	0.5500000E 02	0.6500000E 02	0.6500000E 02	0.5[illegible]E 02	[illegible]
0.9500000E 02	0.8500000E 02	0.8000000E 02	0.7500000E 02	0.7700000E 02	[illegible]	[illegible]
0.8100000E 02	0.7600000E 02	0.6700000E 02	0.7150000E 02	0.7700000E 02	0.7[illegible]E 02	0.7[illegible]E 02
0.7100000E 02	0.7400000E 02	0.7200000E 02	0.7300000E 02	0.7400000E 02	[illegible]	[illegible]
0.8500000E 02	0.8600000E 02	0.8000000E 02	0.8000000E 02	0.7800000E 02	0.7[illegible]E 02	0.7[illegible]E 02
0.7500000E 02	0.7800000E 02	0.7700000E 02	0.7900000E 02	0.7500000E 02	0.7[illegible]E 02	0.7[illegible]E 02
0.6500000E 02	0.7600000E 02	0.6750000E 02	0.7200000E 02	0.5500000E 02	[illegible]	0.71[illegible]E 02
0.6900000E 02	0.6000000E 02	0.6500000E 02	0.6500000E 02	0.6300000E 02	0.67[illegible]E 02	0.7[illegible]E 02
0.7000000E 02	0.6500000E 02	0.6750000E 02	0.6800000E 02	0.7000000E 02	0.[illegible]E 02	[illegible]
0.6500000E 02	0.6000000E 02	0.6650000E 02	0.6300000E 02	0.6500000E 02	0.61[illegible]E 02	[illegible]
0.6300000E 02	0.6300000E 02	0.6700000E 02	0.6100000E 02	0.6500000E 02	0.7[illegible]E 02	[illegible]
0.7300000E 02	0.7350000E 02	0.7300000E 02	0.7400000E 02	0.7300000E 02	[illegible]	[illegible]
0.6650000E 02	0.6430000E 02	0.6700000E 02	0.7[illegible]E 02	[illegible]	[illegible]	0.7[illegible]E 02
0.7000000E 02						

DAILY CLOSING PRICE SERIES FOR WEST MINE.
1970.

0.3750000E 03	0.3800000E 03	0.3700000E 03	0.3750000E 03	0.3700000E 03	0.3750000E 03	0.3700000E 03
0.3650000E 03	0.3650000E 03	0.3600000E 03	0.3550000E 03	0.3600000E 03	0.3600000E 03	0.3650000E 03
0.3750000E 03	0.3750000E 03	0.3750000E 03	0.3600000E 03	0.3550000E 03	0.3700000E 03	0.3600000E 03
0.3780000E 03	0.3800000E 03	0.3800000E 03	0.4150000E 03	0.4100000E 03	[illegible]	[illegible]
0.3900000E 03	0.3900000E 03	[illegible]	0.4100000E 03	0.4250000E 03	[illegible]	[illegible]
0.4250000E 03	0.4250000E 03	0.4250000E 03	[illegible]	[illegible]	[illegible]	[illegible]
0.4150000E 03	0.4200000E 03	0.4150000E 03	[illegible]	0.4150000E 03	[illegible]	[illegible]
0.4100000E 03	0.4250000E 03	0.4200000E 03	[illegible]	0.4150000E 03	[illegible]	[illegible]
0.4200000E 03	0.4150000E 03	0.4200000E 03	[illegible]	0.4250000E 03	[illegible]	[illegible]
0.4200000E 03	0.4300000E 03	0.4550000E 03	[illegible]	[illegible]	[illegible]	[illegible]
0.4900000E 03	0.4800000E 03	0.4800000E 03	0.4700000E 03	0.4700000E 03	[illegible]	[illegible]
0.4650000E 03	0.4500000E 03	0.4400000E 03	[illegible]	[illegible]	[illegible]	[illegible]
0.4450000E 03	0.4750000E 03	0.4600000E 03	[illegible]	[illegible]	[illegible]	[illegible]
0.4550000E 03	0.4450000E 03	0.4450000E 03	0.4350000E 03	0.4350000E 03	[illegible]	[illegible]
0.4050000E 03	0.3950000E 03	0.3950000E 03	0.3550000E 03	[illegible]	[illegible]	[illegible]
0.4150000E 03	0.3950000E 03	0.4000000E 03	0.4100000E 03	[illegible]	[illegible]	[illegible]
0.4150000E 03	0.4050000E 03	0.3950000E 03	0.3900000E 03	[illegible]	[illegible]	[illegible]
0.4200000E 03	0.4200000E 03	0.4150000E 03	0.4100000E 03	[illegible]	[illegible]	[illegible]
0.4150000E 03	0.4200000E 03	0.4200000E 03	0.4250000E 03	[illegible]	[illegible]	[illegible]
0.4400000E 03	0.4400000E 03	0.4300000E 03	0.4250000E 03	0.4250000E 03	[illegible]	[illegible]
0.4300000E 03	0.4250000E 03	0.4350000E 03	[illegible]	[illegible]	[illegible]	[illegible]
0.4600000E 03	0.4500000E 03	0.4200000E 03	0.4350000E 03	[illegible]	[illegible]	[illegible]
0.4700000E 03	0.4200000E 03	0.4000000E 03	0.4350000E 03	[illegible]	[illegible]	[illegible]
0.4150000E 03	0.4150000E 03	0.4100000E 03	0.4100000E 03	[illegible]	[illegible]	[illegible]
0.4200000E 03	0.4150000E 03	0.4100000E 03	0.4100000E 03	[illegible]	[illegible]	[illegible]
0.4050000E 03	0.4100000E 03	0.4050000E 03	[illegible]	[illegible]	[illegible]	[illegible]
0.4000000E 03	0.3950000E 03	0.3900000E 03	0.3350000E 03	[illegible]	[illegible]	[illegible]
0.3950000E 03	0.4000000E 03	0.4000000E 03	0.3950000E 03	[illegible]	[illegible]	[illegible]
0.3850000E 03	0.3900000E 03	0.3900000E 03	0.3850000E 03	0.3900000E 03	[illegible]	[illegible]
0.3800000E 03	0.3900000E 03	0.3750000E 03	0.3750000E 03	[illegible]	[illegible]	[illegible]
0.3850000E 03	0.3800000E 03	0.3800000E 03	0.3800000E 03	[illegible]	[illegible]	[illegible]
0.3350000E 03	0.3850000E 03	0.3900000E 03	[illegible]	[illegible]	[illegible]	[illegible]
0.3651550E 03	0.3500000E 03	0.3400000E 03	0.3450000E 03	[illegible]	[illegible]	[illegible]
0.3450000E 03	0.3400000E 03	0.3400000E 03	0.3300000E 03	0.3200000E 03	[illegible]	[illegible]
0.3250000E 03	0.3350000E 03	0.3500000E 03	0.3500000E 03	[illegible]	[illegible]	[illegible]
0.3450000E 03	0.3450000E 03	0.3700000E 03	0.3800000E 03	[illegible]	[illegible]	[illegible]
0.3700000E 03						

DAILY CLOSING PRICE SERIES FOR ABITIBI.
1971.

0.8125000E 01	0.8125000E 01	0.8250000E 01	0.8250000E 01	0.8375000E 01	0.8375000E 01	0.8500000E 01
0.8625000E 01	0.8500000E 01	0.8500000E 01	0.8500000E 01	0.8250000E 01	[illegible]	0.8625000E 01
0.8625000E 01	0.8500000E 01	0.8500000E 01	0.8500000E 01	0.8500000E 01	[illegible]	[illegible]
0.8315000E 01	0.8125000E 01	0.8000000E 01	0.8125000E 01	[illegible]	[illegible]	[illegible]
0.8125000E 01	0.8125000E 01	0.8375000E 01	0.8125000E 01	0.8125000E 01	[illegible]	[illegible]
0.7375000E 01	0.7250000E 01	0.7250000E 01	0.7250000E 01	[illegible]	[illegible]	[illegible]
0.7125000E 01	0.7250000E 01	0.7125000E 01	0.7125000E 01	0.7125000E 01	[illegible]	[illegible]
0.6875000E 01	0.6875000E 01	0.7000000E 01	0.6875000E 01	0.7125000E 01	[illegible]	[illegible]
0.7000000E 01	0.7125000E 01	0.7000000E 01	0.7000000E 01	[illegible]	[illegible]	[illegible]
0.6875000E 01	0.7000000E 01	0.6750000E 01	0.6625000E 01	[illegible]	[illegible]	[illegible]
0.7125000E 01	0.7000000E 01	0.7775000E 01	0.7625000E 01	[illegible]	[illegible]	[illegible]
0.7500000E 01	0.7250000E 01	0.7375000E 01	0.7500000E 01	0.7375000E 01	[illegible]	[illegible]
0.7125000E 01	0.7125000E 01	0.7000000E 01	0.7125000E 01	[illegible]	[illegible]	[illegible]
0.7000000E 01	0.6875000E 01	0.6875000E 01	0.6875000E 01	0.6875000E 01	[illegible]	[illegible]
0.7000000E 01	0.6875000E 01	0.6750000E 01	0.6750000E 01	[illegible]	[illegible]	[illegible]
0.6750000E 01	0.6750000E 01	0.7250000E 01	0.7500000E 01	0.7375000E 01	[illegible]	[illegible]
0.7750000E 01	0.7625000E 01	0.7500000E 01	0.7375000E 01	[illegible]	[illegible]	[illegible]
0.7625000E 01	0.7500000E 01	0.7375000E 01	0.7250000E 01	[illegible]	[illegible]	[illegible]
0.7125000E 01	0.7125000E 01	0.7000000E 01	0.7250000E 01	[illegible]	[illegible]	[illegible]
0.7125000E 01	0.7000000E 01	0.7250000E 01	0.7125000E 01	[illegible]	[illegible]	[illegible]
0.7125000E 01	0.7000000E 01	0.7125000E 01	0.7250000E 01	[illegible]	[illegible]	[illegible]
0.7375000E 01	0.7250000E 01	0.7250000E 01	0.7375000E 01	0.7125000E 01	[illegible]	[illegible]
0.7125000E 01	0.7250000E 01	0.7250000E 01	0.7700000E 01	0.6875000E 01	[illegible]	[illegible]
0.6875000E 01	0.6875000E 01	0.6750000E 01	0.6875000E 01	[illegible]	[illegible]	[illegible]
0.7000000E 01	0.7000000E 01	0.7125000E 01	0.7000000E 01	[illegible]	[illegible]	[illegible]
0.6750000E 01	0.6750000E 01	0.6875000E 01	0.6875000E 01	[illegible]	[illegible]	[illegible]
0.6750000E 01	0.6625000E 01	0.6125000E 01	0.6375000E 01	[illegible]	[illegible]	[illegible]
0.5750000E 01	0.5750000E 01	0.5625000E 01	0.5750000E 01	[illegible]	[illegible]	[illegible]
0.5500000E 01	0.5625000E 01	0.5625000E 01	0.5625000E 01	[illegible]	[illegible]	[illegible]
0.6125000E 01	0.5875000E 01	0.5875000E 01	0.5875000E 01	[illegible]	[illegible]	[illegible]
0.5875000E 01	0.5750000E 01	0.5875000E 01	0.5750000E 01	[illegible]	[illegible]	[illegible]
0.5875000E 01	0.5875000E 01	0.5750000E 01	0.5750000E 01	[illegible]	[illegible]	[illegible]
0.5750000E 01	0.5625000E 01	0.5500000E 01	0.5375000E 01	[illegible]	[illegible]	[illegible]
0.5875000E 01	0.5800000E 01	0.5875000E 01	0.6250000E 01	[illegible]	[illegible]	[illegible]
0.6500000E 01	0.6500000E 01	0.6375000E 01	0.6250000E 01	[illegible]	[illegible]	[illegible]
0.5750000E 01	0.7250000E 01	0.7125000E 01	0.7250000E 01	[illegible]	[illegible]	[illegible]
0.7125000E 01	0.7125000E 01					

DAILY CLOSING PRICE SERIES FOR ACME GAS.
1971.

0.9500000E 01	0.9000000E 01	0.9000000E 01	0.8750000E 01	0.9500000E 01	0.9500000E 01	0.8250000E 01
0.8000000E 01	0.8000000E 01	0.8750000E 01	0.8750000E 01	0.7750000E 01	0.7750000E 01	0.7750000E 01
0.8000000E 01	0.7000000E 01	0.8500000E 01	0.7500000E 01	0.8000000E 01	0.8500000E 01	0.7500000E 01
0.7000000E 01	0.7000000E 01	0.7000000E 01	0.7000000E 01	0.7250000E 01	0.7[illegible]E 01	0.9[illegible]E 01
0.8000000E 01	0.8000000E 01	0.7500000E 01	0.8000000E 01	0.8[illegible]E 01	0.7[illegible]E 01	0.8[illegible]E 01
0.7500000E 01	0.7500000E 01	0.7500000E 01	0.7750000E 01	0.7750000E 01	0.7[illegible]E 01	0.7500000E 01
0.7000000E 01	0.7000000E 01	0.7000000E 01	0.7500000E 01	0.7000000E 01	0.7[illegible]E 01	0.7[illegible]E 01
0.7000000E 01	0.7000000E 01	0.6500000E 01	0.6000000E 01	0.7000000E 01	0.7[illegible]E 01	0.7[illegible]E 01
0.7000000E 01	0.6000000E 01	0.6500000E 01	0.7000000E 01	0.6750000E 01	0.67[illegible]E 01	0.6[illegible]E 01
0.6500000E 01	0.7000000E 01	0.7000000E 01	0.6500000E 01	0.7000000E 01	0.7[illegible]E 01	0.6[illegible]E 01
0.7[illegible]E 01	0.7500000E 01	0.7500000E 01	0.8[illegible]E 01	0.8[illegible]E 01	0.8[illegible]E 01	0.7[illegible]E 01
0.6500000E 01	0.8000000E 01	0.7500000E 01	0.7750000E 01	0.7000000E 01	0.7[illegible]E 01	0.7250000E 01
0.7250000E 01	0.7000000E 01	0.7500000E 01	0.7500000E 01	0.7500000E 01	0.6[illegible]E 01	0.6[illegible]E 01
0.72[illegible]0000E 01	0.7250000E 01	0.6500000E 01	0.6500000E 01	0.6500000E 01	0.6[illegible]E 01	0.6[illegible]E 01
0.6750000E 01	0.6500000E 01	0.6500000E 01	0.6500000E 01	0.6750000E 01	0.67[illegible]E 01	0.6750000E 01
0.6750000E 01	0.6500000E 01	0.6750000E 01	0.7000000E 01	0.7500000E 01	0.7[illegible]E 01	0.7[illegible]E 01
0.7500000E 01	0.8500000E 01	0.7500000E 01	0.7500000E 01	0.7500000E 01	0.7750000E 01	0.7[illegible]E 01
0.8000000E 01	0.1000000E 02	0.1250000E 02	0.1100000E 02	0.1200000E 02	0.1[illegible]E 02	0.1500000E 02
0.1500000E 02	0.1600000E 02	0.1750000E 02	0.1800000E 02	0.1850000E 02	0.1[illegible]E 02	0.1700000E 02
0.1800000E 02	0.1700000E 02	0.1700000E 02	0.1550000E 02	0.1600000E 02	0.175[illegible]E 02	0.17[illegible]E 02
0.1750000E 02	0.1900000E 02	0.1900000E 02	0.2100000E 02	0.2[illegible]E 02	0.22[illegible]E 02	0.2450000E 02
0.2700000E 02	0.2500000E 02	0.2600000E 02	0.2400000E 02	0.2[illegible]E 02	0.27[illegible]E 02	0.2[illegible]E 02
0.2500000E 02	0.2850000E 02	0.2850000E 02	0.2750000E 02	0.2500000E 02	0.2[illegible]E 02	0.2[illegible]E 02
0.2300000E 02	0.2250000E 02	0.2300000E 02	0.2600000E 02	0.2500000E 02	0.2[illegible]E 02	0.2[illegible]E 02
0.2400000E 02	0.2400000E 02	0.2500000E 02	0.2500000E 02	0.2450000E 02	0.2[illegible]E 02	0.2750000E 02
0.2950000E 02	0.2950000E 02	0.3150000E 02	0.2950000E 02	0.2900000E 02	0.2[illegible]E 02	0.21[illegible]E 02
0.3200000E 02	0.3000000E 02	0.3050000E 02	0.2700000E 02	0.2550000E 02	0.2[illegible]E 02	[illegible]
0.2400000E 02	0.2700000E 02	0.2700000E 02	0.2800000E 02	0.2500000E 02	0.2[illegible]E 02	[illegible]
0.2500000E 02	0.2500000E 02	0.2500000E 02	0.2400000E 02	0.2400000E 02	0.2[illegible]E 02	0.2[illegible]E 02
0.2400000E 02	0.2300000E 02	0.2700000E 02	0.2500000E 02	0.2300000E 02	0.24[illegible]E 02	0.2450000E 02
0.2400000E 02	0.2400000E 02	0.2300000E 02	0.2400000E 02	0.2450000E 02	0.235[illegible]E 02	0.2[illegible]E 02
0.2200000E 02	0.2300000E 02	0.2400000E 02	0.2400000E 02	0.2200000E 02	0.22[illegible]E 02	0.2[illegible]E 02
0.2300000E 02	0.2300000E 02	0.2200000E 02	0.2000000E 02	0.2100000E 02	0.2[illegible]E 02	0.2[illegible]E 02
0.2[illegible]50000E 02	0.2100000E 02	0.2250000E 02	0.2450000E 02	0.22[illegible]E 02	0.2[illegible]E 02	0.2[illegible]E 02
0.2150000E 02	0.2300000E 02	0.2250000E 02	0.2250000E 02	0.2150000E 02	0.2[illegible]E 02	[illegible]
0.2200000E 02	0.2150000E 02	0.2100000E 02	0.2200000E 02	0.2250000E 02	0.2[illegible]E 02	[illegible]
0.2300000E 02	0.2450000E 02					

DAILY CLOSING PRICE SERIES FOR ALCAN.
1971.

0.2312500E 02	0.2312500E 02	0.2337500E 02	0.2375000E 02	0.2437500E 02	0.2475000E 02	0.2437500E 02
0.2450000E 02	0.2450000E 02	0.2425000E 02	0.2475000E 02	0.2512500E 02	0.2512500E 02	0.2325000E 02
0.2362500E 02	0.2375000E 02	0.2262500E 02	0.2325000E 02	0.2337500E 02	0.232[illegible]E 02	0.2[illegible]2500E 02
0.2325000E 02	0.2475000E 02	0.2225000E 02	0.2212500E 02	0.2225000E 02	[illegible]	0.227[illegible]E 02
0.2287500E 02	0.2337500E 02	0.2362500E 02	0.23[illegible]E 02	0.2375[illegible]E 02	[illegible]	[illegible]
0.2337500E 02	0.2275000E 02	0.2275000E 02	0.2275000E 02	0.2250000E 02	[illegible]	[illegible]
0.2262500E 02	0.2287500E 02	0.2287500E 02	0.2300000E 02	0.23[illegible]E 02	0.2312500E 02	[illegible]
0.2275000E 02	0.2325000E 02	0.2375000E 02	0.2400000E 02	0.24[illegible]E 02	[illegible]	[illegible]
0.2375000E 02	0.2337500E 02	0.2350000E 02	0.2375000E 02	0.2375000E 02	0.237[illegible]E 02	[illegible]
0.2450000E 02	0.2350000E 02	0.2275000E 02	0.2262500E 02	0.2287500E 02	[illegible]	0.24[illegible]E 02
0.23[illegible]E 02	0.2275000E 02	0.23[illegible]E 02	0.23[illegible]E 02	0.2287500E 02	[illegible]	[illegible]
0.2275000E 02	0.2237500E 02	0.2225000E 02	0.2212500E 02	0.2237500E 02	[illegible]	[illegible]
0.2287500E 02	0.2312500E 02	0.2287500E 02	0.2412500E 02	0.23[illegible]E 02	[illegible]	[illegible]
0.2350000E 02	0.2375000E 02	0.2375000E 02	0.2375000E 02	0.2325000E 02	[illegible]	[illegible]
0.2362500E 02	0.2375000E 02	0.2350000E 02	0.2350000E 02	0.2325000E 02	[illegible]	[illegible]
0.2362500E 02	0.2387500E 02	0.2387500E 02	0.2400000E 02	0.2337500E 02	[illegible]	[illegible]
0.23[illegible]E 02	0.2337500E 02	0.2262500E 02	0.2225000E 02	0.2275000E 02	0.2337500E 02	[illegible]
0.2225000E 02	0.2237500E 02	0.2250000E 02	0.2237500E 02	0.2237500E 02	[illegible]	[illegible]
0.2250000E 02	0.2275000E 02	0.2275000E 02	0.2262500E 02	0.225[illegible]E 02	[illegible]	[illegible]
0.2137500E 02	0.2125000E 02	0.2125000E 02	0.2100000E 02	[illegible]	[illegible]	[illegible]
0.2125000E 02	0.2162500E 02	0.2175000E 02	0.2175000E 02	0.2175000E 02	[illegible]	[illegible]
0.2112500E 02	0.2162500E 02	0.2000000E 02	0.2125000E 02	0.2137500E 02	[illegible]	[illegible]
0.2112500E 02	[illegible]	0.2000000E 02	0.1925000E 02	0.1887500E 02	[illegible]	[illegible]
0.1887500E 02	0.1887500E 02	0.1925000E 02	[illegible]	0.1837500E 02	[illegible]	[illegible]
0.1900000E 02	0.1900000E 02	0.1925000E 02	0.1937500E 02	0.1925000E 02	[illegible]	[illegible]
0.1900000E 02	0.1812500E 02	0.1900000E 02	0.1875000E 02	0.187[illegible]E 02	[illegible]	[illegible]
0.1862500E 02	0.1862500E 02	0.1825000E 02	0.1812500E 02	0.1762500E 02	[illegible]	[illegible]
0.17[illegible]E 02	0.1750000E 02	0.1750000E 02	0.1737500E 02	0.17[illegible]E 02	[illegible]	0.1712500E 02
0.1575000E 02	0.1675000E 02	0.1687500E 02	0.1637500E 02	0.16[illegible]E 02	[illegible]	[illegible]
0.1637500E 02	0.1637500E 02	0.1675000E 02	0.1587500E 02	0.1675000E 02	[illegible]	[illegible]
0.1675000E 02	0.1675000E 02	0.1687500E 02	0.170[illegible]E 02	0.1737500E 02	[illegible]	[illegible]
0.1712500E 02	0.1712500E 02	0.1662500E 02	0.1675000E 02	0.15[illegible]E 02	[illegible]	[illegible]
0.1575000E 02	0.1550000E 02	0.1637500E 02	0.1537500E 02	0.1512500E 02	[illegible]	[illegible]
0.1575000E 02	0.1575000E 02	0.1650000E 02	0.17[illegible]E 02	0.1775000E 02	[illegible]	[illegible]
0.1337500E 02	0.1787500E 02	0.1787500E 02	0.18[illegible]E 02	0.1787500E 02	[illegible]	[illegible]
0.17[illegible]7500E 02	0.1900000E 02	0.1900000E 02	0.1887500E 02	0.1887500E 02	[illegible]	[illegible]
0.1837500E 02	0.1525000E 02					0.1837500E 02

DAILY CLOSING PRICE SERIES FOR ALBERTA T.G. 1971.

0.4850000E 02	0.4900000E 02	0.4925000E 02	0.4900000E 02	0.4925000E 02	0.4875000E 02	0.4900000E 02
0.4900000E 02	0.4850000E 02	0.4950000E 02	0.4925000E 02	0.4950000E 02	0.4937500E 02	0.4975000E 02
0.4925000E 02	0.4925000E 02	0.4900000E 02	0.4937500E 02	0.4925000E 02	0.4862500E 02	0.4875000E 02
0.4850000E 02	0.4825000E 02	0.4825000E 02	0.4787500E 02	0.4650000E 02	0.4625000E 02	0.4737500E 02
0.4775000E 02	0.4812500E 02	0.4750000E 02	0.4750000E 02	0.4762500E 02	0.4787500E 02	0.4762500E 02
0.4787500E 02	0.4775000E 02	0.4800000E 02	0.4837500E 02	0.4800000E 02	0.4[illegible]	0.4800000E 02
0.4837500E 02	0.4825000E 02	0.4900000E 02	0.4900000E 02	0.4925000E 02	0.5[illegible]	0.4975000E 02
0.4987500E 02	0.5000000E 02	0.5025000E 02	0.5[illegible]	0.50[illegible]	0.5125000E 02	0.5100000E 02
0.5150000E 02	0.5125000E 02	0.5112500E 02	0.5150000E 02	0.5150000E 02	0.5100000E 02	0.51[illegible]
0.5175000E 02	0.5200000E 02	0.5175000E 02	0.5187500E 02	0.5225000E 02	0.52[illegible]	0.5275000E 02
0.5300000E 02	0.5275000E 02	0.5250000E 02	0.5175000E 02	0.5187500E 02	0.5162500E 02	0.517[illegible]
0.5237500E 02	0.520[illegible]	0.5202699E 02	0.5175000E 02	0.5200000E 02	0.5162500E 02	0.52[illegible]
0.5225000E 02	0.5237500E 02	0.5225000E 02	0.5200000E 02	0.5200000E 02	0.5212500E 02	0.52[illegible]
0.5187500E 02	0.5175000E 02	0.5150000E 02	0.5150000E 02	0.5150000E 02	0.515[illegible]	0.5150000E 02
0.5137500E 02	0.5100000E 02	0.5100000E 02	0.4525000E 02	0.4787500E 02	0.4575000E 02	0.4662500E 02
0.4687500E 02	0.4700000E 02	0.4675000E 02	0.4575000E 02	0.4587500E 02	0.46[illegible]	0.4425000E 02
0.4650000E 02	0.4600000E 02	0.4600000E 02	0.4600000E 02	0.4500000E 02	0.4562500E 02	0.4[illegible]
0.4525000E 02	0.4500000E 02	0.4550000E 02	0.4537500E 02	0.4537500E 02	0.4512500E 02	0.4450000E 02
0.4400000E 02	0.4400000E 02	0.4375000E 02	0.4387500E 02	0.4450000E 02	0.4437500E 02	0.4425000E 02
0.4437500E 02	0.4400000E 02	0.4375000E 02	0.4400000E 02	0.4400000E 02	0.4425000E 02	0.4475000E 02
0.4525000E 02	0.4575000E 02	0.4575000E 02	0.4562500E 02	0.4575000E 02	0.4500000E 02	0.4500000E 02
0.445[illegible]	0.4525000E 02	0.4525000E 02	0.4475000E 02	0.4525000E 02	0.4525000E 02	0.4525000E 02
0.45[illegible]	0.4612500E 02	0.4700000E 02	0.4625000E 02	0.4637500E 02	0.4600000E 02	0.4675000E 02
0.4775000E 02	0.4800000E 02	0.4912500E 02	0.4900000E 02	0.4837500E 02	0.4[illegible]	0.4[illegible]
0.4950000E 02	0.4875000E 02	0.4900000E 02	0.4875000E 02	0.4800000E 02	0.4[illegible]	0.4[illegible]
0.4800000E 02	0.4825000E 02	0.4912500E 02	0.4787500E 02	0.4737500E 02	0.477[illegible]	0.4787500E 02
0.4862500E 02	0.4900000E 02	0.4975000E 02	0.4937500E 02	0.4962500E 02	0.4[illegible]	0.4[illegible]
0.4800000E 02	0.4837500E 02	0.4900000E 02	0.4950000E 02	0.4950000E 02	0.4875000E 02	0.4[illegible]
0.4887500E 02	0.4812500E 02	0.4725000E 02	0.4775000E 02	0.4825000E 02	0.4875000E 02	0.4[illegible]
0.4950000E 02	0.4812500E 02	0.4825000E 02	0.4850000E 02	0.4862500E 02	0.4[illegible]	0.47[illegible]
0.4750000E 02	0.4750000E 02	0.4725000E 02	0.4775000E 02	0.4775000E 02	0.475[illegible]	0.4762500E 02
0.4725000E 02	0.4762500E 02	0.4775000E 02	0.4787500E 02	0.4812500E 02	0.4[illegible]	0.4[illegible]
0.4650000E 02	0.4837500E 02	0.4625000E 02	0.46[illegible]	0.4512500E 02	0.4[illegible]	0.4[illegible]
0.4625000E 02	0.4650000E 02	0.4737500E 02	0.4725000E 02	0.475[illegible]	0.4[illegible]	0.4[illegible]
0.4900000E 02	0.4887500E 02	0.4875000E 02	0.4900000E 02	0.4[illegible]	0.4[illegible]	[illegible]
0.5000000E 02	0.5100000E 02	0.4987500E 02	0.4975000E 02	0.5[illegible]	0.5[illegible]	0.51[illegible]
0.5100000E 02	0.5100000E 02					

DAILY CLOSING PRICE SERIES FOR ARMCRE.
1971.

0.1350000E 02	0.1375000E 02	0.1350000E 02	0.1250000E 02	0.1250000E 02	0.1350000E 02	0.1300000E 02
0.1400000E 02	0.1500000E 02	0.1500000E 02	0.1400000E 02	0.1300000E 02	0.1400000E 02	0.1300000E 02
0.1350000E 02	0.1150000E 02	0.1400000E 02	0.1300000E 02	0.1325000E 02	0.1350000E 02	0.1300000E 02
0.1350000E 02	0.1400000E 02	0.1300000E 02	0.1400000E 02	0.1400000E 02	0.1400000E 02	0.1400000E 02
0.1400000E 02	0.1375000E 02	0.1350000E 02	0.1400000E 02	0.1375000E 02	0.13[illegible]E 02	0.1350000E 02
0.1350000E 02	0.1375000E 02	0.1350000E 02	0.1350000E 02	0.1350000E 02	0.14[illegible]E 02	0.13[illegible]E 02
0.1350000E 02	0.1400000E 02	0.1500000E 02	0.1500000E 02	0.1500000E 02	0.145[illegible]E 02	0.15[illegible]E 02
0.1550000E 02	0.1550000E 02	0.1650000E 02	0.1950000E 02	0.2[illegible]E 02	0.18[illegible]E 02	0.175[illegible]E 02
0.1800000E 02	0.1600000E 02	0.1550000E 02	0.1600000E 02	0.1700000E 02	0.2[illegible]E 02	[illegible]
0.2[illegible]E 02	0.2050000E 02	0.1950000E 02	0.2050000E 02	0.2100000E 02	0.2[illegible]E 02	0.2[illegible]E 02
0.1950000E 02	0.1950000E 02	0.1950000E 02	0.1350000E 02	0.1850000E 02	0.175[illegible]E 02	0.17[illegible]E 02
0.1750000E 02	0.1800000E 02	0.1750000E 02	0.1850000E 02	0.1850000E 02	0.18[illegible]E 02	0.2100000E 02
0.2200000E 02	0.2150000E 02	0.2000000E 02	0.2050000E 02	0.2000000E 02	0.2[illegible]E 02	0.19[illegible]E 02
0.1700000E 02	0.1600000E 02	0.1700000E 02	0.1600000E 02	0.1600000E 02	0.175[illegible]E 02	0.175[illegible]E 02
0.1700000E 02	0.1600000E 02	0.1500000E 02	0.1575000E 02	0.1600000E 02	0.1625000E 02	[illegible]
0.1700000E 02	0.1600000E 02	0.1550000E 02	0.1550000E 02	0.1600000E 02	0.165[illegible]E 02	[illegible]
0.1750000E 02	0.1750000E 02	0.1800000E 02	0.1650000E 02	0.1750000E 02	0.16[illegible]E 02	0.17[illegible]E 02
0.1650000E 02	0.1675000E 02	0.1750000E 02	0.1700000E 02	0.1675000E 02	0.1675000E 02	0.17[illegible]E 02
0.1650000E 02	0.1650000E 02	0.1650000E 02	0.1600000E 02	0.1600000E 02	0.16[illegible]E 02	0.17[illegible]E 02
0.1700000E 02	0.1600000E 02	0.1500000E 02	0.1500000E 02	0.1500000E 02	0.14[illegible]E 02	0.14[illegible]E 02
0.1450000E 02	0.1450000E 02	0.1550000E 02	0.1350000E 02	0.1425000E 02	0.14[illegible]E 02	0.145[illegible]E 02
0.1450000E 02	0.1400000E 02	0.1375000E 02	0.1300000E 02	0.1400000E 02	0.135[illegible]E 02	0.14[illegible]E 02
0.1300000E 02	0.1400000E 02	0.1400000E 02	0.1375000E 02	0.1425000E 02	0.14[illegible]E 02	0.14[illegible]E 02
0.1450000E 02	0.1400000E 02	0.1350000E 02	0.1350000E 02	0.1400000E 02	0.14[illegible]E 02	0.15[illegible]E 02
0.1700000E 02	0.1600000E 02	0.1400000E 02	0.1400000E 02	0.1425000E 02	0.1425000E 02	0.13[illegible]E 02
0.1400000E 02	0.1375000E 02	0.1350000E 02	0.1350000E 02	0.1300000E 02	0.1300000E 02	0.14[illegible]E 02
0.1325000E 02	0.1250000E 02	0.1300000E 02	0.1325000E 02	0.1325000E 02	0.125[illegible]E 02	0.125[illegible]E 02
0.1300000E 02	0.1350000E 02	0.1400000E 02	0.1300000E 02	0.1250000E 02	0.13[illegible]E 02	0.1275000E 02
0.1275000E 02	0.1250000E 02	0.1250000E 02	0.1100000E 02	0.1100000E 02	0.11[illegible]E 02	0.11[illegible]E 02
0.1175000E 02	0.1150000E 02	0.1200000E 02	0.1100000E 02	0.1100000E 02	0.1150000E 02	0.11[illegible]E 02
0.1150000E 02	0.1100000E 02	0.1050000E 02	0.1150000E 02	0.1100000E 02	0.11[illegible]E 02	0.1[illegible]E 02
0.1150000E 02	0.1100000E 02	0.1100000E 02	0.1150000E 02	0.1150000E 02	0.11[illegible]E 02	0.115[illegible]E 02
0.1150000E 02	0.1100000E 02	0.1150000E 02	0.1100000E 02	0.1050000E 02	0.1[illegible]E 02	0.11[illegible]E 02
0.1200000E 02	0.1100000E 02	0.1175000E 02	0.1200000E 02	0.1100000E 02	0.1[illegible]E 02	0.1[illegible]E 02
0.1050000E 02	0.1050000E 02	0.1050000E 02	0.1075000E 02	0.1050000E 02	0.1[illegible]E 02	0.11[illegible]E 02
0.1150000E 02	0.1200000E 02	0.1150000E 02	0.1400000E 02	0.1400000E 02	0.1[illegible]E 02	0.14[illegible]E 02
0.1400000E 02	0.1400000E 02					

DAILY CLOSING PRICE SERIES FOR BROUL REEF.
1971.

0.2400000E 02	0.2300000E 02	0.2400000E 02	0.2350000E 02	0.2350000E 02	0.2425000E 02	0.2500000E 02
0.2200000E 02	0.2400000E 02	0.2400000E 02	0.2400000E 02	0.2450000E 02	0.2400000E 02	0.2375000E 02
0.2350000E 02	0.2425000E 02	0.2375000E 02	0.2400000E 02	0.2400000E 02	0.2400000E 02	0.2400000E 02
0.2200000E 02	0.2425000E 02	0.2400000E 02	0.2450000E 02	0.2450000E 02	0.2700000E 02	0.2700000E 02
0.2700000E 02	0.2650000E 02	0.2800000E 02	0.2750000E 02	0.2700000E 02	0.2750000E 02	0.2750000E 02
0.2700000E 02	0.2800000E 02	0.2400000E 02	0.2700000E 02	0.2700000E 02	0.2700000E 02	0.2750000E 02
0.2750000E 02	0.2700000E 02	0.2625000E 02	0.2600000E 02	0.2550000E 02	0.2650000E 02	0.2650000E 02
0.2350000E 02	0.2625000E 02	0.2550000E 02	0.2650000E 02	0.2600000E 02	0.2500000E 02	0.2400000E 02
0.2500000E 02	0.2550000E 02	0.2625000E 02	0.2625000E 02	0.2450000E 02	0.2450000E 02	0.2600000E 02
0.2575000E 02	0.2900000E 02	0.2600000E 02	0.2600000E 02	0.2700000E 02	0.2700000E 02	0.2800000E 02
0.2350000E 02	0.2900000E 02	0.2850000E 02	0.2950000E 02	0.2850000E 02	0.2400000E 02	0.2700000E 02
0.2725000E 02	0.2400000E 02	0.2650000E 02	0.2700000E 02	0.2700000E 02	0.2750000E 02	0.2750000E 02
0.2400000E 02	0.2900000E 02	0.2750000E 02	0.2400000E 02	0.2950000E 02	0.2500000E 02	0.2775000E 02
0.2825000E 02	0.2550000E 02	0.2800000E 02	0.2800000E 02	0.2400000E 02	0.2650000E 02	0.2450000E 02
0.2800000E 02	0.2800000E 02	0.2700000E 02	0.2600000E 02	0.2600000E 02	0.2500000E 02	0.2550000E 02
0.2500000E 02	0.2500000E 02	0.2400000E 02	0.2450000E 02	0.2200000E 02	0.2500000E 02	0.2500000E 02
0.2650000E 02	0.2600000E 02	0.2500000E 02	0.2600000E 02	0.2600000E 02	0.2450000E 02	0.2600000E 02
0.2600000E 02	0.2300000E 02	0.2500000E 02	0.2525000E 02	0.2500000E 02	0.2550000E 02	0.2500000E 02
0.2600000E 02	0.2650000E 02	0.2650000E 02	0.2650000E 02	0.2500000E 02	0.2500000E 02	0.2550000E 02
0.2500000E 02	0.2600000E 02	0.2600000E 02	0.2600000E 02	0.2550000E 02	0.2500000E 02	0.2450000E 02
0.2650000E 02	0.2700000E 02	0.2600000E 02	0.2500000E 02	0.2300000E 02	0.2650000E 02	0.2600000E 02
0.2500000E 02	0.2550000E 02	0.2600000E 02	0.2600000E 02	0.2600000E 02	0.2600000E 02	0.2600000E 02
0.2625000E 02	0.2500000E 02	0.2500000E 02	0.2500000E 02	0.2600000E 02	0.2550000E 02	0.2550000E 02
0.2550000E 02	0.2550000E 02	0.2600000E 02	0.2500000E 02	0.2520000E 02	0.2500000E 02	0.25[illegible]E 02
0.2500000E 02	0.2650000E 02	0.2500000E 02	0.2650000E 02	0.2650000E 02	0.2650000E 02	0.2600000E 02
0.2500000E 02	0.2650000E 02	0.2500000E 02	0.2500000E 02	0.2550000E 02	0.2550000E 02	0.2500000E 02
0.2500000E 02	0.2600000E 02	0.2550000E 02	0.2500000E 02	0.2650000E 02	0.2450000E 02	0.2550000E 02
0.2500000E 02	0.2500000E 02	0.2500000E 02	0.2600000E 02	0.2600000E 02	0.2400000E 02	0.2400000E 02
0.2400000E 02	0.2400000E 02	0.2550000E 02	0.2350000E 02	0.2300000E 02	0.2300000E 02	0.2300000E 02
0.2400000E 02	0.2300000E 02	0.2300000E 02	0.2300000E 02	0.2300000E 02	0.2100000E 02	0.2100000E 02
0.2300000E 02	0.1900000E 02	0.2300000E 02	0.2300000E 02	0.2250000E 02	0.2100000E 02	0.2300000E 02
0.2300000E 02	0.2200000E 02	0.2150000E 02	0.1700000E 02	0.2100000E 02	0.2100000E 02	0.2100000E 02
0.2100000E 02	0.2100000E 02	0.2200000E 02	0.2050000E 02	0.2700000E 02	0.2175000E 02	0.2125000E 02
0.2050000E 02	0.2125000E 02	0.2125000E 02	0.2050000E 02	0.2100000E 02	0.2125000E 02	0.2125000E 02
0.2125000E 02	0.2125000E 02	0.2250000E 02	0.2050000E 02	0.2050000E 02	0.2100000E 02	0.2100000E 02
0.2225000E 02	0.2300000E 02	0.2250000E 02	0.2275000E 02	0.2250000E 02	0.2300000E 02	0.2150000E 02
0.2275000E 02	0.2400000E 02					

DAILY CLOSING PRICE SERIES FOR CARRIER J.D.
1971.

0.5563000E 01	0.5563000E 01	0.5375000E 01	0.5563000E 01	0.5000000E 01	0.4875000E 01	0.4750000E 01
0.5250000E 01	0.5250000E 01	0.5125000E 01	0.5250000E 01	0.5313000E 01	0.5438000E 01	0.5500000E 01
0.5750000E 01	0.5750000E 01	0.5750000E 01	0.5375000E 01	0.5750000E 01	0.5750000E 01	0.5125000E 01
0.5000000E 01	0.5313000E 01	0.5375000E 01	0.5250000E 01	0.5250000E 01	0.5125000E 01	0.5000000E 01
0.4900000E 01	0.4900000E 01	0.4850000E 01	0.4750000E 01	0.4750000E 01	0.4650000E 01	0.4650000E 01
0.4725000E 01	0.4600000E 01	0.4650000E 01	0.4900000E 01	0.5000000E 01	0.5000000E 01	0.4925000E 01
0.4750000E 01	0.4900000E 01	0.4950000E 01	0.5050000E 01	0.5000000E 01	0.512[illegible]	0.5125000E 01
0.4800000E 01	0.5000000E 01	0.4875000E 01	0.4850000E 01	0.4650000E 01	0.4[illegible]	0.45[illegible]
0.4500000E 01	0.4700000E 01	0.5000000E 01	0.5125000E 01	0.5125000E 01	0.512[illegible]	0.512[illegible]
0.5125000E 01	0.4950000E 01	0.5500000E 01	0.5125000E 01	0.4900000E 01	0.512[illegible]	0.5[illegible]
0.5000000E 01	0.5000000E 01	0.5000000E 01	0.5000000E 01	0.5300000E 01	0.4[illegible]	0.5[illegible]
0.5000000E 01	0.4900000E 01	0.4900000E 01	0.4950000E 01	0.5000000E 01	0.5[illegible]	0.5[illegible]
0.5375000E 01	0.5250000E 01	0.5375000E 01	0.5375000E 01	0.5313000E 01	0.5313000E 01	0.5313000E 01
0.5313000E 01	0.5250000E 01	0.5125000E 01	0.5125000E 01	0.51[illegible]	0.5125000E 01	0.5[illegible]
0.5125000E 01	0.5313000E 01	0.5000000E 01	0.5125000E 01	0.5375000E 01	0.5375000E 01	0.57[illegible]
0.6000000E 01	0.5688000E 01	0.6125000E 01	0.6500000E 01	0.6000000E 01	0.6250000E 01	0.5[illegible]
0.5750000E 01	0.5375000E 01	0.6000000E 01	0.5500000E 01	0.5688000E 01	0.[illegible]	0.5750000E 01
0.5875000E 01	0.6000000E 01	0.6250000E 01	0.6125000E 01	0.6000000E 01	0.6125000E 01	0.6750000E 01
0.6500000E 01	0.6500000E 01	0.7000000E 01	0.7000000E 01	0.[illegible]	0.7[illegible]	0.7625000E 01
0.7375000E 01	0.7500000E 01	0.7500000E 01	0.7750000E 01	0.7875000E 01	0.7813000E 01	0.7[illegible]
0.7875000E 01	0.7875000E 01	0.7875000E 01	0.7875000E 01	0.7250000E 01	0.7[illegible]	0.7125000E 01
0.7000000E 01	0.7125000E 01	0.7125000E 01	0.7125000E 01	0.7000000E 01	0.6875000E 01	0.6[illegible]
0.6750000E 01	0.6750000E 01	0.6750000E 01	0.6750000E 01	0.6375000E 01	0.6375000E 01	0.6[illegible]
0.6188000E 01	0.6063000E 01	0.6500000E 01	0.6250000E 01	0.6250000E 01	0.6375000E 01	0.6[illegible]
0.6313000E 01	0.6125000E 01	0.6375000E 01	0.6500000E 01	0.6750000E 01	0.675[illegible]	0.6750000E 01
0.6625000E 01	0.6375000E 01	0.6500000E 01	0.6500000E 01	0.6375000E 01	0.67[illegible]	0.6[illegible]
0.6125000E 01	0.6120000E 01	0.6000000E 01	0.6250000E 01	0.6125000E 01	0.6250000E 01	0.5500000E 01
0.5750000E 01	0.5625000E 01	0.6000000E 01	0.5875000E 01	0.6000000E 01	0.6[illegible]	0.5500000E 01
0.5330000E 01	0.5500000E 01	0.5250000E 01	0.5500000E 01	0.5500000E 01	0.5500000E 01	0.5563000E 01
0.5625000E 01	0.5125000E 01	0.5250000E 01	0.5000000E 01	0.5000000E 01	0.5[illegible]	0.4900000E 01
0.4750000E 01	0.4750000E 01	0.4700000E 01	0.4850000E 01	0.4800000E 01	0.4[illegible]	0.4750000E 01
0.4700000E 01	0.4600000E 01	0.4750000E 01	0.4800000E 01	0.4950000E 01	0.4900000E 01	0.4[illegible]
0.4725000E 01	0.4600000E 01	0.4550000E 01	0.4700000E 01	0.4[illegible]	0.4[illegible]	0.4[illegible]
0.4800000E 01	0.4750000E 01	0.4800000E 01	0.4700000E 01	0.4625000E 01	0.4[illegible]	0.5[illegible]
0.5500000E 01	0.5875000E 01	0.6125000E 01	0.6250000E 01	0.6375000E 01	0.6[illegible]	0.[illegible]
0.6750000E 01	0.6875000E 01	0.6625000E 01	0.6625000E 01	0.[illegible]	0.6[illegible]	0.6625000E 01
0.6750000E 01	0.6875000E 01					

DAILY CLOSING PRICE SERIES FOR £D.SUGARS.
1971.

0.3250000E 02	0.3200000E 02	0.3250000E 02	0.3300000E 02	0.3300000E 02	0.3225000E 02	0.3350000E 02
0.3325000E 02	0.3350000E 02	0.3450000E 02	0.3400000E 02	0.3400000E 02	0.3450000E 02	0.3450000E 02
0.3600000E 02	0.3700000E 02	0.3700000E 02	0.3500000E 02	0.3300000E 02	0.3400000E 02	0.3425000E 02
0.3500000E 02	0.3600000E 02	0.3600000E 02	0.3550000E 02	0.3500000E 02	0.3425000E 02	[illegible]
0.3462500E 02	0.3400000E 02	0.3350000E 02	0.3375000E 02	0.335[illegible]E 02	0.33[illegible]E 02	[illegible]
0.3300000E 02	0.3300000E 02	0.3300000E 02	0.3300000E 02	0.33[illegible]E 02	0.33[illegible]E 02	[illegible]
0.3300000E 02	0.3300000E 02	0.3300000E 02	0.3300000E 02	0.3300000E 02	0.34[illegible]E 02	0.3425000E 02
0.3425000E 02	0.3500000E 02	0.3506200E 02	0.3500000E 02	0.3525000E 02	[illegible]	[illegible]
0.3600000E 02	0.3568800E 02	0.3550000E 02	0.3550000E 02	0.3525000E 02	0.3450000E 02	[illegible]
0.3475000E 02	0.3450000E 02	0.3400000E 02	0.3375000E 02	0.3375000E 02	[illegible]	[illegible]
0.3300000E 02	0.3300000E 02	0.3300000E 02	0.3300000E 02	0.3325000E 02	[illegible]	[illegible]
0.3300000E 02	0.3350000E 02	0.3312500E 02	0.3300000E 02	[illegible]	[illegible]	[illegible]
0.3325000E 02	0.3300000E 02	0.3200000E 02	0.3200000E 02	0.3175000E 02	0.312[illegible]E 02	[illegible]
0.3125000E 02	0.3187500E 02	0.3250000E 02	0.3100000E 02	[illegible]	0.3275[illegible]E 02	[illegible]
0.3200000E 02	0.3206300E 02	[illegible]	0.3225000E 02	0.3147500E 02	[illegible]	[illegible]
0.3300000E 02	0.3300000E 02	0.3275000E 02	0.3250000E 02	0.3275000E 02	0.3275[illegible]E 02	[illegible]
0.3325000E 02	0.3287500E 02	0.3325000E 02	0.3312500E 02	0.3300000E 02	[illegible]	[illegible]
0.3312500E 02	0.3312500E 02	0.3318800E 02	0.3300000E 02	[illegible]	0.31[illegible]E 02	[illegible]
0.3300000E 02	0.3250000E 02	0.3293800E 02	0.3250000E 02	0.3275[illegible]E 02	0.32[illegible]E 02	[illegible]
0.3262500E 02	0.3275000E 02	0.3287500E 02	0.3325000E 02	0.33[illegible]E 02	[illegible]	0.332[illegible]E 02
0.3325000E 02	0.3225000E 02	0.3287500E 02	0.3287500E 02	0.3275[illegible]E 02	[illegible]	[illegible]
0.3250000E 02	0.3275000E 02	0.3200000E 02	0.3200000E 02	0.31[illegible]E 02	[illegible]	[illegible]
0.3037500E 02	0.3125000E 02	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
0.2950000E 02	0.2925000E 02	0.2975000E 02	0.3025000E 02	[illegible]	[illegible]	[illegible]
0.3025000E 02	0.3037500E 02	0.3025000E 02	0.3037500E 02	[illegible]	[illegible]	[illegible]
0.3050000E 02	0.3050000E 02	0.3000000E 02	0.3050000E 02	[illegible]	[illegible]	[illegible]
0.3100000E 02	0.3062500E 02	0.3050000E 02	0.3050000E 02	0.3025[illegible]E 02	[illegible]	0.3012500E 02
0.3300000E 02	0.3150000E 02	0.3100000E 02	0.3100000E 02	0.3125000E 02	[illegible]	[illegible]
0.3100000E 02	0.3100000E 02	0.3025000E 02	0.3025000E 02	[illegible]	[illegible]	[illegible]
0.3025000E 02	0.3075000E 02	0.3050000E 02	0.3050000E 02	0.3025[illegible]E 02	[illegible]	[illegible]
0.3025000E 02	0.3050000E 02	0.3025000E 02	0.3050000E 02	0.3075000E 02	0.3112500E 02	[illegible]
0.3050000E 02	0.3037500E 02	0.3075000E 02	0.3075000E 02	0.3100000E 02	0.3112500E 02	[illegible]
0.3100000E 02	0.3150000E 02	0.3137500E 02	0.3150000E 02	0.3175000E 02	0.32[illegible]E 02	[illegible]
0.3325000E 02	0.3400000E 02	0.3375000E 02	0.3375000E 02	0.335[illegible]E 02	0.34[illegible]E 02	[illegible]
0.3375000E 02	0.3425000E 02	0.3450000E 02	0.3150000E 02	0.3300000E 02	[illegible]	[illegible]
0.3375000E 02	0.3375000E 02	0.3200000E 02	0.3250000E 02	0.3562500E 02	[illegible]	[illegible]
0.3375000E 02	0.3375000E 02					

DAILY CLOSING PRICE SERIES FOR G. HYROC. 1971.

0.1612500E 02	0.1612500E 02	0.1512500E 02	0.1625000E 02	0.1637500E 02	0.1637500E 02	0.1637500E 02
0.1675000E 02	0.1700000E 02	0.1700000E 02	0.1725000E 02	0.1700000E 02	0.1712500E 02	0.1700000E 02
0.1687500E 02	0.1687500E 02	0.1625000E 02	0.1600000E 02	0.1612500E 02	0.1612500E 02	0.1612500E 02
0.1600000E 02	0.1600000E 02	0.1612500E 02	0.1675000E 02	0.1625000E 02	0.1625000E 02	0.1637500E 02
0.1625000E 02	0.1612500E 02	0.1612500E 02	0.1587500E 02	0.1625000E 02	[illegible]	0.1612500E 02
0.1612500E 02	0.1600000E 02	0.1600000E 02	0.1625000E 02	0.1625000E 02	[illegible]	[illegible]
0.1662500E 02	0.1662500E 02	0.1687500E 02	0.1700000E 02	0.1700000E 02	[illegible]	[illegible]
0.1712500E 02	0.1712500E 02	0.1712500E 02	0.1737500E 02	0.1750000E 02	0.1762500E 02	[illegible]
0.1787500E 02	0.1762500E 02	0.1750000E 02	0.1775000E 02	0.1762500E 02	0.1750000E 02	[illegible]
0.1762500E 02	0.1775000E 02	0.1775000E 02	0.1775000E 02	0.1775000E 02	0.1775000E 02	[illegible]
0.1737500E 02	0.1775000E 02	0.1787500E 02	0.1775000E 02	0.1775000E 02	[illegible]	[illegible]
0.1725000E 02	0.1725000E 02	0.1725000E 02	0.1750000E 02	0.1737500E 02	0.1737500E 02	[illegible]
0.1750000E 02	0.1750000E 02	0.1775000E 02	0.1775000E 02	0.1762500E 02	[illegible]	[illegible]
0.1762500E 02	0.1762500E 02	0.1787500E 02	0.1762500E 02	0.1700000E 02	[illegible]	[illegible]
0.1675000E 02	0.1675000E 02	0.1637500E 02	0.1612500E 02	0.1612500E 02	0.1612500E 02	[illegible]
0.1625000E 02	0.1575000E 02	0.1612500E 02	0.1600000E 02	0.1612500E 02	[illegible]	[illegible]
0.1612500E 02	0.1600000E 02	0.1587500E 02	0.1550000E 02	0.1562500E 02	[illegible]	[illegible]
0.1500000E 02	0.1487500E 02	0.1450000E 02	0.1475000E 02	0.1462500E 02	[illegible]	[illegible]
0.1487500E 02	0.1500000E 02	0.1500000E 02	0.1500000E 02	0.1512500E 02	[illegible]	[illegible]
0.1612500E 02	0.1612500E 02	0.1600000E 02	0.1612500E 02	0.1637500E 02	[illegible]	0.1612500E 02
0.1625000E 02	0.1625000E 02	0.1625000E 02	0.1600000E 02	0.1587500E 02	[illegible]	[illegible]
0.1575000E 02	0.1537500E 02	0.1537500E 02	0.1512500E 02	[illegible]	[illegible]	[illegible]
0.1487500E 02	0.1525000E 02	0.1512500E 02	0.1525000E 02	0.1512500E 02	[illegible]	[illegible]
0.1512500E 02	0.1437500E 02	0.1450000E 02	0.1462500E 02	0.1475000E 02	[illegible]	[illegible]
0.1462500E 02	0.1450000E 02	0.1475000E 02	0.1500000E 02	0.1500000E 02	[illegible]	[illegible]
0.1487500E 02	0.1500000E 02	0.1475000E 02	0.1462500E 02	[illegible]	[illegible]	[illegible]
0.1500000E 02	0.1487500E 02	0.1475000E 02	0.1475000E 02	0.1437500E 02	[illegible]	[illegible]
0.1487500E 02	0.1462500E 02	0.1425000E 02	0.1400000E 02	0.1425000E 02	[illegible]	[illegible]
0.1325000E 02	0.1262500E 02	0.1325000E 02	0.1300000E 02	0.1325000E 02	[illegible]	[illegible]
0.1350000E 02	0.1275000E 02	0.1275000E 02	0.1250000E 02	0.1250000E 02	[illegible]	[illegible]
0.1225000E 02	0.1225000E 02	0.1175000E 02	0.1175000E 02	0.1150000E 02	[illegible]	[illegible]
0.1175000E 02	0.1187500E 02	0.1162500E 02	0.1175000E 02	0.1175000E 02	[illegible]	[illegible]
0.1200000E 02	0.1200000E 02	0.1200000E 02	0.1175000E 02	0.1175000E 02	[illegible]	[illegible]
0.1175000E 02	0.1162500E 02	0.1187500E 02	0.1237500E 02	0.1250000E 02	[illegible]	[illegible]
0.1237500E 02	0.1325000E 02	0.1325000E 02	0.1325000E 02	[illegible]	[illegible]	[illegible]
0.1362500E 02	0.1387500E 02	0.1400000E 02	0.1387500E 02	0.1362500E 02	[illegible]	0.1375000E 02
0.1375000E 02	0.1375000E 02					

DAI[illegible]ERIES FOR CON.TIRES.

0.28000000E 02	0.28000000E 02	0.28375000E 02	[illegible]00E 02	0.29500000E 02	0.295[illegible]E 02	0.28250000E 02
0.28500000E 02	0.28625000E 02	0.28750000E 02	[illegible]50000E 02	0.29000000E 02	0.285[illegible]E 02	0.295[illegible]E 02
0.29000000E 02	0.29500000E 02	0.29000000E 02	0.28750000E 02	0.2856[illegible]E 02	0.287[illegible]E 02	0.2850[illegible]E 02
0.28750000E 02	0.29000000E 02	0.28250000E 02	0.29[illegible]E 02	0.28750000E 02	0.2[illegible]E 02	0.2[illegible]E 02
0.29[illegible]E 02	0.29[illegible]E 02	0.28750000E 02	0.29[illegible]E 02	0.29[illegible]E 02	0.2[illegible]E 02	[illegible]
0.295[illegible]E 02	0.29500000E 02	0.28563000E 02	0.29[illegible]E 02	0.29[illegible]E 02	0.295[illegible]E 02	0.29[illegible]E 02
0.29250000E 02	0.29125000E 02	0.29375000E 02	0.29375000E 02	0.3[illegible]E 02	0.3[illegible]E 02	0.31[illegible]E 02
0.3[illegible]50000E 02	0.31500000E 02	0.29750000E 02	0.30875000E 02	0.3[illegible]E 02	0.31[illegible]E 02	0.32[illegible]E 02
0.32750000E 02	0.32375000E 02	0.32[illegible]E 02	0.32[illegible]E 02	0.3225[illegible]E 02	0.323[illegible]E 02	0.32375[illegible]E 02
0.32[illegible]E 02	0.32250000E 02	0.33[illegible]E 02	0.35[illegible]E 02	0.34875000E 02	0.34[illegible]E 02	0.3[illegible]E 02
0.37[illegible]E 02	0.37[illegible]E 02	0.36500000E 02	0.35375000E 02	0.34375[illegible]E 02	0.34[illegible]E 02	0.3[illegible]E 02
0.36375000E 02	0.34250000E 02	0.35000000E 02	0.35[illegible]E 02	0.35[illegible]E 02	0.3425[illegible]E 02	0.34[illegible]E 02
0.34[illegible]00E 02	0.33750000E 02	0.33750000E 02	0.347[illegible]E 02	0.347[illegible]E 02	0.34[illegible]E 02	0.35[illegible]E 02
0.34875000E 02	0.34675000E 02	0.34875000E 02	0.35000000E 02	0.3525[illegible]E 02	0.35[illegible]E 02	0.35[illegible]E 02
0.35750000E 02	0.35875000E 02	0.35500000E 02	0.35875000E 02	0.35[illegible]E 02	0.34[illegible]E 02	0.35125[illegible]E 02
0.35[illegible]E 02	0.36500000E 02	0.36500000E 02	0.37[illegible]E 02	0.3725[illegible]E 02	0.38125[illegible]E 02	0.34375[illegible]E 02
0.40[illegible]E 02	0.40[illegible]E 02	0.37250000E 02	0.37575[illegible]E 02	0.37375[illegible]E 02	0.37[illegible]E 02	0.37[illegible]E 02
0.385[illegible]E 02	0.38250000E 02	0.38500000E 02	0.38375000E 02	0.35[illegible]E 02	0.37[illegible]E 02	0.3[illegible]E 02
0.38563000E 02	0.38500000E 02	0.39000000E 02	0.38250000E 02	0.37250000E 02	0.3[illegible]E 02	0.4[illegible]E 02
0.39[illegible]E 02	0.38750000E 02	0.38250000E 02	0.38[illegible]E 02	0.3[illegible]E 02	0.3[illegible]13[illegible]E 02	0.3[illegible]E 02
0.395[illegible]E 02	0.39000000E 02	0.39875000E 02	0.33[illegible]E 02	0.35125000E 02	0.3[illegible]E 02	[illegible]
0.38[illegible]E 02	0.37750000E 02	0.37375000E 02	0.37125000E 02	0.37125000E 02	0.37[illegible]E 02	0.37[illegible]E 02
0.37[illegible]E 02	0.37750000E 02	0.375[illegible]E 02	0.37250000E 02	0.3[illegible]5000E 02	0.3[illegible]E 02	0.3[illegible]E 02
0.35[illegible]E 02	0.34000000E 02	0.35000000E 02	0.36[illegible]E 02	0.36500000E 02	0.377[illegible]E 02	0.37250[illegible]E 02
0.365[illegible]E 02	0.37500000E 02	0.37750000E 02	0.3775[illegible]E 02	0.36500000E 02	0.3[illegible]E 02	0.36750[illegible]E 02
0.37[illegible]E 02	0.37188000E 02	0.37250000E 02	0.37500000E 02	0.3750[illegible]E 02	0.375[illegible]E 02	0.37[illegible]E 02
0.37750000E 02	0.37[illegible]00E 02	0.36875000E 02	0.36250000E 02	0.355[illegible]E 02	0.3[illegible]125[illegible]E 02	0.34125000E 02
0.32250000E 02	0.33875000E 02	0.345[illegible]E 02	0.35500000E 02	0.3[illegible]E 02	0.34[illegible]E 02	0.35[illegible]E 02
0.34250000E 02	0.32000000E 02	0.31[illegible]E 02	0.31875000E 02	0.[illegible]2250[illegible]E 02	0.3[illegible]E 02	0.33[illegible]E 02
0.32000000E 02	0.32000000E 02	0.32000000E 02	0.32125000E 02	0.33[illegible]E 02	[illegible]	0.32[illegible]E 02
0.32563000E 02	0.32375000E 02	0.32[illegible]E 02	0.325[illegible]E 02	0.322[illegible]E 02	[illegible]	0.32[illegible]E 02
0.33[illegible]7001E 02	0.34000000E 02	0.34000000E 02	0.33500000E 02	0.34[illegible]E 02	0.34[illegible]E 02	0.3[illegible]E 02
0.3750[illegible]E 02	0.37500000E 02	0.37000000E 02	0.33875000E 02	0.37[illegible]E 02	0.3[illegible]E 02	0.36[illegible]E 02
0.3625[illegible]E 02	0.36250000E 02	0.36250000E 02	0.37000000E 02	0.36[illegible]E 02	0.3[illegible]E 02	0.3[illegible]E 02
0.37[illegible]E 02	0.37750000E 02	0.38000000E 02	0.37[illegible]E 02	0.37[illegible]E 02	0.372[illegible]E 02	0.34[illegible]E 02
0.3[illegible]50000E 02	0.39[illegible]E 02	0.41500000E 02	0.40250000E 02	0.35[illegible]E 02	0.3475[illegible]E 02	0.34[illegible]E 02
0.39500000E 02	0.40500000E 02					

DAILY CLOSING PRICE SERIES FOR DISCOVERY. 1971.

0.1150000E 03	0.1120000E 03	0.1105000E 03	0.1105000E 03	0.1030000E 03	0.1070000E 03	0.1060000E 03
0.1110000E 03	0.1070000E 03	0.1085000E 03	0.1020000E 03	0.11[illegible]E 03	0.1050000E 03	0.1020000E 03
0.1035000E 03	0.9700000E 02	0.1020000E 03	0.1090000E 03	0.9900000E 02	0.104[illegible]E 03	0.1[illegible]E 03
0.1035000E 03	0.1150000E 03	0.1250000E 03	0.1200000E 03	0.1200000E 03	0.114[illegible]E 03	0.115[illegible]E 03
0.1175000E 03	0.1130000E 03	0.1150000E 03	0.1150000E 03	0.11[illegible]E 03	0.1[illegible]E 03	0.1[illegible]E 03
0.1020000E 03	0.1020000E 03	0.1020000E 03	0.1045000E 03	0.1080000E 03	0.1[illegible]E 03	0.1[illegible]E 03
0.1050000E 03	0.1040000E 03	0.1000000E 03	0.1010000E 03	0.1050000E 03	0.112[illegible]E 03	0.112[illegible]E 03
0.1125000E 03	0.1150000E 03	0.1070000E 03	0.1150000E 03	0.1170000E 03	0.11[illegible]E 03	0.1[illegible]E 03
0.1175000E 03	0.1120000E 03	0.1150000E 03	0.1150000E 03	0.1150000E 03	0.11[illegible]E 03	0.112[illegible]E 03
0.1150000E 03	0.1050000E 03	0.1150000E 03	0.1150000E 03	0.1150000E 03	0.1[illegible]E 03	0.11[illegible]E 03
0.1150000E 03	0.1180000E 03	0.1130000E 03	0.1170000E 03	0.1090000E 03	0.11[illegible]E 03	0.1[illegible]E 03
0.1150000E 03	0.1150000E 03	0.1120000E 03	0.1100000E 03	0.11[illegible]E 03	0.11[illegible]E 03	0.1[illegible]E 03
0.1080000E 03	0.1080000E 03	0.1115000E 03	0.1130000E 03	0.1130000E 03	0.112[illegible]E 03	0.10[illegible]E 03
0.1100000E 03	0.1100000E 03	0.1115000E 03	0.1160000E 03	0.11[illegible]E 03	0.11[illegible]E 03	0.110[illegible]E 03
0.1080000E 03	0.1065000E 03	0.1050000E 03	0.1080000E 03	0.1040000E 03	0.1[illegible]E 03	0.1[illegible]E 03
0.1050000E 03	0.1025000E 03	0.1010000E 03	0.1030000E 03	0.1115000E 03	0.111[illegible]E 02	0.111[illegible]E 03
0.1115000E 03	0.1130000E 03	0.1095000E 03	0.1010000E 03	0.1010000E 03	0.1[illegible]	0.1[illegible]
0.1090000E 03	0.1000000E 03	0.9600000E 02	0.9950000E 02	0.9950000E 02	0.1[illegible]	[illegible]
0.1100000E 03	0.1050000E 03	0.9950000E 02	0.1000000E 03	0.9900000E 02	[illegible]	0.1[illegible]
0.1050000E 03	0.1100000E 03	0.1100000E 03	0.1045000E 03	0.9[illegible]E 02	[illegible]	[illegible]
0.9950000E 02	0.9950000E 02	0.9950000E 02	0.9200000E 02	0.9950000E 02	[illegible]	0.1[illegible]
0.9900000E 02	0.7500000E 02	0.9150000E 02	0.7200000E 02	0.94[illegible]E 02	[illegible]	[illegible]
0.9500000E 02	0.9500000E 02	0.9700000E 02	0.1000000E 03	0.1000000E 03	[illegible]	[illegible]
0.9500000E 02	0.9800000E 02	0.9550000E 02	0.9550000E 02	0.9250000E 02	0.8[illegible]	[illegible]
0.9050000E 02	0.7900000E 02	0.7500000E 02	0.7900000E 02	0.1[illegible]E 03	0.1[illegible]	0.1[illegible]
0.9500000E 02	0.8400000E 02	0.9900000E 02	0.9500000E 02	0.8[illegible]E 02	[illegible]	0.9[illegible]
0.9500000E 02	0.9500000E 02	0.8300000E 02	0.9500000E 02	0.9[illegible]E 02	[illegible]	[illegible]
0.8100000E 02	0.7800000E 02	0.7800000E 02	0.9200000E 02	0.9[illegible]E 02	0.7[illegible]	0.77[illegible]
0.7500000E 02	0.8500000E 02	0.8500000E 02	0.9150000E 02	0.85[illegible]E 02	0.7[illegible]	0.77[illegible]
0.5800000E 02	0.6700000E 02	0.7500000E 02	0.6700000E 02	0.7[illegible]E 02	0.7[illegible]	0.7[illegible]
0.7250000E 02	0.6100000E 02	0.6500000E 02	0.6500000E 02	0.7200000E 02	0.7[illegible]	[illegible]
0.6750000E 02	0.6500000E 02	0.7050000E 02	0.6100000E 02	0.68[illegible]E 02	0.6[illegible]	[illegible]
0.5500000E 02	0.6200000E 02	0.6500000E 02	0.7150000E 02	0.6750000E 02	0.72[illegible]	[illegible]
0.7300000E 02	0.7000000E 02	0.6500000E 02	0.7450000E 02	0.7[illegible]E 02	0.6[illegible]	0.71[illegible]
0.6700000E 02	0.6600000E 02	0.6750000E 02	0.6800000E 02	0.7[illegible]E 02	0.7[illegible]	[illegible]
0.7000000E 02	0.7500000E 02	0.7200000E 02	0.7500000E 02	0.72[illegible]E 02	0.6[illegible]	0.7[illegible]
0.7000000E 02	0.7000000E 02					

DAILY CLOSING PRICE SERIES FOR GRANDROY.
1971.

0.2400000E 02	0.2400000E 02	0.2250000E 02	0.2400000E 02	0.2400000E 02	0.2350000E 02	0.2400000E 02
0.2400000E 02	0.2400000E 02	0.2400000E 02	0.25[illegible]E 02	0.24[illegible]E 02	0.22[illegible]E 02	0.2425000E 02
0.2425000E 02	0.2400000E 02	0.2275000E 02	0.24[illegible]E 02	0.2300000E 02	0.22[illegible]E 02	0.2250000E 02
0.2200000E 02	0.2100000E 02	0.2100000E 02	0.21[illegible]E 02	0.19[illegible]E 02	[illegible]	0.21[illegible]E 02
0.2125000E 02	0.2125000E 02	0.2[illegible]E 02	0.2175[illegible]E 02	0.21[illegible]E 02	[illegible]	[illegible]
0.2[illegible]E 02	0.2000000E 02	0.2100000E 02	0.2[illegible]E 02	0.21[illegible]E 02	[illegible]	[illegible]
0.2[illegible]E 02	0.2000000E 02	0.2000000E 02	0.21[illegible]E 02	0.21[illegible]E 02	[illegible]	[illegible]
0.2100000E 02	0.2225000E 02	0.2200000E 02	0.24[illegible]E 02	0.2[illegible]E 02	[illegible]	[illegible]
0.2400000E 02	0.2400000E 02	0.2400000E 02	0.23[illegible]E 02	0.2[illegible]E 02	[illegible]	[illegible]
0.2200000E 02	0.2[illegible]E 02	0.2[illegible]E 02	0.23[illegible]E 02	0.2325[illegible]E 02	[illegible]	[illegible]
0.23[illegible]E 02	0.2350000E 02	0.2400000E 02	0.2[illegible]E 02	0.2[illegible]E 02	[illegible]	[illegible]
0.2200000E 02	0.2150000E 02	0.2100000E 02	0.21[illegible]E 02	0.21[illegible]E 02	[illegible]	[illegible]
0.2225000E 02	0.2[illegible]E 02	0.2175000E 02	0.21[illegible]E 02	0.217[illegible]E 02	[illegible]	[illegible]
0.2100000E 02	0.2100000E 02	0.2[illegible]E 02	0.2[illegible]E 02	0.1[illegible]E 02	[illegible]	[illegible]
0.2[illegible]E 02	0.2[illegible]E 02	0.2000000E 02	0.2[illegible]E 02	0.17[illegible]E 02	[illegible]	[illegible]
0.1750000E 02	0.1750000E 02	0.1750000E 02	0.17[illegible]E 02	0.17[illegible]E 02	[illegible]	[illegible]
0.1500000E 02	0.1500000E 02	0.16[illegible]E 02	0.1[illegible]E 02	0.1[illegible]E 02	[illegible]	[illegible]
0.1450000E 02	0.1450000E 02	0.1200000E 02	0.13[illegible]E 02	0.120[illegible]E 02	[illegible]	[illegible]
0.1200000E 02	0.1200000E 02	0.1[illegible]E 02	0.14[illegible]E 02	0.14[illegible]E 02	[illegible]	[illegible]
0.1550000E 02	0.16[illegible]E 02	0.1[illegible]E 02	0.15[illegible]E 02	0.18[illegible]E 02	[illegible]	[illegible]
0.1700000E 02	0.1600000E 02	0.1600000E 02	0.15[illegible]E 02	0.15[illegible]E 02	[illegible]	[illegible]
0.1500000E 02	0.1450000E 02	0.14[illegible]E 02	0.13[illegible]E 02	0.14[illegible]E 02	[illegible]	[illegible]
0.1375000E 02	0.1350000E 02	0.1725000E 02	0.13[illegible]E 02	0.1[illegible]E 02	[illegible]	[illegible]
0.1200000E 02	0.1200000E 02	0.1100000E 02	0.11[illegible]E 02	0.1[illegible]E 02	[illegible]	[illegible]
0.1100000E 02	0.1100000E 02	0.1075000E 02	0.11[illegible]E 02	0.1[illegible]E 02	[illegible]	[illegible]
0.1000000E 02	0.1000000E 02	0.1[illegible]E 02	0.10[illegible]E 02	0.9[illegible]E 01	[illegible]	[illegible]
0.9500000E 01	0.9750000E 01	0.8500000E 01	0.8500000E 01	0.1[illegible]E 02	[illegible]	[illegible]
0.1150000E 02	0.1[illegible]E 02	0.1[illegible]E 02	0.1[illegible]E 02	0.1[illegible]E 02	[illegible]	[illegible]
0.1[illegible]E 02	0.1[illegible]E 02	0.85[illegible]E 01	0.925[illegible]E 01	[illegible]	[illegible]	[illegible]
0.9750000E 01	0.9000000E 01	0.9500000E 01	0.95[illegible]E 01	[illegible]	[illegible]	[illegible]
0.8750000E 01	0.8000000E 01	0.8[illegible]E 01	0.8[illegible]E 01	0.77[illegible]E 01	[illegible]	[illegible]
0.9000000E 01	0.8500000E 01	0.8500000E 01	0.825[illegible]E 01	0.8[illegible]E 01	[illegible]	[illegible]
0.7000000E 01	0.6000000E 01	0.5500000E 01	0.6[illegible]E 01	[illegible]	[illegible]	[illegible]
0.7000000E 01	0.6000000E 01	0.6[illegible]E 01	0.7000000E 01	[illegible]	[illegible]	[illegible]
0.8500000E 01	0.8500000E 01	0.8[illegible]E 01	0.8000000E 01	0.85[illegible]E 01	[illegible]	[illegible]
0.7250000E 01	0.8500000E 01	0.8500000E 01	0.5[illegible]E 01	0.85[illegible]E 01	[illegible]	[illegible]
0.7000000E 01	0.8[illegible]E 01			[illegible]	[illegible]	[illegible]

DAILY CLOSING PRICE SERIES FOR G.L.POWER.
1971.

0.1787500E 02	0.1837500E 02	0.1837500E 02	0.1850000E 02	0.1925000E 02	0.1850000E 02	0.1875000E 02
0.1875000E 02	0.1875000E 02	0.1850000E 02	0.1850000E 02	0.1837500E 02	0.1850000E 02	0.1862500E 02
0.1850000E 02	0.1862500E.02	0.1825000E 02	0.1825000E 02	0.1825000E 02	[illegible]	[illegible]
0.1800000E 02	0.1800000E 02	0.1825000E 02	0.1825000E 02	0.1800000E 02	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
0.1837500E 02	[illegible]	0.1875000E 02	[illegible]	[illegible]	[illegible]	[illegible]
0.2012500E 02	0.2025000E 02	0.2012500E 02	0.2012500E 02	[illegible]	0.2012500E 02	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	0.2037500E 02	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	0.1950000E 02	0.1962500E 02	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	0.1975000E 02	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
0.2012500E 02	0.2012500E 02	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	0.2037500E 02	0.1975000E 02	[illegible]	[illegible]	[illegible]	[illegible]
0.1987500E 02	[illegible]	0.2000000E 02	0.1925000E 02	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	0.1987500E 02	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	0.1975000E 02	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	0.2012500E 02	0.2012500E 02	0.2012500E 02	[illegible]	[illegible]	[illegible]
0.2012500E 02	[illegible]	0.2012500E 02	[illegible]	[illegible]	[illegible]	[illegible]
0.2225000E 02	[illegible]	0.2012500E 02	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	0.1975000E 02	[illegible]	[illegible]
0.1962500E 02	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	0.1962500E 02	[illegible]	[illegible]
0.1962500E 02	0.1975000E 02	0.1962500E 02	[illegible]	[illegible]	[illegible]	[illegible]
0.1987500E 02	0.1962500E 02	0.1975000E 02	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	0.1775000E 02	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
0.1775000E 02	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	0.1787500E 02	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	0.1925000E 02	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	0.1962500E 02	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
0.1925000E 02	0.1925000E 02	0.1950000E 02	0.1937500E 02	[illegible]	[illegible]	[illegible]
[illegible]	0.1950000E 02					

DAILY CLOSING PRICE SERIES FOR HANO CHEMICAL. 1971.

0.6375000E 01	0.6250000E 01	0.6250000E 01	[illegible]	0.6250000E 01	0.6250000E 01	0.6250000E 01
0.6250000E 01	0.6000000E 01	0.5875000E 01	0.5875000E 01	0.5875000E 01	0.5875000E 01	[illegible]
0.5750000E 01	0.5750000E 01	0.6500000E 01	0.5500000E 01	[illegible]	[illegible]	[illegible]
[illegible]	0.5875000E 01	0.5750000E 01	[illegible]	[illegible]	[illegible]	[illegible]
0.6375000E 01	0.6875000E 01	0.6875000E 01	[illegible]	[illegible]	[illegible]	[illegible]
0.5438000E 01	0.6438000E 01	0.6438000E 01	[illegible]	[illegible]	[illegible]	[illegible]
0.6250000E 01	0.6250000E 01	0.6250000E 01	[illegible]	[illegible]	[illegible]	[illegible]
0.6250000E 01	0.6250000E 01	0.6250000E 01	[illegible]	[illegible]	[illegible]	[illegible]
0.7000000E 01	0.6700000E 01	0.6625000E 01	[illegible]	[illegible]	[illegible]	[illegible]
0.5750000E 01	0.5625000E 01	0.5625000E 01	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	0.5500000E 01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
0.8000000E 01	0.8000000E 01	0.9500000E 01	[illegible]	[illegible]	[illegible]	[illegible]
0.9500000E 01	0.8875000E 01	0.8750000E 01	[illegible]	[illegible]	[illegible]	[illegible]
0.8375000E 01	0.8500000E 01	0.8500000E 01	[illegible]	[illegible]	[illegible]	[illegible]
0.7500000E 01	0.7500000E 01	0.7000000E 01	[illegible]	[illegible]	[illegible]	[illegible]
0.6625000E 01	0.6375000E 01	0.7313000E 01	[illegible]	[illegible]	[illegible]	[illegible]
0.7317000E 01	0.7313000E 01	0.7313000E 01	0.7313000E 01	0.7313000E 01	[illegible]	[illegible]
0.7313000E 01	0.7313000E 01	0.6938000E 01	[illegible]	[illegible]	[illegible]	[illegible]
0.7250000E 01	0.6875000E 01	0.6875000E 01	[illegible]	[illegible]	[illegible]	[illegible]
0.7375000E 01	0.7375000E 01	0.7375000E 01	[illegible]	[illegible]	[illegible]	[illegible]
0.7375000E 01	0.7375000E 01	0.6750000E 01	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
0.5750000E 01	0.5750000E 01	0.5750000E 01	[illegible]	[illegible]	[illegible]	[illegible]
0.5750000E 01	0.5750000E 01	0.6500000E 01	0.5625000E 01	[illegible]	[illegible]	[illegible]
0.6500000E 01	0.6500000E 01	0.5625000E 01	[illegible]	[illegible]	[illegible]	[illegible]
0.6163000E 01	0.5500000E 01	0.5563000E 01	[illegible]	[illegible]	[illegible]	[illegible]
0.5750000E 01	0.5750000E 01	0.5563000E 01	[illegible]	[illegible]	[illegible]	[illegible]
0.5188000E 01	0.5500000E 01	0.5775000E 01	[illegible]	[illegible]	[illegible]	[illegible]
0.5280000E 01	0.5280000E 01	0.4700000E 01	0.5375000E 01	[illegible]	[illegible]	[illegible]
0.5125000E 01	0.5125000E 01	0.5250000E 01	[illegible]	[illegible]	[illegible]	[illegible]
0.5250000E 01	0.5250000E 01	0.4500000E 01	[illegible]	[illegible]	[illegible]	[illegible]
0.5125000E 01	0.5250000E 01	0.5000000E 01	[illegible]	[illegible]	[illegible]	[illegible]
0.4875000E 01	0.5000000E 01	0.5250000E 01	[illegible]	[illegible]	[illegible]	[illegible]
0.5250000E 01	0.5250000E 01	0.5750000E 01	[illegible]	[illegible]	[illegible]	[illegible]
0.5300000E 01	0.5775000E 01	0.5775000E 01	0.5775000E 01	[illegible]	[illegible]	[illegible]
0.7000000E 01	0.7500000E 01					

DAILY CLOSING PRICE SERIES FOR HUDSON BAY.
1971.

0.1475000E 02	0.1487500E 02	0.1475000E 02	0.1462500E 02	0.1462500E 02	0.1512500E 02	0.1587500E 02
0.1587500E 02	0.1600000E 02	0.1612500E 02	0.1587500E 02	0.1600000E 02	0.1500000E 02	0.1637500E 02
0.1637500E 02	0.1650000E 02	0.1650000E 02	0.1625000E 02	0.1637500E 02	0.1625000E 02	0.1612500E 02
0.1637500E 02	0.1650000E 02	0.1637500E 02	0.1700000E 02	0.1712500E 02	0.1712500E 02	0.1712500E 02
0.1712500E 02	0.1700000E 02	0.1700000E 02	0.1712500E 02	0.1700000E 02	[illegible]	[illegible]
0.1675000E 02	0.1675000E 02	0.1675000E 02	0.1687500E 02	0.1687500E 02	[illegible]	0.1700000E 02
0.1712500E 02	0.1712500E 02	0.1712500E 02	0.1737500E 02	0.1725000E 02	[illegible]	[illegible]
0.1775000E 02	0.1762500E 02	0.1762500E 02	0.1775000E 02	0.1787500E 02	[illegible]	[illegible]
0.1787500E 02	0.1787500E 02	0.1787500E 02	0.1762500E 02	0.1775000E 02	[illegible]	[illegible]
0.1800000E 02	0.1800000E 02	0.1787500E 02	0.1812500E 02	[illegible]	[illegible]	[illegible]
0.1837500E 02	0.1837500E 02	0.1825000E 02	0.1812500E 02	[illegible]	[illegible]	[illegible]
0.1837500E 02	0.1900000E 02	0.1900000E 02	[illegible]	[illegible]	[illegible]	[illegible]
0.1825000E 02	0.1775000E 02	0.1800000E 02	0.1812500E 02	0.1812500E 02	[illegible]	[illegible]
0.1787500E 02	0.1775000E 02	0.1762500E 02	0.1775000E 02	0.1762500E 02	[illegible]	[illegible]
0.1762500E 02	0.1750000E 02	0.1712500E 02	0.1700000E 02	0.1700000E 02	[illegible]	[illegible]
0.1700000E 02	0.1712500E 02	0.1737500E 02	0.1812500E 02	[illegible]	[illegible]	[illegible]
0.1900000E 02	0.1887500E 02	0.1900000E 02	0.1887500E 02	[illegible]	[illegible]	[illegible]
0.1937500E 02	0.1925000E 02	0.1900000E 02	[illegible]	[illegible]	[illegible]	[illegible]
0.1900000E 02	0.1875000E 02	0.1887500E 02	0.1837500E 02	[illegible]	[illegible]	[illegible]
0.1962500E 02	0.1962500E 02	0.1950000E 02	0.1975000E 02	[illegible]	[illegible]	[illegible]
0.1987500E 02	0.1950000E 02	0.1962500E 02	0.1925000E 02	[illegible]	[illegible]	[illegible]
0.1787500E 02	0.1787500E 02	0.1775000E 02	0.1750000E 02	0.1737500E 02	[illegible]	[illegible]
0.1800000E 02	0.1800000E 02	0.1850000E 02	0.1837500E 02	0.1825000E 02	[illegible]	[illegible]
0.1837500E 02	0.1837500E 02	0.1875000E 02	0.1900000E 02	0.1850000E 02	[illegible]	[illegible]
0.1862500E 02	0.1862500E 02	0.1875000E 02	0.1900000E 02	0.1912500E 02	[illegible]	[illegible]
0.1925000E 02	0.1937500E 02	0.1925000E 02	0.1937500E 02	0.1850000E 02	[illegible]	[illegible]
0.1937500E 02	0.1950000E 02	0.1925000E 02	0.1900000E 02	0.1875000E 02	[illegible]	[illegible]
0.1790000E 02	0.1775000E 02	0.1775000E 02	0.1775000E 02	0.1762500E 02	[illegible]	[illegible]
0.1750000E 02	0.1695000E 02	0.1675000E 02	0.1700000E 02	0.1700000E 02	[illegible]	[illegible]
0.1750000E 02	0.1800000E 02	0.1775000E 02	0.1762500E 02	[illegible]	[illegible]	[illegible]
0.1725000E 02	0.1700000E 02	0.1687500E 02	0.1700000E 02	0.1700000E 02	[illegible]	[illegible]
0.1675000E 02	0.1662500E 02	0.1625000E 02	0.1612500E 02	0.1650000E 02	[illegible]	[illegible]
0.1687500E 02	0.1687500E 02	0.1675000E 02	0.1637500E 02	0.1687500E 02	[illegible]	[illegible]
0.1737500E 02	0.1750000E 02	0.1762500E 02	[illegible]	[illegible]	[illegible]	[illegible]
0.1725000E 02	0.1737500E 02	0.1750000E 02	0.1750000E 02	0.1775000E 02	[illegible]	[illegible]
0.1850000E 02	0.1900000E 02	0.1900000E 02	0.1837500E 02	[illegible]	[illegible]	[illegible]
0.1912500E 02	0.1912500E 02					

DAILY CLOSING PRICE SERIES FOR IMPERIAL OIL.
1971.

0.2012500E 02	0.2012500E 02	0.2012500E 02	0.1975000E 02	0.1975000E 02	0.1975000E 02	0.1987500E 02
0.1987500E 02	0.1937500E 02	0.1975000E 02	0.1975000E 02	0.1937500E 02	0.1925000E 02	0.1962500E 02
0.2000000E 02	0.1987500E 02	0.1962500E 02	0.1937500E 02	0.1925000E 02	0.1912500E 02	0.1912500E 02
0.1925000E 02	0.1900000E 02	0.1887500E 02	0.1925000E 02	0.1925000E 02	0.19[illegible]E 02	0.19375[illegible]E 02
0.1925[illegible]E 02	0.19[illegible]E 02	0.1862500E 02	0.19[illegible]E 02	0.1[illegible]E 02	0.1[illegible]E 02	[illegible]
0.1912500E 02	0.1912500E 02	0.1950000E 02	0.1912500E 02	0.1925000E 02	0.19[illegible]E 02	0.1[illegible]E 02
0.1912500E 02	0.1950000E 02	0.1962500E 02	0.1975000E 02	0.1987500E 02	0.19[illegible]E 02	0.1[illegible]E 02
0.1975000E 02	0.1975000E 02	0.2012500E 02	0.2050000E 02	0.2[illegible]62500E 02	0.2[illegible]E 02	0.21[illegible]E 02
0.2162500E 02	0.2050000E 02	0.2075000E 02	0.20[illegible]E 02	0.2075000E 02	0.2[illegible]E 02	0.20[illegible]75[illegible]E 02
0.2112500E 02	0.2100000E 02	0.2100000E 02	0.2087500E 02	0.2[illegible]E 02	0.21375[illegible]E 02	0.21[illegible]E 02
0.2125000E 02	0.2125000E 02	0.2125000E 02	0.2125000E 02	0.2137500E 02	0.212[illegible]E 02	0.21[illegible]E 02
0.2175000E 02	0.2200000E 02	0.2225000E 02	0.2225000E 02	0.2250000E 02	0.221[illegible]E 02	0.21[illegible]E 02
0.2187500E 02	0.2112500E 02	0.2175000E 02	0.2175000E 02	0.2175000E 02	0.217[illegible]E 02	0.21[illegible]E 02
0.2250000E 02	0.2275000E 02	0.2275000E 02	0.2300000E 02	0.2237500E 02	0.227[illegible]E 02	0.22[illegible]E 02
0.2275000E 02	0.2275000E 02	0.2300000E 02	0.2287500E 02	0.2262500E 02	0.22[illegible]E 02	0.220[illegible]E 02
0.2262500E 02	0.2262500E 02	0.2312500E 02	0.2337500E 02	0.23[illegible]E 02	0.23[illegible]E 02	0.2[illegible]375[illegible]E 02
0.2375000E 02	0.2362500E 02	0.235[illegible]E 02	0.2337500E 02	0.2325000E 02	0.23[illegible]E 02	[illegible]
0.2400000E 02	0.2450000E 02	0.2450000E 02	0.2462500E 02	0.2462500E 02	0.2[illegible]75[illegible]E 02	0.2[illegible]75[illegible]E 02
0.2437500E 02	0.2500000E 02	0.2500000E 02	0.2525000E 02	0.2[illegible]375[illegible]E 02	0.2[illegible]E 02	[illegible]
0.2562500E 02	0.2512500E 02	0.2512500E 02	0.2550000E 02	0.2[illegible]12500E 02	0.2[illegible]25[illegible]E 02	0.2[illegible]75[illegible]E 02
0.2700000E 02	0.2712500E 02	0.2737500E 02	0.2750000E 02	0.27[illegible]E 02	0.2[illegible]7[illegible]E 02	0.2[illegible]125[illegible]E 02
0.2600000E 02	0.2575000E 02	0.2575000E 02	0.2675000E 02	0.2687500E 02	0.2[illegible]E 02	0.2[illegible]375[illegible]E 02
0.2712500E 02	0.2825000E 02	0.2737500E 02	0.2887500E 02	0.2875000E 02	0.29[illegible]E 02	[illegible]
0.2875000E 02	0.2825000E 02	0.2900000E 02	0.2875000E 02	0.2875000E 02	0.29[illegible]E 02	0.2[illegible]E 02
0.2850000E 02	0.2950000E 02	0.2937500E 02	0.2937500E 02	0.2[illegible]62500E 02	0.2[illegible]5[illegible]E 02	0.2[illegible]E 02
0.2950000E 02	0.2962500E 02	0.2962500E 02	0.2950000E 02	0.30[illegible]E 02	0.2[illegible]750[illegible]E 02	0.2[illegible]E 02
0.3000000E 02	0.3000000E 02	0.2987500E 02	0.2962500E 02	0.2912500E 02	0.28[illegible]E 02	0.2[illegible]E 02
0.2850000E 02	0.2937500E 02	0.2[illegible]87500E 02	0.3037500E 02	0.3[illegible]62500E 02	[illegible]	0.31[illegible]E 02
0.3[illegible]E 02	0.2975000E 02	0.3012500E 02	0.3000000E 02	0.3012500E 02	0.297[illegible]E 02	[illegible]
0.2925000E 02	0.2925000E 02	0.2875000E 02	0.2862500E 02	0.2[illegible]7500E 02	0.2[illegible]E 02	[illegible]
0.2950000E 02	0.2900000E 02	0.2887500E 02	0.2[illegible]62500E 02	0.2[illegible]37500E 02	0.2[illegible]75[illegible]E 02	[illegible]
0.2900000E 02	0.2887500E 02	0.2837500E 02	0.2762500E 02	0.2750000E 02	0.2[illegible]E 02	[illegible]
0.2875000E 02	0.2850000E 02	0.2850000E 02	0.2737500E 02	0.28[illegible]E 02	[illegible]	0.2[illegible]175[illegible]E 02
0.2900000E 02	0.2887500E 02	0.2962500E 02	0.2950000E 02	0.3[illegible]E 02	[illegible]	0.3[illegible]E 02
0.3125000E 02	0.3[illegible]25000E 02	0.3[illegible]50000E 02	0.3087500E 02	0.3[illegible]E 02	0.31[illegible]E 02	0.31[illegible]E 02
0.3187500E 02	0.3225000E 02	0.3212500E 02	0.3150000E 02	0.312[illegible]E 02	0.31[illegible]E 02	0.31[illegible]E 02
0.3125000E 02	0.3112500E 02					

DAILY CLOSING PRICE SERIES FOR MARITIME.
1971.

0.1900000E 02	0.1875000E 02	0.1875000E 02	0.1900000E 02	0.1900000E 02	0.1900000E 02	0.1900000E 02
0.1925000E 02	0.1937500E 02	0.1975000E 02	0.1962500E 02	0.1987500E 02	0.1962500E 02	0.1975000E 02
0.2000000E 02	0.2050000E 02	0.2050000E 02	0.2050000E 02	0.2025000E 02	0.1975000E 02	0.2000000E 02
0.2025000E 02	0.2000000E 02	0.2000000E 02	0.2012500E 02	0.2000000E 02	0.20[illegible]E 02	0.2000000E 02
0.1975000E 02	0.1975000E 02	0.2050000E 02	0.2000000E 02	0.21[illegible]E 02	0.20[illegible]E 02	0.2025000E 02
0.2037500E 02	0.2025000E 02	0.2050000E 02	0.2050000E 02	0.2050000E 02	0.2037500E 02	0.2[illegible]E 02
0.2075000E 02	0.2075000E 02	0.2100000E 02	0.2087500E 02	0.2100000E 02	0.21[illegible]E 02	0.21[illegible]E 02
0.2175000E 02	0.2150000E 02	0.2137500E 02	0.2200000E 02	0.2200000E 02	0.21[illegible]E 02	0.21[illegible]E 02
0.2187500E 02	0.2187500E 02	0.2187500E 02	0.2200000E 02	0.2200000E 02	0.2187500E 02	0.2187500E 02
0.2200000E 02	0.2200000E 02	0.2200000E 02	0.2200000E 02	0.2250000E 02	0.2050000E 02	0.2[illegible]E 02
0.2250000E 02	0.2262500E 02	0.2200000E 02	0.22[illegible]E 02	0.2187500E 02	0.21[illegible]E 02	0.22[illegible]E 02
0.2175000E 02	0.2200000E 02	0.2150000E 02	0.2150000E 02	0.2175000E 02	0.2175000E 02	0.21[illegible]E 02
0.2175000E 02	0.2175000E 02	0.2175000E 02	0.2200000E 02	0.2175000E 02	0.2175000E 02	0.2175000E 02
0.2150000E 02	0.2187500E 02	0.2175000E 02	0.2175000E 02	0.2175000E 02	0.21[illegible]E 02	0.2175000E 02
0.2150000E 02	0.2100000E 02	0.2125000E 02	0.2100000E 02	0.2050000E 02	0.2[illegible]E 02	0.2[illegible]E 02
0.2100000E 02	0.2100000E 02	0.2050000E 02	0.2087500E 02	0.2087500E 02	0.21[illegible]E 02	0.21[illegible]E 02
0.2050000E 02	0.2087500E 02	0.2025000E 02	0.2100000E 02	0.2100000E 02	0.21[illegible]E 02	0.2137500E 02
0.2100000E 02	0.2125000E 02	0.2130000E 02	0.2075000E 02	0.2037500E 02	0.20[illegible]E 02	0.2175000E 02
0.2050000E 02	0.2050000E 02	0.2062500E 02	0.2075000E 02	0.2050000E 02	0.20[illegible]E 02	0.2[illegible]E 02
0.2050000E 02	0.2062500E 02	0.2062500E 02	0.2050000E 02	0.2050000E 02	0.20[illegible]E 02	0.2012500E 02
0.2000000E 02	0.2000000E 02	0.2000000E 02	0.1975000E 02	0.1975000E 02	0.1987500E 02	0.19[illegible]E 02
0.1975000E 02	0.1987500E 02	0.2000000E 02	0.1987500E 02	0.2000000E 02	0.19[illegible]E 02	0.19[illegible]E 02
0.1987500E 02	0.1993800E 02	0.1975000E 02	0.1975000E 02	0.1962500E 02	0.19[illegible]E 02	0.19[illegible]E 02
0.1925000E 02	0.1987500E 02	0.1950000E 02	0.1975000E 02	0.2000000E 02	0.1987500E 02	0.2[illegible]E 02
0.2000000E 02	0.2025000E 02	0.2025000E 02	0.2025000E 02	0.2100000E 02	0.2012500E 02	0.2012500E 02
0.2000000E 02	0.2037500E 02	0.2031300E 02	0.2067500E 02	0.2050000E 02	0.2037500E 02	0.1975000E 02
0.2000000E 02	0.2025000E 02	0.2025000E 02	0.2025000E 02	0.2037500E 02	0.2[illegible]E 02	0.2[illegible]E 02
0.2000000E 02	0.1975000E 02	0.1987500E 02	0.1975000E 02	0.2000000E 02	0.2012500E 02	0.2037500E 02
0.2050000E 02	0.2050000E 02	0.2043800E 02	0.2037500E 02	0.2018800E 02	0.2012500E 02	0.2[illegible]E 02
0.2000000E 02	0.2000000E 02	0.1987500E 02	0.1975000E 02	0.21[illegible]E 02	0.20[illegible]E 02	0.1987500E 02
0.1950000E 02	0.1950000E 02	0.2000000E 02	0.1962500E 02	0.20[illegible]E 02	0.2[illegible]E 02	0.1987500E 02
0.2000000E 02	0.2000000E 02	0.1987500E 02	0.1975000E 02	0.2025000E 02	0.1987500E 02	0.2000000E 02
0.2000000E 02	0.2012500E 02	0.2025000E 02	0.2012500E 02	0.2012500E 02	0.20[illegible]E 02	0.19[illegible]E 02
0.2025000E 02	0.2075000E 02	0.2050000E 02	0.2075000E 02	0.2075000E 02	0.21[illegible]E 02	0.21[illegible]E 02
0.2175000E 02	0.2187500E 02	0.2175000E 02	0.2150000E 02	0.2137500E 02	0.2175000E 02	0.22[illegible]E 02
0.2275000E 02	0.22[illegible]E 02	0.2187500E 02	0.2200000E 02	0.2200000E 02	0.2225000E 02	0.22[illegible]E 02
0.2200000E 02	0.2212500E 02					

DAILY CLOSING PRICE SERIES FOR ROTHMAN CDA.
1971.

0.1237500E 02	0.1250000E 02	0.1250000E 02	0.1275000E 02	0.1337500E 02	0.1362500E 02	0.1397500E 02
0.1362500E 02	0.1350000E 02	0.1375000E 02	0.1350000E 02	0.1375000E 02	0.1400000E 02	0.1350000E 02
0.1375000E 02	0.1500000E 02	0.1475000E 02	0.1450000E 02	0.1425000E 02	0.1475000E 02	0.1462500E 02
0.1487500E 02	0.1500000E 02	0.1500000E 02	0.1462500E 02	0.1450000E 02	0.1475000E 02	0.1487500E 02
0.1500000E 02	0.1500000E 02	0.1462500E 02	0.1487500E 02	0.1350000E 02	0.1225000E 02	0.1250000E 02
0.1262500E 02	0.1237500E 02	0.1200000E 02	0.1175000E 02	0.1162500E 02	0.1162500E 02	0.1175000E 02
0.1162500E 02	0.1187500E 02	0.1200000E 02	0.1225000E 02	0.1250000E 02	0.1212500E 02	[illegible]
0.1250000E 02	0.1250000E 02	0.1300000E 02	0.1300000E 02	0.1300000E 02	0.1300000E 02	0.1300000E 02
0.1312500E 02	0.1325000E 02	0.1325000E 02	0.1350000E 02	0.1350000E 02	[illegible]	0.1300000E 02
0.1300000E 02	0.1350000E 02	0.1300000E 02	0.1262500E 02	0.1275000E 02	0.1275000E 02	0.1250000E 02
0.1200000E 02	0.1200000E 02	0.1200000E 02	0.1200000E 02	0.1212500E 02	0.1212500E 02	[illegible]
0.1225000E 02	0.1200000E 02	0.1200000E 02	0.1175000E 02	0.1200000E 02	0.1187500E 02	0.1175000E 02
0.1175000E 02	0.1150000E 02	0.1150000E 02	0.1187500E 02	0.1200000E 02	0.1187500E 02	0.1175000E 02
0.1162500E 02	0.1187500E 02	0.1187500E 02	0.1187500E 02	0.1125000E 02	[illegible]	0.1150000E 02
0.1087500E 02	0.1062500E 02	0.1062500E 02	0.1050000E 02	0.1050000E 02	0.1075000E 02	0.1027500E 02
0.1100000E 02	0.1150000E 02	0.1200000E 02	0.1150000E 02	0.1125000E 02	0.1162500E 02	0.1147500E 02
0.1175000E 02	0.1162500E 02	0.1137500E 02	0.1125000E 02	0.1125000E 02	0.1150000E 02	0.1125000E 02
0.1200000E 02	0.1200000E 02	0.1175000E 02	0.1162500E 02	0.1175000E 02	0.1175000E 02	0.1175000E 02
0.1162500E 02	0.1137500E 02	0.1175000E 02	0.1187500E 02	0.1175000E 02	0.1187500E 02	0.1187500E 02
0.1200000E 02	0.1187500E 02	0.1150000E 02	0.1125000E 02	0.1150000E 02	0.1150000E 02	0.1150000E 02
0.1137500E 02	0.1112500E 02	0.1175000E 02	0.1131300E 02	0.1112500E 02	0.1100000E 02	0.1137500E 02
0.1100000E 02	0.1112500E 02	0.1100000E 02	0.1112500E 02	0.1062500E 02	0.1012500E 02	[illegible]
0.1000000E 02	0.1000000E 02	0.9875000E 01	0.9875000E 01	0.1037500E 02	0.1037500E 02	[illegible]
0.1075000E 02	0.1087500E 02	0.1087500E 02	0.1037500E 02	0.1062500E 02	0.1062500E 02	[illegible]
0.1062500E 02	0.1075000E 02	0.1075000E 02	0.1062500E 02	0.1075000E 02	0.1075000E 02	[illegible]
0.1075000E 02	0.1087500E 02	0.1075000E 02	0.1087500E 02	0.1100000E 02	0.1062500E 02	0.1011300E 02
0.1062500E 02	0.1062500E 02	0.1062500E 02	0.1062500E 02	0.1050000E 02	0.1050000E 02	0.9500000E 01
0.1000000E 02	0.1175000E 02	0.1150000E 02	0.1212500E 02	0.1250000E 02	0.1350000E 02	0.1337500E 02
0.1362500E 02	0.1337500E 02	0.1375000E 02	0.1362500E 02	0.1450000E 02	0.1425000E 02	[illegible]
0.1400000E 02	0.1387500E 02	0.1375000E 02	0.1362500E 02	0.1425000E 02	0.1412500E 02	0.1387500E 02
0.1425000E 02	0.1437500E 02	0.1400000E 02	0.1400000E 02	0.1500000E 02	0.1500000E 02	0.1512500E 02
0.1500000E 02	0.1475000E 02	0.1475000E 02	0.1450000E 02	0.1437500E 02	0.1400000E 02	0.1425000E 02
0.1425000E 02	0.1425000E 02	0.1400000E 02	0.1347500E 02	0.1400000E 02	0.1400000E 02	0.1400000E 02
0.1412500E 02	0.1400000E 02	0.1375000E 02	0.1375000E 02	0.1412500E 02	[illegible]	[illegible]
0.1400000E 02	0.1462500E 02	0.1450000E 02	0.1450000E 02	0.1450000E 02	0.1475000E 02	0.1450000E 02
0.1462500E 02	0.1487500E 02	0.1575000E 02	0.1462500E 02	0.1675000E 02	[illegible]	[illegible]
0.1600000E 02	0.1600000E 02					

DAILY CLOSING PRICE SERIES FOR SHAW PIPE. 1971.

0.9750000E 01	0.9875000E 01	0.1000000E 02	0.1037500E 02	0.1012500E 02	0.1000000E 02	0.1012500E 02
0.1000000E 02	0.1012500E 02	0.1000000E 02	0.1025000E 02	0.1087500E 02	0.1062500E 02	0.1075000E 02
0.1050000E 02	0.1075000E 02	0.1050000E 02	0.1050000E 02	0.1050000E 02	0.1075000E 02	0.1075000E 02
0.1050000E 02	0.1025000E 02	0.1000000E 02	0.1000000E 02	0.1000000E 02	0.9875000E 01	0.9750000E 01
0.9625000E 01	0.9625000E 01	0.9750000E 01	0.9813000E 01	0.9813000E 01	0.97[illegible]E 01	[illegible]
0.9750000E 01	0.9500000E 01	0.9625000E 01	0.9500000E 01	0.9250000E 01	0.9313000E 01	0.9125000E 01
0.9000000E 01	0.9000000E 01	0.9000000E 01	0.8625000E 01	0.8625000E 01	0.8875000E 01	0.8[illegible]E 01
0.8625000E 01	0.8500000E 01	0.8750000E 01	0.8750000E 01	0.9[illegible]E 01	0.92[illegible]E 01	0.925[illegible]E 01
0.8875000E 01	0.8875000E 01	0.8875000E 01	0.9000000E 01	0.8625000E 01	0.8[illegible]E 01	0.8875000E 01
0.8625000E 01	0.8750000E 01	0.9000000E 01	0.9125000E 01	0.9[illegible]E 01	0.875[illegible]E 01	0.9[illegible]E 01
0.9300000E 01	0.9125000E 01	0.9300000E 01	0.9775000E 01	0.9250000E 01	0.9[illegible]E 01	0.9625000E 01
0.9750000E 01	0.9500000E 01	0.9500000E 01	0.9500000E 01	0.9375000E 01	0.9375000E 01	0.9375000E 01
0.9375000E 01	0.9125000E 01	0.9250000E 01	0.9125000E 01	0.9250000E 01	0.9125000E 01	0.9125000E 01
0.8375000E 01	0.8875000E 01	0.8875000E 01	0.8875000E 01	0.8875000E 01	0.9125000E 01	0.9[illegible]E 01
0.8875000E 01	0.8875000E 01	0.8875000E 01	0.8675000E 01	0.8500000E 01	0.8[illegible]E 01	[illegible]
0.8375000E 01	0.8375000E 01	0.8250000E 01	0.8125000E 01	0.8125000E 01	0.8375000E 01	0.8125000E 01
0.8500000E 01	0.8750000E 01	0.8250000E 01	0.8250000E 01	0.8500000E 01	0.8625000E 01	[illegible]
0.8625000E 01	0.8250000E 01	0.8250000E 01	0.8313000E 01	0.8375000E 01	0.8313000E 01	0.8250000E 01
0.8250000E 01	0.8500000E 01	0.8750000E 01	0.8625000E 01	0.8875000E 01	0.9[illegible]E 01	0.9[illegible]E 01
0.8875000E 01	0.9250000E 01	0.9375000E 01	0.9500000E 01	0.9250000E 01	0.9[illegible]E 01	[illegible]
0.1000000E 02	0.1025000E 02	0.1037500E 02	0.1037500E 02	0.10[illegible]E 02	0.1[illegible]E 02	0.987[illegible]E 01
0.9750000E 01	0.9500000E 01	0.9375000E 01	0.9375000E 01	0.9625000E 01	[illegible]	[illegible]
0.9750000E 01	0.9625000E 01	0.9875000E 01	0.9375000E 01	0.9375000E 01	0.962[illegible]E 01	0.9[illegible]E 01
0.9500000E 01	0.9438000E 01	0.9625000E 01	0.9375000E 01	0.9375000E 01	0.9375000E 01	0.9375000E 01
0.9125000E 01	0.9000000E 01	0.9000000E 01	0.9000000E 01	0.9250000E 01	0.9250000E 01	0.9000000E 01
0.9000000E 01	0.8875000E 01	0.9000000E 01	0.9000000E 01	0.9250000E 01	0.9[illegible]E 01	0.9250000E 01
0.9250000E 01	0.9250000E 01	0.9250000E 01	0.9250000E 01	0.8875000E 01	0.8875000E 01	0.8625000E 01
0.8500000E 01	0.8375000E 01	0.8375000E 01	0.8375000E 01	0.8500000E 01	0.8375000E 01	0.8375000E 01
0.8375000E 01	0.8250000E 01	0.8125000E 01	0.7750000E 01	0.7938000E 01	0.8[illegible]E 01	0.787[illegible]E 01
0.7875000E 01	0.8000000E 01	0.8000000E 01	0.7750000E 01	0.7875000E 01	0.78[illegible]E 01	0.7875000E 01
0.7875000E 01	0.7875000E 01	0.7625000E 01	0.7875000E 01	0.7750000E 01	0.8125000E 01	0.8250000E 01
0.8250000E 01	0.8125000E 01	0.8000000E 01	0.8000000E 01	0.7875000E 01	0.7875000E 01	0.7875000E 01
0.7375000E 01	0.7875000E 01	0.7875000E 01	0.7625000E 01	0.7625000E 01	0.77[illegible]E 01	0.75[illegible]E 01
0.7625000E 01	0.7750000E 01	0.7500000E 01	0.7250000E 01	0.7500000E 01	0.7375000E 01	0.7313000E 01
0.7250000E 01	0.7500000E 01	0.7750000E 01	0.7750000E 01	0.7875000E 01	0.8[illegible]E 01	0.8[illegible]E 01
0.8250000E 01	0.8000000E 01	0.8000000E 01	0.8000000E 01	0.8500000E 01	0.8[illegible]E 01	0.875[illegible]E 01
0.9000000E 01	0.9125000E 01					

DAILY CLOSING PRICE SERIES FOR VAN NESS.
1971.

0.7300000E 02	0.6800000E 02	0.7100000E 02	0.7300000E 02	0.9000000E 02	0.9400000E 02	0.9[illegible]E 02
0.8700000E 02	0.1000000E 03	0.1200000E 03	0.1200000E 03	0.1150000E 03	0.1100000E 03	0.1100000E 03
0.1200000E 03	0.1200000E 03	0.1150000E 03	0.1100000E 03	0.1200000E 03	0.1150000E 03	0.1150000E 03
0.1150000E 03	0.1150000E 03	0.1100000E 03	0.1050000E 03	0.1000000E 03	0.1[illegible]E 03	0.91[illegible]E 02
0.1100000E 03	0.1100000E 03	0.1150000E 03	0.1[illegible]E 03	0.1[illegible]E 03	0.1[illegible]E 03	0.9[illegible]E 02
0.9500000E 02	0.9500000E 02	0.9500000E 02	0.9600000E 02	0.9000000E 02	0.9[illegible]E 02	0.87[illegible]E 02
0.8700000E 02	0.8600000E 02	0.8250000E 02	0.8700000E 02	0.9000000E 02	0.8[illegible]E 02	0.8[illegible]E 02
0.8300000E 02	0.8500000E 02	0.8500000E 02	0.8500000E 02	0.8000000E 02	0.8[illegible]E 02	0.79[illegible]E 02
0.8500000E 02	0.8500000E 02	0.8[illegible]E 02	0.8200000E 02	0.8200000E 02	0.9[illegible]E 02	0.9[illegible]E 02
0.1050000E 03	0.9500000E 02	0.9500000E 02	0.9[illegible]E 02	0.9200000E 02	0.92[illegible]E 02	[illegible]
0.9200000E 02	0.9450000E 02	0.9700000E 02	0.1[illegible]E 03	0.9[illegible]E 02	[illegible]	[illegible]
0.9500000E 02	0.9500000E 02	0.9100000E 02	0.8500000E 02	0.8700000E 02	0.87[illegible]E 02	[illegible]
0.9500000E 02	0.9000000E 02	0.9150000E 02	0.8900000E 02	0.8500000E 02	0.8[illegible]E 02	[illegible]
0.8100000E 02	0.8100000E 02	0.7700000E 02	0.7600000E 02	0.7800000E 02	0.8[illegible]E 02	0.77[illegible]E 02
0.7850000E 02	0.8150000E 02	0.8000000E 02	0.8250000E 02	0.8000000E 02	0.75[illegible]E 02	0.71[illegible]E 02
0.8500000E 02	0.8100000E 02	0.8100000E 02	0.7500000E 02	0.7500000E 02	0.76[illegible]E 02	0.7[illegible]E 02
0.8200000E 02	0.8400000E 02	0.8200000E 02	0.8200000E 02	0.8250000E 02	0.77[illegible]E 02	[illegible]
0.7500000E 02	0.7500000E 02	0.7700000E 02	0.7600000E 02	0.7500000E 02	0.75[illegible]E 02	0.7[illegible]E 02
0.7500000E 02	0.7500000E 02	0.7300000E 02	0.7000000E 02	0.7100000E 02	0.71[illegible]E 02	0.775[illegible]E 02
0.7350000E 02	0.7350000E 02	0.7100000E 02	0.7300000E 02	0.7100000E 02	0.72[illegible]E 02	0.77[illegible]E 02
0.7100000E 02	0.7100000E 02	0.7600000E 02	0.7200000E 02	0.7250000E 02	0.75[illegible]E 02	0.75[illegible]E 02
0.7400000E 02	0.7400000E 02	0.7450000E 02	0.7450000E 02	0.7300000E 02	0.75[illegible]E 02	[illegible]
0.7350000E 02	0.7500000E 02	0.8000000E 02	0.8000000E 02	0.8[illegible]E 02	0.7[illegible]E 02	0.7[illegible]E 02
0.8000000E 02	0.8100000E 02	0.7350000E 02	0.6900000E 02	0.7350000E 02	0.7[illegible]E 02	0.71[illegible]E 02
0.7500000E 02	0.7600000E 02	0.7300000E 02	0.7500000E 02	0.7500000E 02	0.75[illegible]E 02	0.75[illegible]E 02
0.7300000E 02	0.7100000E 02	0.7700000E 02	0.6800000E 02	0.6[illegible]E 02	0.6[illegible]E 02	[illegible]
0.6750000E 02	0.6950000E 02	0.6950000E 02	0.6950000E 02	0.6600000E 02	0.57[illegible]E 02	0.6[illegible]E 02
0.6300000E 02	0.6000000E 02	0.5900000E 02	0.5550000E 02	0.5500000E 02	0.51[illegible]E 02	[illegible]
0.5900000E 02	0.7100000E 02	0.7700000E 02	0.7500000E 02	0.8500000E 02	0.87[illegible]E 02	[illegible]
0.8650000E 02	0.8550000E 02	0.8550000E 02	0.8[illegible]E 02	0.8[illegible]E 02	0.7[illegible]E 02	0.7[illegible]E 02
0.9000000E 02	0.8250000E 02	0.8000000E 02	0.8500000E 02	0.8[illegible]E 02	0.87[illegible]E 02	0.8[illegible]E 02
0.8600000E 02	0.8[illegible]E 02	0.8500000E 02	0.9[illegible]E 02	0.8500000E 02	0.8[illegible]E 02	0.8[illegible]E 02
0.8550000E 02	0.8300000E 02	0.8300000E 02	0.8500000E 02	0.8[illegible]E 02	0.8[illegible]E 02	[illegible]
0.8300000E 02	0.8000000E 02	0.8000000E 02	0.7500000E 02	0.7500000E 02	0.775[illegible]E 02	0.77[illegible]E 02
0.7750000E 02	0.7200000E 02	0.7500000E 02	0.7750000E 02	0.7400000E 02	0.77[illegible]E 02	[illegible]
0.8500000E 02	0.8100000E 02	0.8300000E 02	0.8500000E 02	0.7700000E 02	0.75[illegible]E 02	0.77[illegible]E 02
0.7500000E 02	0.7400000E 02					

DAILY CLOSING PRICE SERIES FOR WEST MINE.
1971.

0.3850000E 03	0.3750000E 03	0.3750000E 03	0.3950000E 03	0.3950000E 03	0.39[illegible]E 03	0.4[illegible]E 03
0.3900000E 03	0.3900000E 03	0.3850000E 03	0.3650000E 03	0.3700000E 03	0.36[illegible]E 03	0.3450000E 03
0.3450000E 03	0.3700000E 03	0.3500000E 03	0.3450000E 03	0.3450000E 03	0.355[illegible]E 03	0.35[illegible]E 03
0.3450000E 03	0.3400000E 03	0.3400000E 03	0.3400000E 03	0.3300000E 03	0.33[illegible]E 03	0.33[illegible]E 03
0.3350000E 03	0.3350000E 03	0.3450000E 03	0.3450000E 03	0.3450000E 03	0.34[illegible]E 03	0.34[illegible]E 03
0.3300000E 03	0.3350000E 03	0.3350000E 03	0.3300000E 03	0.3350000E 03	0.32[illegible]E 03	0.33[illegible]E 03
0.3250000E 03	0.3250000E 03	0.3250000E 03	0.3250000E 03	0.3350000E 03	0.35[illegible]E 03	0.35[illegible]E 03
0.3600000E 03	0.3600000E 03	0.3750000E 03	0.3900000E 03	0.3850000E 03	[illegible]	0.3[illegible]E 03
0.3850000E 03	0.3700000E 03	0.3650000E 03	0.3700000E 03	0.3650000E 03	0.35[illegible]E 03	0.37[illegible]E 03
0.3550000E 03	0.3750000E 03	0.3750000E 03	0.3750000E 03	0.3800000E 03	0.37[illegible]E 03	0.375[illegible]E 03
0.3700000E 03	0.3750000E 03	0.3750000E 03	0.3700000E 03	0.3600000E 03	[illegible]	0.34[illegible]E 03
0.3450000E 03	0.3500000E 03	0.3500000E 03	0.3450000E 03	0.3400000E 03	0.345[illegible]E 03	0.34[illegible]E 03
0.3400000E 03	0.3450000E 03	0.3400000E 03	0.3400000E 03	0.3350000E 03	0.3[illegible]E 03	0.3[illegible]E 03
0.3350000E 03	0.3350000E 03	0.3300000E 03	0.3400000E 03	0.3350000E 03	0.33[illegible]E 03	0.3[illegible]E 03
0.3250000E 03	0.3300000E 03	0.3350000E 03	0.3250000E 03	0.3250000E 03	0.32[illegible]E 03	0.3[illegible]E 03
0.3200000E 03	0.3150000E 03	0.3100000E 03	0.3150000E 03	0.3200000E 03	0.31[illegible]E 03	0.3[illegible]E 03
0.3250000E 03	0.3500000E 03	0.3500000E 03	0.3400000E 03	0.3400000E 03	0.34[illegible]E 03	[illegible]
0.3400000E 03	0.3400000E 03	0.3350000E 03	0.3350000E 03	0.3350000E 03	0.33[illegible]E 03	0.33[illegible]E 03
0.3300000E 03	0.3400000E 03	0.3300000E 03	0.3300000E 03	0.3350000E 03	0.33[illegible]E 03	0.33[illegible]E 03
0.3300000E 03	0.3250000E 03	0.3350000E 03	0.3300000E 03	0.3250000E 03	0.3[illegible]E 03	0.32[illegible]E 03
0.3350000E 03	0.3250000E 03	0.3250000E 03	0.3200000E 03	0.3250000E 03	0.32[illegible]E 03	0.32[illegible]E 03
0.3250000E 03	0.3200000E 03	0.3150000E 03	0.3150000E 03	0.3150000E 03	0.3[illegible]E 03	0.3[illegible]E 03
0.3100000E 03	0.3050000E 03	0.3050000E 03	0.3200000E 03	0.3150000E 03	0.3[illegible]E 03	0.3[illegible]E 03
0.3100000E 03	0.3050000E 03	0.3000000E 03	0.3100000E 03	0.3000000E 03	0.29[illegible]E 03	0.2975[illegible]E 03
0.2950000E 03	0.2900000E 03	0.2890000E 03	0.2850000E 03	0.2810000E 03	0.2[illegible]E 03	0.29[illegible]E 03
0.3005000E 03	0.2910000E 03	0.3000000E 03	0.2910000E 03	0.2970000E 03	0.29[illegible]E 03	0.29[illegible]E 03
0.2990000E 03	0.2990000E 03	0.3050000E 03	0.3050000E 03	0.2990000E 03	0.2[illegible]E 03	0.29[illegible]E 03
0.2900000E 03	0.2900000E 03	0.2850000E 03	0.2850000E 03	0.2850000E 03	0.28[illegible]E 03	0.28[illegible]E 03
0.2680000E 03	0.2550000E 03	0.2500000E 03	0.2650000E 03	0.2650000E 03	0.2[illegible]E 03	0.2[illegible]E 03
0.2600000E 03	0.2500000E 03	0.2350000E 03	0.2200000E 03	0.2300000E 03	0.24[illegible]E 03	0.24[illegible]E 03
0.2410000E 03	0.2300000E 03	0.2300000E 03	0.2350000E 03	0.2350000E 03	0.23[illegible]E 03	0.23[illegible]E 03
0.2330000E 03	0.2350000E 03	0.2330000E 03	0.2375000E 03	0.2400000E 03	0.245[illegible]E 03	0.2[illegible]E 03
0.2500000E 03	0.2500000E 03	0.2510000E 03	0.2420000E 03	0.2450000E 03	0.244[illegible]E 03	0.2321[illegible]E 03
0.2300000E 03	0.2250000E 03	0.2250000E 03	0.2225000E 03	0.2200000E 03	0.24[illegible]E 03	0.23[illegible]E 03
0.2390000E 03	0.2390000E 03	0.2350000E 03	0.2350000E 03	0.2350000E 03	0.231[illegible]E 03	0.2[illegible]E 03
0.2500000E 03	0.2410000E 03	0.2550000E 03	0.2350000E 03	0.2475000E 03	0.24[illegible]E 03	0.2540[illegible]E 03
0.2550000E 03	0.2650000E 03					

APPENDIX 2

List of Programs for Calculating the
Geometric Mean Returns under the Buy-and-Hold Policy,
the Filter Technique and the Average Long Position Policy

```
/COMPILE
C       PROGRAM FOR FILTER,AVERAGE L.P. AND BUY-AND-HOLD STRATEGIES.
C       ALBERTA TEUNG GAS. 1970
C       RETURNS FROM FILTER RULE WITHOUT ADJUSTMENT FOR COMMISSION.
        INTEGER T,L,K,M,Q,TJ,LJ,TTD,SUMST,NSD,NTD
        DIMENSION RET(30)
        DIMENSION X(30)
        DIMENSION SUMT(30)
        DIMENSION P(300),F(300),D(300)
        DIMENSION NTD(300),NSD(300),YL(300),YS(300)
        REAL TRATE,LRATE,RATES,NRATE,NRAT,HLP,LSP
        DIMENSION RAAT(50)
        DIMENSION RPR(300),DRPR(300)
        DIMENSION RRAT(50)
        DIMENSION YCB(300),NSSD(200),ALY(200)
        DIMENSION YBS(300),REET(30)
        ND=253
        DO 5566 I=1,ND
  5566  READ(5,5567)RPR(I),DRPR(I)
  5567  FORMAT(F10.8,3X,F3.2)
C       READING IN STOCK PRICE ONE AT A TIME.
        DO 100 I=1,ND
   100  READ(5,101)P(I),F(I),D(I)
   101  FORMAT(16X,F8.4,4X,F5.3,4X,F5.3)
        DO 330 IP=1,12
   330  READ(5,333)X(IP)
   333  FORMAT(F5.3)
        REFLP=0.00
        T=1
        II=1
        LSP=0.000
        HLP=0.000
        L=1
        I=1
        LL=1
        III=1
        NT=0
        NNT=0
        IP=1
        M=0
        DIV=0.000
        K=0
C       EVALUATING WHETHER INITIAL POSITIONS HAS BEEN TAKEN UP OR NOT.
     6  IF(M.EQ.1)GO TO 2
C       KEEPING THE VALUE OF P(1) AS THE FIRST REFERENCE POINT.
        IF(K.EQ.1)GO TO 9
        REFPI=P(I)*F(I)
        K=1
        I=I+1
        GO TO 6
C       EVALUATING WHETHER LONG OR SHORT POSITION IS TO BE TAKEN UP.
     9  IF(P(I)*F(I).LT.REFPI)GO TO 4
        PERI=(P(I)*F(I)-REFPI)/(REFPI)
        IF(PERI.LT.X(IP))GO TO 5
C       LONG POSITION TO BE OPENED
        REFLP=P(I)*F(I)
        HLP=P(I)*F(I)
        M=1
        Q=I
        DIV=D(I)
```

```
          1
          1
          O 6
          S=(REFPI-P(I)*F(I))/(REFPI)
          (PERS.LT.X(IP)) GO TO 5
C         SHORT POSITION TO BE OPENED
          REFSP=P(I)*F(I)
          LSP=P(I)*F(I)
          NSSD(LL)=DEFR(I)
          YCR(LL)=RFR(I)
          LL=LL+1
          M=1
          Q=I
          I=I+1
          LPTU=0
          GO TO 6
C         NO POSITION TO BE TAKEN UP . ANOTHER PRICE MOVEMENT TO BE INTIATED.
        5 I=I+1
          GO TO 6
C         EVALUATING WHETHER LONG(SHORT) POSITION TO REMAIN CLOSED OR OPENED.
        2 IF(LPTU.EQ.0)GO TO 20
          EVALUATING WHETHER LONG POSITION TO REMAIN OPEN OR CLOSE OR A NEW
          REFERENCE PEAK FORMED.
          IF(P(I)*F(I).LT.HLP)GO TO 15
          HLP=P(I)*F(I)
          IF(I.EQ.ND)GO TO 2600
       14 DIV=DIV+D(I)
          I=I+1
          GO TO 6
C         EVALUATING IF P(I) HAS DROPPED X% FROM HLP.
       15 PERLP=(HLP-P(I)*F(I))/(HLP)
          IF(PERLP.LT.X(IP))GO TO 16
          COMPUTING RATE OF RETURN FROM LONG POSITION.
          DIV=DIV+D(I)
          REFLT=(DIV+P(I)*F(I)-REFLP)/(REFLP)
          YL(T)=REFLT+1
          DEFLT=ABS(REFLT)
          ALY(T)=(1+REFLT)-(0.1*DEFLT)
          NT=NT+1
          NTD(T)=I-Q
          Q=I
          IF(I.EQ.ND)GO TO 2800
          T=T+1
          REFSP=P(I)*F(I)
          LSP=P(I)*F(I)
          I=I+1
          REFLP=0
          HLP=0
          LPTU=0
          GO TO 6
       16 IF(I.EQ.ND)GO TO 2600
          DIV=DIV+D(I)
          I=I+1
          GO TO 6
C         EVALUATING WHETHER SHORT POSITION TO REMAIN CLOSED OR OPENED.
       20 IF(P(I)*F(I).GT.LSP)GO TO 19
          YCR(LL)=RFR(I)
          NSSD(LL)=DRFR(I)
          LL=LL+1
          LSP=P(I)*F(I)
```

```
      IF(I.EQ.ND)GO TO 2700
      I=I+1
      GO TO 6
   19 PERSP=(P(I)*F(I)-LSP)/(LSP)
      IF(PERSP.LT.X(IP))GO TO 22
C     COMPUTING RETURNS FROM SHORT POSITION.
      PRISP=((P(I)*F(I))-(REFSP+D(I)))/(REFSP)
      YS(L)=1-PRISP
      YBS(I)=1+PRISP
      NNT=LNT+1
      NSD(L)=I-Q
      Q=I
      IF(I.EQ.ND)GO TO 2900
      L=L+1
      HLP=P(I)*F(I)
      REFLP=P(I)*F(I)
      DIV=D(I)
      I=I+1
      LPTU=1
      LSP=0
      REFSP=0
      CONTINUE
      GO TO 6
   22 IF(I.EQ.ND)GO TO 2700
      YCR(IL)=FER(I)
      NSSD(LL)=DEFR(I)
      LL=LL+1
      I=I+1
      GO TO 6
 2600 T=T-1
 2800 L=L-1
      LL=LL-1
      GO TO 2000
 2700 L=L-1
      LL=LL-1
 2900 T=T-1
      GO TO 2000
C     COMPUTING THE NUMBERS OF LONG TRADING DAYS
 2000 SUMLT=0
      DO 205 TJ=1,T
  205 SUMLT=SUMLT+NTD(TJ)
      SUMST=0
      DO 206 LJ=1,L
  206 SUMST=SUMST+NSD(LJ)
      TTD=SUMLT+SUMST
C     COMPUTING RETURNS FROM LONG POSITIONS ONLY.
      RLONG=1
      DO 207 TJ=1,T
  207 RLONG=RLONG*YL(TJ)
      RRATE=(RLONG**(1./SUMLT))-1
C     COMPUTING RETURNS FROM SHORT POSITIONS ONLY.
      SHOR=1
      DO 208 LJ=1,L
  208 SHOR=SHOR*YS(LJ)
      RATES=(SHOR**(1./SUMST))-1
C     COMPUTING NOMINAL ANNUAL RATE OF RETURNS USING THE FILTER RULE.
      TRATE=RLONG*SHOR
      NRATE=(TRATE**(1./TTD))-1
      RET(II)=NRATE
      PRINT880,X(IP)
```

```
  880 FORMAT(F5.3)
      PRINT53
   53 FORMAT(' ','OVERALL RETURNS FROM LONGS')
      WRITE(6,54)RRATE
   54 FORMAT(' ',20X,F15.10)
      PRINT56
   56 FORMAT(' ','OVERALL RATES OF RETURNS FROM SHORT POSITION')
      WRITE(6,57)RATES
   57 FORMAT(' ',20X,F15.10)
      PRINT58
   58 FORMAT(' ','OVERALL RATES OF RETURNS FROM FILTER RULES')
      WRITE(6,59)NRATE
   59 FORMAT(' ',20X,F15.10)
      AFLP=SUMLT/NT
      PRINT522
  522 FORMAT(' ','AVERAGE LENGTH OF L.P. TRANSACTIONS.')
      WRITE(6,544)AFLP
  544 FORMAT(' ',20X,F15.10)
      AFSP=SUMST/NNT
      PRINT533
  533 FORMAT(' ','AVERAGE LENGTH S.P.TRANSACTION.')
      WRITE(6,589)AFSP
  589 FORMAT(' ',20X,F15.10)
      TTDN=NT+NNT
      PRINT117
  117 FORMAT(' ','TOTAL NO OF TRANSACTIONS.')
      WRITE(6,668)TTDN
  668 FORMAT(' ',20X,F15.10)
      BHRS=1
      DO 210 LJ=1,L
  210 BHRS=BHRS*YBS(LJ)
      BHR=RLONG*BHRS
      BHRR=(BHR**(1./TTD))-1.
      REET(III)=BHRR
      PRINT990,X(IP)
  990 FORMAT(F5.3)
      PRINT80
   80 FORMAT(' ','RETURNS FROM BUY-AND-HOLD STRATEGY.')
      WRITE(6,241)BHRR
  241 FORMAT(' ',20X,F15.10)
C     COMPUTING ANNUAL A.L.P.RETURNS.
      ALTD=0
      DO 266 LJ=1,LL
  266 ALTD=ALTD+NSSD(LL)
      ALRR=1
      DO 285 LJ=1,LL
  285 ALRR=ALRR*YCR(LL)
      ALCP=1
      DO 940 LJ=1,T
  940 ALCP=ALCP*ALY(LJ)
      ALPR=ALCP*ALRR
      TCD=SUMLT+ALTD
      CTALP=(ALPR**(1./TCD))-1
      PRINT633
  633 FORMAT(' ','OVERALL A.L.P.RETURNS.')
      WRITE(6,547)CTALP
  547 FORMAT(' ',20X,F15.10)
      REAT(II)=CTALP
C     CALCULATING A.L.P.RETURNS UNADJUSTED FOR CLEARINGHOUSE FEES.
      SSS=RLONG*ALRR
```

```
      ALPCF=(SSS**(1./TCD))-1
      PRINT600
  600 FORMAT(' ','A.L.P.RETURNS UNADJUSTED FOR CLEARINGHOUSE FEES.')
      WRITE(6,154)ALPCF
  154 FORMAT(' ',20X,F15.10)
      RAAT(II)=ALPCF
      LL=1
      NNT=0
      TTDN=0
      NT=0
      III=III+1
      IF(IP.EQ.12)GO TO 6000
      IP=IP+1
      LIPTU=0
      DIV=0
      K=0
      REFLP=0
      L=1
      M=0
      I=1
      T=1
      II=II+1
      GO TO 6
 6000 CONTINUE
C     COMPUTING THE AVERAGE RETURN FROM FILTER RULE OVER ALL FILTERS.
      AVR=0
      DO 5050 II=1,12
 5050 AVR=AVR+RET(II)
      AVRR=AVR/12
      PRINT5051
 5051 FORMAT(' ','AVERAGE RETURN FROM FILTER RULE OVER ALL FILTERS.')
      WRITE(6,5052)AVRR
 5052 FORMAT(' ',10X,F15.10)
C     COMPUTING THE AVERAGE RETURNS FROM BUY-AND-HOLD STRATEGY.
      AVRB=0
      DO 5055 III=1,12
 5055 AVRB=AVRB+REFT(III)
      AVB=AVRB/12
      PRINT5066
 5066 FORMAT(' ','MEAN BUY-AND-HOLD RETURNS.')
      WRITE(6,5111)AVB
 5111 FORMAT(' ',20X,F15.10)
C     COMPUTING THE A.L.P.RETURN AVERAGE OVER ALL FILTERS.
      AMR=0
      DO 5057 II=1,12
 5057 AMR=AMR+REAT(II)
      AMRR=AMR/12
      PRINT5058
 5058 FORMAT(' ','AVERAGE RETURN FROM A.L.P.STRATEGY.')
      WRITE(6,5007)AMRR
 5007 FORMAT(' ',10X,F15.10)
C     COMPUTING A.L.P.AVERAGE RETURNS UNADJUSTED FOR CLEARINGHOUSE FEES.
      AMM=0
      DO 5501 II=1,12
 5501 AMM=AMM+RAAT(II)
      AM=AMM/12
      PRINT1505
 1505 FORMAT(' ','UNADJUSTED A.L.P.AVERAGE RETURNS.')
      WRITE(6,007)AM
  007 FORMAT(' ',10X,F15.10)
```

```
273          STOP
274          END

     /EXECUTE
```

```
.005
OVERALL RETURNS FROM LONGS
                        0.0013217920
OVERALL RATES OF RETURNS FROM SHORT POSITION
                       -0.0007453561
OVERALL RATES OF RETURNS FROM FILTER RULES
                        0.0004892349
AVERAGE LENGTH OF L.P. TRANSACTIONS.
                        3.4090900000
AVERAGE LENGTH S.P.TRANSACTION.
                        2.0000000000
TOTAL NO OF TRANSACTIONS.
                       88.0000000000

.005
RETURNS FROM BUY-AND-HOLD STRATEGY.
                        0.0010309210
OVERALL A.L.P.RETURNS.
                        0.0006418228
A.L.P.RETURNS UNADJUSTED FOR CLEARINGHOUSE FEES.
                        0.0009918213

.010
OVERALL RETURNS FROM LONGS
                        0.0012168880
OVERALL RATES OF RETURNS FROM SHORT POSITION
                       -0.0009183884
OVERALL RATES OF RETURNS FROM FILTER RULES
                        0.0003242493
AVERAGE LENGTH OF L.P. TRANSACTIONS.
                        5.3703690000
AVERAGE LENGTH S.P.TRANSACTION.
                        3.0000000000
TOTAL NO OF TRANSACTIONS.
                       54.0000000000

.010
RETURNS FROM BUY-AND-HOLD STRATEGY.
                        0.0010414120
OVERALL A.L.P.RETURNS.
                        0.0005865097
A.L.P.RETURNS UNADJUSTED FOR CLEARINGHOUSE FEES.
                        0.0008401871

.015
OVERALL RETURNS FROM LONGS
                        0.0007247925
OVERALL RATES OF RETURNS FROM SHORT POSITION
                       -0.0025049440
OVERALL RATES OF RETURNS FROM FILTER RULES
                       -0.0003572702
AVERAGE LENGTH OF L.P. TRANSACTIONS.
                        7.5000000000
AVERAGE LENGTH S.P.TRANSACTION.
                        3.0000000000
```

TOTAL NO OF TRANSACTIONS.
44.0000000000

.015
RETURNS FROM BUY-AND-HOLD STRATEGY.
0.0012760160
OVERALL A.L.P.RETURNS.
0.0003099442
A.L.P.RETURNS UNADJUSTED FOR CLEARINGHOUSE FEES.
0.0005655289

.020
OVERALL RETURNS FROM LONGS
0.0011777370
OVERALL RATES OF RETURNS FROM SHORT POSITION
-0.0015900130
OVERALL RATES OF RETURNS FROM FILTER RULES
0.0003061295
AVERAGE LENGTH OF L.P. TRANSACTIONS.
11.3333300000
AVERAGE LENGTH S.P.TRANSACTION.
5.0000000000
TOTAL NO OF TRANSACTIONS.
30.0000000000

.020
RETURNS FROM BUY-AND-HOLD STRATEGY.
0.0012722010
OVERALL A.L.P.RETURNS.
0.0006694794
A.L.P.RETURNS UNADJUSTED FOR CLEARINGHOUSE FEES.
0.0008945465

.025
OVERALL RETURNS FROM LONGS
0.0011520380
OVERALL RATES OF RETURNS FROM SHORT POSITION
-0.0014868370
OVERALL RATES OF RETURNS FROM FILTER RULES
0.0001716614
AVERAGE LENGTH OF L.P. TRANSACTIONS.
14.1818100000
AVERAGE LENGTH S.P.TRANSACTION.
8.0000000000
TOTAL NO OF TRANSACTIONS.
22.0000000000

.025
RETURNS FROM BUY-AND-HOLD STRATEGY.
0.0012445440
OVERALL A.L.P.RETURNS.
0.0006084442
A.L.P.RETURNS UNADJUSTED FOR CLEARINGHOUSE FEES.
0.0008039474

.030
OVERALL RETURNS FROM LONGS
0.0011348720
OVERALL RATES OF RETURNS FROM SHORT POSITION
-0.0019225470

OVERALL RATES OF RETURNS FROM FILTER RULES
0.0000276566
AVERAGE LENGTH OF L.P. TRANSACTIONS.
19.6250000000
AVERAGE LENGTH S.P.TRANSACTION.
9.0000000000
TOTAL NO OF TRANSACTIONS.
17.0000000000

.030
RETURNS FROM BUY-AND-HOLD STRATEGY.
0.0013589850
OVERALL A.L.P.RETURNS.
0.0004281998
A.L.P.RETURNS UNADJUSTED FOR CLEARINGHOUSE FEES.
0.0005178452

.035
OVERALL RETURNS FROM LONGS
0.0014781950
OVERALL RATES OF RETURNS FROM SHORT POSITION
-0.0009934902
OVERALL RATES OF RETURNS FROM FILTER RULES
0.0001077652
AVERAGE LENGTH OF L.P. TRANSACTIONS.
15.5000000000
AVERAGE LENGTH S.P.TRANSACTION.
15.0000000000
TOTAL NO OF TRANSACTIONS.
9.0000000000

.035
RETURNS FROM BUY-AND-HOLD STRATEGY.
0.0011482230
OVERALL A.L.P.RETURNS.
0.0006313324
A.L.P.RETURNS UNADJUSTED FOR CLEARINGHOUSE FEES.
0.0007667542

.040
OVERALL RETURNS FROM LONGS
0.0008239746
OVERALL RATES OF RETURNS FROM SHORT POSITION
-0.0002157092
OVERALL RATES OF RETURNS FROM FILTER RULES
0.0002737045
AVERAGE LENGTH OF L.P. TRANSACTIONS.
24.5000000000
AVERAGE LENGTH S.P.TRANSACTION.
18.0000000000
TOTAL NO OF TRANSACTIONS.
5.0000000000

.040
RETURNS FROM BUY-AND-HOLD STRATEGY.
0.0004777908
OVERALL A.L.P.RETURNS.
0.0003519058
A.L.P.RETURNS UNADJUSTED FOR CLEARINGHOUSE FEES.
0.0004806519

.045
OVERALL RETURNS FROM LONGS
0.0007324219
OVERALL RATES OF RETURNS FROM SHORT POSITION
-0.0003272295
OVERALL RATES OF RETURNS FROM FILTER RULES
0.0001411438
AVERAGE LENGTH OF L.P. TRANSACTIONS.
23.0000000000
AVERAGE LENGTH S.P.TRANSACTION.
19.0000000000
TOTAL NO OF TRANSACTIONS.
5.0000000000

.045
RETURNS FROM BUY-AND-HOLD STRATEGY.
0.0004777908
OVERALL A.L.P.RETURNS.
0.0002975464
A.L.P.RETURNS UNADJUSTED FOR CLEARINGHOUSE FEES.
0.0004196167

.050
OVERALL RETURNS FROM LONGS
-0.0007152557
OVERALL RATES OF RETURNS FROM SHORT POSITION
-0.0021894570
OVERALL RATES OF RETURNS FROM FILTER RULES
-0.0015438790
AVERAGE LENGTH OF L.P. TRANSACTIONS.
23.0000000000
AVERAGE LENGTH S.P.TRANSACTION.
19.0000000000
TOTAL NO OF TRANSACTIONS.
5.0000000000

.050
RETURNS FROM BUY-AND-HOLD STRATEGY.
0.0007829666
OVERALL A.L.P.RETURNS.
-0.0003427267
A.L.P.RETURNS UNADJUSTED FOR CLEARINGHOUSE FEES.
-0.0002295375

.060
OVERALL RETURNS FROM LONGS
-0.0007152557
OVERALL RATES OF RETURNS FROM SHORT POSITION
-0.0029590120
OVERALL RATES OF RETURNS FROM FILTER RULES
-0.0018254510
AVERAGE LENGTH OF L.P. TRANSACTIONS.
23.0000000000
AVERAGE LENGTH S.P.TRANSACTION.
15.0000000000
TOTAL NO OF TRANSACTIONS.
5.0000000000

.060
RETURNS FROM BUY-AND-HOLD STRATEGY.

```
                     0.0009422302
OVERALL A.L.P.RETURNS.
                    -0.0009422293
A.L.P.RETURNS UNADJUSTED FOR CLEARINGHOUSE FEES.
                    -0.0002912283

.070
OVERALL RETURNS FROM LONGS
                     0.0004405975
OVERALL RATES OF RETURNS FROM SHORT POSITION
                    -0.0025920739
OVERALL RATES OF RETURNS FROM FILTER RULES
                    -0.0007396380
AVERAGE LENGTH OF L.P. TRANSACTIONS.
                    50.0000000000
AVERAGE LENGTH S.P.TRANSACTION.
                    16.0000000000
TOTAL NO OF TRANSACTIONS.
                     3.0000000000

.070
RETURNS FROM BUY-AND-HOLD STRATEGY.
                     0.0011749260
OVERALL A.L.P.RETURNS.
                     0.0003070831
A.L.P.RETURNS UNADJUSTED FOR CLEARINGHOUSE FEES.
                     0.0003337860
AVERAGE RETURN FROM FILTER RULE OVER ALL FILTERS.
           -0.0002187242
MEAN BUY-AND-HOLD RETURNS.
                     0.0010190010
AVERAGE RETURN FROM A.L.P.STRATEGY.
           0.0003389418
UNADJUSTED A.L.P.AVERAGE RETURNS.
           0.0005078265

CORE USAGE        OBJECT CODE=    9248 BYTES,ARRAY AREA=    15680 BYTES,TOTAL AREA AVAI

DIAGNOSTICS         NUMBER OF ERRORS=        0, NUMBER OF WARNINGS=       0, NUMBER OF E

COMPILE TIME=     1.54 SEC,EXECUTION TIME=     4.05 SEC,  WATFIV - VERSION 1 LEVEL 3 M

       /BTCHEND
00:17.05 5.655 RC=0
```

APPENDIX 3

List of Geometric Mean Returns for the Filter Technique,
the Average Long Position Strategy and the Buy-and-Hold Strategy

APPENDIX 3

TABLE 3.1

Comparison of Rates of Return, under the Filter Technique ($\overset{*}{R}_i^{(j)}$), the Buy-and-Hold ($R_i^{(j)}$), and the Average Long Position ($\overset{**}{R}_i^{(j)}$) strategies 1970.

Filter Size	0.005				0.010			
Security	$R_i^{(j)}$	$\overset{*}{R}_i^{(j)}$	$\overset{**}{R}_i^{(j)}$	$\overset{***}{R}_i^{(j)}$	$R_i^{(j)}$	$\overset{*}{R}_i^{(j)}$	$\overset{**}{R}_i^{(j)}$	$\overset{***}{R}_i^{(j)}$
Abitibi	-.001876	-.002475	-.002426	-.002992	-.001872	-.003216	-.002868	-.003471
Acme G.	-.002574	-.010401	-.003914	-.004826	-.002573	-.010401	-.003914	-.004826
Alcan	-.000596	.000119*	-.000146*	-.000544*	-.00[illegible]96	-.000392	-.000424	-.000596
Alta G.T.	.001031	.000489	.000992	.000642	.001041	.000324	.000940	.000587
Armore	-.001366	-.012318	-.004680	-.005408	-.001366	-.012318	-.004680	-.005407
Broul R.	-.001723	-.014813	-.010658	-.012029	-.001723	-.014633	-.010481	-.011833
Carrier	-.00447	-.003213*	-.004080	-.004991	-.004472	-.002400	-.001764	-.002194
CD Sugars	-.000354	-.002108	-.001358*	-.001714*	-.000383	-.002155	-.001327	-.001679
C. Tires	.00564	-.001033	-.001033	-.001466	.000567	-.002949	-.000679	-.001018
Discovery	-.008950	-.006455*	-.006455*	-.007438*	-.000903	-.010649	-.007209	-.008197
Grandroy	-.002599	-.006010	-.006010	-.007342	-.002599	-.007969	-.006113	-.007452
G.L. Powers	-.000992	-.003212	-.003212	-.003812	-.000992	-.004188	-.003003	-.003551
Hand C.	-.002894	-.005877	-.005877	-.007190	-.002871	-.009465	-.007259	-.008595
Hudson B.	-.001084	-.000212*	.000212*	-.000034*	-.001120	.000506	-.000061	-.000259
Imperial O.	.000532	-.000434	-.000434	-.000103	.000532	-.002106	-.000801	-.001363
Maritime	.000817	-.004607	-.004607	-.005236	.000893	-.007326	-.003537	-.004393
Rothman	-.001946	-.003158	-.003158	-.004202	-.001945	-.000711	-.001218	-.001996
Shaw Pipe	-.001924	-.003924	-.003924	-.005115	-.001924	-.003518	-.003078	-.004168
Van Ness	-.004740	-.003301	-.003301	-.004982	-.004747	-.003484	-.003201	-.005079
West Mine	.002290	.000876	.000876	.000589	-.000107	.002296	.000376	.000599

APPENDIX 3

TABLE 3.2 (Cont'd)

Comparison of Rates of Return, under the Filter Technique ($\overset{*}{R}{}_i^{(j)}$), the Buy-and-Hold ($R_i^{(j)}$), and the Average Long Position ($\overset{**}{R}{}_i^{(j)}$) strategies 1970.

Filter Size	0.015				0.020			
Security	$R_i^{(j)}$	$\overset{*}{R}{}_i^{(j)}$	$\overset{**}{R}{}_i^{(j)}$	$\overset{***}{R}{}_i^{(j)}$	$R_i^{(j)}$	$\overset{*}{R}{}_i^{(j)}$	$\overset{**}{R}{}_i^{(j)}$	$\overset{***}{R}{}_i^{(j)}$
Abitibi	-.001731	-.002996	-.002638	-.003199	-.001741	-.004283	-.003189	-.003719
Acme G.	-.002573	-.010524	-.003977	-.004898	-.002573	-.010000	-.003732	-.004612
Alcan	-.000596	.000733	.000229	-.000011	-.000569	.000686	.000211	.000046
Alta G.T.	.001276	-.000357	.000565	.000310	.001272	.000306	.000894	.000669
Armore	-.001366	-.012211	-.004568	-.005282	-.001366	-.010172	-.003649	-.004239
Broul R.	-.001723	-.016041	-.011101	-.012456	-.001723	-.016723	-.010938	-.012212
Carrier	-.004472	-.003502	-.002119	-.002538	-.004472	-.004091	-.002228	-.002622
CD Sugars	-.000334	-.002137	-.001243	-.001534	-.000323	-.002170	-.000535	-.000653
C. Tires	.000562	-.003315	-.000749	-.001032	.000567	-.003249	-.000707	-.000973
Discovery	-.001237	-.011039	-.007452	-.008425	-.001237	-.010261	-.006802	-.007703
Grandroy	-.002599	-.007740	-.005895	-.007222	-.002599	-.009751	-.007117	-.008536
G.L. Powers	-.000992	-.003590	-.002577	-.003101	-.000991	-.001532	-.001265	-.001594
Hand C.	-.002878	-.007217	-.005540	-.006718	-.003029	-.008948	-.006655	-.007923
Hudson B.	-.001110	-.000241	-.000243	-.000427	-.001236	-.000976	-.000934	-.001261
Imperial	.000588	-.001736	-.000502	-.000968	.000608	-.001551	-.000395	-.000853
Maritime	.000845	-.007023	-.003651	-.004175	.000861	-.004880	-.002161	-.002505
Rothman	-.001998	-.001816	-.001757	-.002447	-.001999	-.001415	-.001452	-.002104
Shaw Pipe	-.001968	-.005580	-.003055	-.004083	-.001861	-.005442	-.002099	-.002616
Van Ness	-.004747	-.004584	-.003874	-.005669	-.004747	-.003345	-.003167	-.004803
West Mine	.000055	.000884	-.000419	.000216	.000055	.000417	.000465	.000055

APPENDIX 3

TABLE 3.3 (Cont'd)

Comparison of Rates of Return, under the Filter Technique ($R_i^{*(j)}$), the Buy-and-Hold ($R_i^{(j)}$), and the Average Long Position ($R_i^{**(j)}$) strategies 1970.

Filter Size	0.025				0.030			
Security	$R_i^{(j)}$	$R_i^{*(j)}$	$R_i^{**(j)}$	$R_i^{***(j)}$	$R_i^{(j)}$	$R_i^{*(j)}$	$R_i^{**(j)}$	$R_i^{***(j)}$
Abitibi	-.001741	-.002916	-.002362	-.002796	-.001497	-.002576	-.002009	-.002382
Acme G.	-.002574	-.010001	-.003732	-.004612	-.002573	-.008143	-.002981	-.003746
Alcan	-.000539	.000231	-.000019	-.000204	-.000350	-.000498	-.000319	-.000496
Alta G.T.	.001244	.000171	.000804	.000608	.001359	.000027	.000518	.000428
Armore	-.001366	-.008644	-.002787	-.003267	-.001366	-.008636	-.002824	-.003307
Broul R.	-.001723	-.016098	-.010969	-.012290	-.001723	-.016445	-.010493	-.011693
Carrier	-.004472	-.002444	-.001674	-.002016	-.004471	-.002973	-.001833	-.002178
CD Sugars	-.000322	-.001158	-.000328	-.000445	-.000318	-.001421	-.000325	-.000425
C. Tires	.000567	-.004294	-.001148	-.001443	.000491	-.003592	-.001455	-.001904
Discovery	-.001237	-.008866	-.005668	-.006402	-.001302	-.008495	-.005433	-.006139
Grandroy	-.002788	-.005412	-.004219	-.005336	-.002788	-.005146	-.004062	-.005132
G.L. Powers	-.000910	-.000482	-.000681	-.000933	-.001016	-.001051	-.001022	-.001261
Hand C.	-.002915	-.010747	-.007254	-.008499	-.002916	-.009490	-.006471	-.007515
Hudson B.	-.001498	-.000903	-.001041	-.001349	-.001534	.000681	-.000158	-.000360
Imperial	.000584	-.001165	-.000167	-.000588	.000557	-.001722	-.000471	-.000886
Maritime	.000860	-.006514	-.002954	-.003376	.000897	-.006362	-.001608	-.001846
Rothman	-.002816	.000682	-.000248	-.000448	-.002365	.001588	.000037	-.000351
Shaw Pipe	-.001861	-.004590	-.001660	-.002109	-.002433	-.003715	-.003050	-.003899
Van Ness	-.005018	-.005329	-.004503	-.006023	-.005019	-.005416	-.004526	-.005999
West Mine	.000055	-.001292	-.000394	-.000777	.000112	-.000613	-.000102	-.000475

APPENDIX 3

TABLE 3.4 (Cont'd)

Comparison of Rates of Return, under the Filter Technique ($\overset{*}{R}{}_i^{(j)}$), the Buy-and-Hold ($R_i^{(j)}$), and the Average Long Position ($\overset{**}{R}{}_i^{(j)}$) strategies 1970.

Filter Size	0.035				0.040			
Security	$R_i^{(j)}$	$\overset{*}{R}{}_i^{(j)}$	$\overset{**}{R}{}_i^{(j)}$	$\overset{***}{R}{}_i^{(j)}$	$R_i^{(j)}$	$\overset{*}{R}{}_i^{(j)}$	$\overset{**}{R}{}_i^{(j)}$	$\overset{***}{R}{}_i^{(j)}$
Abitibi	-.001582	-.001031	-.000514	-.000642	-.001582	-.001607	-.000706	-.000948
Acme G.	-.002573	-.008849	-.003108	-.003798	-.002574	-.008326	-.002970	-.003675
Alcan	-.000349	-.000658	-.000397	-.000548	-.000412	-.000127	-.000092	-.000181
Alta G.T.	.001148	.000107	.000767	.000631	.000478	.000273	.000481	.000352
ARmore	-.001366	-.011700	-.003585	-.004153	-.001511	-.012827	-.007311	-.008321
Broul R.	-.001723	-.015848	-.009897	-.011035	-.001723	-.014947	-.009297	-.010365
Carrier	-.004349	-.001047	-.001245	-.001531	-.004339	-.000567	-.001087	-.001335
CD Sugars	-.000214	-.002361	-.000525	-.000634	-.000112	-.002633	-.001271	-.001455
C. Tires	.000491	-.002632	-.000949	-.001332	.000485	-.003215	-.001237	-.001613
Discovery	-.001302	-.009250	-.005863	-.006524	-.001592	-.007788	-.005005	-.005602
Grandroy	-.002788	-.005589	-.004348	-.005404	-.002788	-.006336	-.004705	-.005755
G.L. Powers	-.001571	-.002835	-.002206	-.002477	-.002095	-.005657	-.002323	-.002615
Hand C.	-.002917	-.008792	-.005979	-.006949	-.002914	-.006949	-.004940	-.005744
Hudson B.	-.001614	.000136	-.000511	-.000721	-.001563	.000041	-.000577	-.000824
Imperial	.000388	-.001699	-.000533	-.000902	.000306	-.000393	.000119	-.000149
Maritime	.000897	-.006517	-.001363	-.001555	.000896	-.005252	-.001293	-.001494
Rothman	-.002365	.001780	.000124	-.000210	-.002363	.001706	.000095	-.002364
Shaw Pipe	-.002434	-.003207	-.002759	-.003513	-.002433	-.002971	-.002618	-.003340
Van Ness	-.005018	-.007409	-.005543	-.007069	-.005018	-.007302	-.006060	-.007631
West Mine	.000112	-.001690	-.000484	-.000830	-.000144	-.000803	-.000179	-.000459

APPENDIX 3

TABLE 3.5 (Cont'd)

Comparison of Rates of Return, under the Filter Technique ($\overset{*}{R}{}_i^{(j)}$), the Buy-and-Hold ($R_i^{(j)}$), and the Average Long Position ($\overset{**}{R}{}_i^{(j)}$) strategies 1970.

Filter Size	0.045				0.050			
Security	$R_i^{(j)}$	$\overset{*}{R}{}_i^{(j)}$	$\overset{**}{R}{}_i^{(j)}$	$\overset{***}{R}{}_i^{(j)}$	$R_i^{(j)}$	$\overset{*}{R}{}_i^{(j)}$	$\overset{**}{R}{}_i^{(j)}$	$\overset{***}{R}{}_i^{(j)}$
Abitibi	-.001557	-.002110	-.000832	-.000987	-.001793	-.002804	-.002193	-.002564
Acme G.	-.002473	-.007723	-.003049	-.003727	-.002573	-.009289	-.006219	-.007545
Alcan	-.000388	.000288	.000120	.000091	-.000434	.000020	.000045	-.000029
Alta G.T.	-.000478	.000141	.000419	.000297	.000782	-.001543	-.000229	-.000342
Armore	-.001511	-.008970	-.005011	-.005792	-.001510	-.009308	-.005199	-.006001
Broul R.	-.001868	-.013145	-.008154	-.009120	-.001868	-.013355	-.008197	-.009149
Carrier	-.004349	-.000722	-.001174	-.001473	-.004349	-.002015	-.001446	-.001734
CD Sugars	-.000321	-.001850	-.000901	-.001033	-.000380	-.002609	-.001289	-.001451
C. Tires	.000485	-.003985	-.001603	-.001998	.000404	-.003589	-.001411	-.001771
Discovery	-.001592	-.007818	-.004909	-.005482	-.001592	-.007394	-.004681	-.005179
Grandroy	-.003718	-.005799	-.004838	-.005742	-.003718	-.006488	-.005231	-.006176
G.L. Powers	-.002095	-.001595	-.001768	-.002005	-.002095	-.002198	-.002070	-.002315
Hand C.	-.002913	-.006927	-.004898	-.005676	-.002913	-.006593	-.004660	-.005413
Hudson B.	-.001563	-.000664	-.000946	-.001174	-.001517	.000825	-.000122	-.000269
Imperial	.000307	-.000722	-.000049	-.000311	.000307	-.001044	-.000112	-.000365
Maritime	.000223	-.005630	-.002656	-.002979	-.000493	-.003839	-.002115	-.002374
Rothman	-.002363	.001083	-.000204	-.000500	-.001756	-.000213	-.000456	-.000717
Shaw Pipe	-.002065	-.004151	-.002739	-.003356	-.002102	-.002927	-.000125	-.002642
Van Ness	-.005018	-.011580	-.007941	-.009540	-.005019	-.012493	-.008130	-.009695
West Mine	.000172	-.001691	-.000621	-.000920	.000172	-.001220	-.000363	-.000556

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TABLE 3.6 (Cont'd)

Comparison of Rates of Return, under the Filter Technique ($\overset{*}{R}{}_i^{(j)}$), the Buy-and-Hold ($R_i^{(j)}$), and the Average Long Position ($\overset{**}{R}{}_i^{(j)}$), strategies 1970.

Filter Size	0.060				0.070			
Security	$R_i^{(j)}$	$\overset{*}{R}{}_i^{(j)}$	$\overset{**}{R}{}_i^{(j)}$	$\overset{***}{R}{}_i^{(j)}$	$R_i^{(j)}$	$\overset{*}{R}{}_i^{(j)}$	$\overset{**}{R}{}_i^{(j)}$	$\overset{***}{R}{}_i^{(j)}$
Abitibi	-.001918	-.004151	-.002826	-.003215	-.001922	-.001134	-.001071	-.001247
Acme G.	-.002357	-.009092	-.002805	-.003393	-.002357	-.010376	-.003172	-.003824
Alcan	-.001504	-.000940	-.000496	-.000558	-.000750	-.000741	-.000608	-.000750
Alta G.T.	.000942	-.001825	-.000291	-.000422	.001174	-.000739	.000333	.000307
Armore	-.006735	-.010829	-.005930	-.006735	-.001510	-.007079	-.003889	-.004589
Broul R.	-.001714	-.011748	-.003480	-.003896	-.002307	-.014911	-.009119	-.010182
Carrier	-.004126	-.001499	-.002506	-.003000	-.003986	-.000107	-.001656	-.002066
CD Sugars	-.000352	-.000801	-.000428	-.000498	-.000313	-.001338	-.000737	-.000856
C. Tires	.000052	-.003812	-.000856	-.001034	.000092	-.003816	-.001776	-.002057
Discovery	-.001592	-.007965	-.004895	-.005453	-.001592	-.008625	-.005216	-.005773
Grandroy	-.004909	-.004676	-.004153	-.004909	-.003718	-.004038	-.003798	-.004[illegible]
G.L. Powers	-.002095	-.002486	-.002220	-.002478	-.001846	-.002023	-.001563	-.002035
Hand C.	-.002621	-.005671	-.003899	-.004542	-.002275	-.007596	-.004705	-.003447
Hudson B.	-.001471	-.000303	-.000254	-.000341	-.001623	-.000207	-.000711	-.000879
Imperial	-.000219	-.000216	-.000004	-.0001121	-.000112	-.000157	-.000001	-.000135
Maritime	-.000335	-.005272	-.001275	-.001421	-.000292	-.002680	-.001364	-.001316
Rothman	-.001756	-.000693	-.000742	-.001059	-.001755	-.001451	-.001122	-.001335
Shaw Pipe	-.001801	-.003040	-.001791	-.002199	-.001801	-.002412	-.001498	-.001873
Van Ness	-.005918	-.011583	-.007397	-.008832	-.005185	-.001131	-.006556	-.007812
West Mine	-.000786	-.000223	-.000384	-.000568	-.000786	-.000209	-.000351	-.000576

APPENDIX 3

TABLE 3.7 (Cont'd)

Comparison of Rates of Return, the Filter Technique ($\overset{*}{R}{}_i^{(j)}$), under the Buy-and-Hold ($R_i^{(j)}$) and the Average Long Position ($\overset{**}{R}{}_i^{(j)}$) strategies 1971

Filter Size	0.005				0.010			
Security	$R_i^{(j)}$	$\overset{*}{R}{}_i^{(j)}$	$\overset{**}{R}{}_i^{(j)}$	$\overset{***}{R}{}_i^{(j)}$	$R_i^{(j)}$	$\overset{*}{R}{}_i^{(j)}$	$\overset{**}{R}{}_i^{(j)}$	$\overset{***}{R}{}_i^{(j)}$
Abitibi	-.000586	-.002649	-.001893	-.002570	-.000586	-.002649	-.001892	-.002570
Acme G.	.003672	-.019475	-.008917	-.011117	.003671	-.019475	-.008917	-.011117
Alcan	-.001656	.000102	-.000803	-.001332	-.000950	-.000657	-.000773	-.001140
Alta G.T.	.000164	.000639	.000541	.000209	-.000160	-.000059	-.000056	-.000225
Armore	.000071	-.011084	-.006521	-.008109	.000071	-.011083	-.006521	-.008109
Broul R.	-.000043	-.255555	-.015755	-.017723	-.000043	-.024414	-.014881	-.016755
Carrier	.000698	-.007824	-.002573	-.003354	.000698	-.007388	-.003964	-.005172
CD Sugars	.000212	-.001470	-.000694	-.001045	.000183	-.000015	.000139	-.000044
C. Hydro	-.000615	-.000329	-.000482	-.000851	-.000689	-.000624	-.000649	-.000996
C. Tires	.001335	-.001522	.000000	-.000577	.001342	-.001333	.000116	-.000361
Discovery	-.001871	-.020014	-.013603	-.015702	-.001379	-.019174	-.012738	-.014793
Grandroy	-.004284	-.010661	-.008250	-.009624	-.004284	-.010661	-.008250	-.009624
G.L. Powers	.000236	-.001923	-.000996	-.001244	.000241	-.000640	-.000163	-.000325
Hand C.	-.000834	-.011295	-.006446	-.007863	-.000639	-.011904	-.006714	-.008154
Hudson B.	.001038	.002093	.001956	.001037	.000986	.001931	.001671	.001435
Imperial	.001929	.000677	.001581	.001256	.001930	.001028	.001682	.001425
Maritime	.000770	-.001627	-.000478	-.000797	.000755	-.001576	-.000597	-.000373
Rothman	.000983	-.003024	-.001138	-.001913	.000982	-.002219	-.000616	-.001364
Van Ness	.000390	-.003864	-.001775	-.003194	.000390	-.003576	-.001569	-.002941
West Mine	-.001641	-.002975	-.001209	-.001572	-.001555	-.002915	-.002539	-.003082

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TABLE 3.8 (Cont'd)

Comparison of Rates of Return, the Filter Technique ($\overset{*}{R}{}_i^{(j)}$), under the Buy-and-Hold ($R_i^{(j)}$) and the Average Long [illegible] ($\overset{**}{R}{}_i^{(j)}$) strategies 1971

Filter Size	0.015				0.020			
Security	$R_i^{(j)}$	$\overset{*}{R}{}_i^{(j)}$	$\overset{**}{R}{}_i^{(j)}$	$\overset{***}{R}{}_i^{(j)}$	$R_i^{(j)}$	$\overset{*}{R}{}_i^{(j)}$	$\overset{**}{R}{}_i^{(j)}$	$\overset{***}{R}{}_i^{(j)}$
Abitibi	-.000586	-.003142	-.002198	-.002869	-.000651	-.003242	[illegible]	[illegible]
Acme G.	.003671	-.019475	-.008917	-.011172	.003624	[illegible]	[illegible]	[illegible]
Alcan	-.000960	-.000621	-.000739	-.001085	-.000960	-.000353	[illegible]	[illegible]
Alta G.T.	-.000133	.000064	.000032	-.000113	-.000090	-.000159	[illegible]	[illegible]
Armore	.000071	-.010744	-.006331	-.007896	.000456	-.019711	[illegible]	[illegible]
Broul R.	-.000044	-.023449	-.014050	-.015845	-.000043	-.022763	[illegible]	[illegible]
Carrier	.000698	-.008035	-.004289	-.005430	.000770	[illegible]	[illegible]	[illegible]
CD Sugars	.000183	.000046	.000209	.000007	-.000000	[illegible]	[illegible]	[illegible]
C. Hydro	-.000689	-.000936	-.000816	-.001163	-.000790	.000346	[illegible]	[illegible]
C. Tires	.001190	-.001611	-.000133	-.000540	.001139	-.001544	[illegible]	[illegible]
Discovery	-.001870	-.018839	-.012423	-.014381	-.001870	[illegible]	[illegible]	[illegible]
Grandroy	-.004284	-.010570	-.008179	-.009586	-.004284	[illegible]	[illegible]	[illegible]
G.L. Powers	.000265	-.000258	.000173	.000116	.000193	[illegible]	[illegible]	[illegible]
Hand C.	-.000640	-.011019	-.006206	-.007588	-.000510	[illegible]	[illegible]	[illegible]
Hudson B.	.000986	.001622	.001473	.001260	.000986	[illegible]	[illegible]	[illegible]
Imperial	.001890	.000273	.001239	.000996	.002028	[illegible]	[illegible]	[illegible]
Maritime	.000633	-.001729	-.000547	-.000747	.000519	[illegible]	[illegible]	[illegible]
Rothman	.000912	-.002164	-.000596	-.001238	.000912	[illegible]	[illegible]	[illegible]
Van Ness	.000390	-.005414	-.002664	-.003991	.000390	[illegible]	[illegible]	[illegible]
West Mine	-.001559	-.001480	-.001549	-.001935	-.001559	[illegible]	[illegible]	[illegible]

APPENDIX 3

TABLE 3.9 (Cont'd)

Comparison of Rates of Return, the Filter Technique ($\overset{*}{R}_i^{(j)}$), under the Buy-and-Hold ($R_i^{(j)}$) and the Average Long Position ($\overset{**}{R}_i^{(j)}$) strategies 1971

Filter Size	0.025				[illegible]			
Security	$R_i^{(j)}$	$\overset{*}{R}_i^{(j)}$	$\overset{**}{R}_i^{(j)}$	$\overset{***}{R}_i^{(j)}$	$R_i^{(j)}$	$\overset{*}{R}_i^{(j)}$	$\overset{**}{R}_i^{(j)}$	$\overset{***}{R}_i^{(j)}$
Abitibi	-.000586	-.002649	-.001893	-.002570	-.000586	-.002649	-.001592	-.002570
Acme G.	.003624	-.018969	-.008403	-.010394	.003625	-.015069	-.006173	-.007803
Alcan	-.000958	-.000097	-.000434	-.000638	-.001068	.000720	[illegible]	-.000176
Alta G.T.	-.000115	-.000356	-.000173	-.000304	.000209	-.000453	[illegible]	[illegible]
Armore	.000457	-.011089	-.003446	-.004228	.000456	-.009583	-.002723	-.002126
Broul R.	-.000043	-.022851	-.008190	-.000196	-.000043	-.022546	[illegible]	[illegible]
Carrier	.000771	-.096712	-.003154	-.004041	.000771	-.027480	-.003538	[illegible]
CD Sugars	-.000000	.000059	.000095	-.000050	.000000	-.000617	-.000229	[illegible]
C. Hydro	-.000790	-.000503	-.000578	-.000324	-.001265	-.000842	[illegible]	[illegible]
C. Tires	.001189	-.000828	.000300	-.000024	.001278	-.000514	.000452	-.000219
Discovery	-.001871	-.020551	-.013386	-.015388	-.001824	-.023100	-.011766	-.016734
Grandroy	-.004678	-.011733	-.008809	-.010291	-.004678	-.010490	-.004263	-.002650
G.L. Powers	.000193	-.000199	.000052	-.000040	.000259	-.000623	-.000105	-.000265
Hand C.	-.005107	-.013000	-.007223	-.003601	-.000598	-.011074	[illegible]	-.000761
Hudson B.	.000986	.000704	.000587	.000491	.000475	.000331	.000733	.000413
Imperial	.002077	-.000309	.000966	.000715	.002056	-.000178	.000464	.000641
Maritime	.000579	-.000027	.000336	.000217	.000579	-.000286	.000216	[illegible]
Rothman	.000912	-.000196	.000586	.000119	.000192	.000141	.000414	.000176
Van Ness	.000390	-.006324	-.003096	-.004294	.000501	-.002766	-.002776	-.000526
West Mine	-.001557	-.001447	-.001482	-.001808	-.001565	-.001715	-.001715	[illegible]

APPENDIX 3

TABLE 3.10 (Cont'd)

Comparison of Rates of Return, under the Filter Technique ($\overset{*}{R}{}_i^{(j)}$), the Buy-and-Hold ($R_i^{(j)}$) and the Average Long Position ($\overset{**}{R}{}_i^{(j)}$) strategies 1971

Filter Size	0.035				0.040			
Security	$R_i^{(j)}$	$\overset{*}{R}{}_i^{(j)}$	$\overset{**}{R}{}_i^{(j)}$	$\overset{***}{R}{}_i^{(j)}$	$R_i^{(j)}$	$\overset{*}{R}{}_i^{(j)}$	$\overset{**}{R}{}_i^{(j)}$	$\overset{***}{R}{}_i^{(j)}$
Abitibi	-.001126	-.002677	-.000978	-.001043	-.001126	-.002914	-.000354	-.001003
Acme G.	.003625	-.015009	-.006173	-.007903	.003625	-.017994	-.007766	-.000482
Alcan	-.001018	.000575	-.000060	-.000217	-.001726	-.000461	-.000970	-.001081
Alta G.T.	.000220	.000471	.000403	.000324	.000226	[illegible]	-.002247	-.000315
Armore	.000457	-.010583	-.003646	-.003748	.000462	-.010656	-.002235	-.000554
Broul R.	-.000044	-.023039	-.007972	-.008917	-.000043	-.021012	-.006988	-.000766
Carrier J.D.	.000770	-.006040	-.002729	-.003519	.000840	[illegible]	-.002276	[illegible]
CD Sugars	-.000122	-.000484	-.000224	-.000294	-.000122	-.001371	-.000671	-.000771
C. Hydro	-.001471	.000367	-.000460	-.000586	-.001547	-.000066	-.000713	-.000254
C. Tires	.001283	.000018	.000763	.000572	.001283	-.000726	.000374	.000160
Discovery	-.001824	-.025240	-.016087	-.018197	-.001556	-.026265	-.016102	-.014547
Grandroy	-.004678	-.010665	-.008064	-.009437	-.004678	-.017979	-.002210	-.009619
G.L. Powers	-.000183	-.001093	-.000608	-.000739	-.000065	-.001895	-.000459	-.000534
Hand C.	-.000507	-.011995	-.006412	-.007553	-.005078	-.011681	-.006209	-.007327
Hudson B.	.000475	.000885	.000754	.000636	.000533	.000022	.000343	.000221
Imperial	.0001818	-.000719	.000455	.000329	.001882	-.000763	.000179	.000352
Maritime	.000554	-.000150	.000267	.000169	.000329	-.000074	.000196	.000139
Rothman	.000722	.000767	.000104	-.000144	.000722	.000317	.000398	.000173
Van Ness	.000500	-.005853	-.002575	-.003595	.000501	-.001787	-.001962	-.002909
West Mine	-.001866	-.000732	-.001218	-.001474	-.001996	-.001214	-.001541	-.001767

APPENDIX 3

TABLE 3.11 (Cont'd)

Comparison of Rates of Return, under the Filter Technique ($\overset{*}{R}{}_i^{(j)}$), the Buy-and-Hold ($R_i^{(j)}$), and the Average Long Position ($\overset{**}{R}{}_i^{(j)}$) strategies 1971

Filter Size	0.045				0.050			
Security	$R_i^{(j)}$	$\overset{*}{R}{}_i^{(j)}$	$\overset{**}{R}{}_i^{(j)}$	$\overset{***}{R}{}_i^{(j)}$	$R_i^{(j)}$	$\overset{*}{R}{}_i^{(j)}$	$\overset{**}{R}{}_i^{(j)}$	$\overset{***}{R}{}_i^{(j)}$
Abitibi	-.001126	-.001463	-.000501	-.000613	-.001193	-.000461	-.000277	-.000352
Acme G.	.003624	-.017661	-.007575	-.009252	.003701	-.015527	-.003010	-.003828
1can	-.001726	-.001177	-.001343	-.001493	-.001785	-.001792	-.001704	-.001886
Alta G.T.	.000347	-.001035	-.000296	-.000369	-.000199	-.001443	-.000780	-.000893
Armore	-.000530	-.008984	-.002689	-.003262	-.000344	-.002466	-.005156	-.006200
Broul R.	.000136	-.020809	-.005873	-.006533	-.000136	-.020762	-.010874	-.012082
Carrier	.000840	-.001770	-.000338	-.000910	.000840	-.002846	-.000921	-.001537
CD Sugars	-.000122	-.001159	-.000548	-.000637	-.000122	-.000838	-.000309	-.000435
C. Hydro	-.001374	-.000509	-.000363	-.000428	-.001371	-.001009	-.000464	-.000527
C. Tires	.001290	-.000366	.000906	.000743	.001290	.000191	.000814	.000654
Discovery	-.001556	-.028311	-.017538	-.019723	-.001556	-.032069	-.019657	-.021887
Grandroy	-.004188	-.011991	-.008491	-.009910	-.004188	-.011479	-.008067	-.009383
G.L. Powers	-.000064	-.000637	-.000065	-.000732	-.000409	-.002608	-.000457	-.000951
Hand C.	-.000575	-.012439	-.006405	-.007396	-.000429	-.013053	-.006625	-.007646
Hudson B.	.000345	-.000236	.000098	.000012	.000464	.000199	.000371	.000274
IMperial	.002109	-.000181	.001052	.000883	.002144	.000142	.001223	.001090
Maritime	.000330	-.000195	.000126	.000062	.000305	-.000445	-.000220	-.000072
Rothman	.000722	.000013	.000327	.000121	.000722	-.000450	.000199	-.000001
Van Ness	.000501	-.007095	-.003201	-.004184	.000501	-.007022	-.003100	-.004050
West Mine	-.001996	-.000834	-.001339	-.001549	-.001892	-.001276	-.001546	-.001763

APPENDIX 3

TABLE 3.12 (Cont'd)

Comparison of Rates of Return, under the Filter Technique $(\overset{*}{R}_i^{(j)})$, the Buy-and-Hold $(R_i^{(j)})$, and the Average Long Position $(\overset{**}{R}_i^{(j)})$ strategies 1971

Filter Size	0.060				0.070			
Security	$R_i^{(j)}$	$\overset{*}{R}_i^{(j)}$	$\overset{**}{R}_i^{(j)}$	$\overset{***}{R}_i^{(j)}$	$R_i^{(j)}$	$\overset{*}{R}_i^{(j)}$	$\overset{**}{R}_i^{(j)}$	$\overset{***}{R}_i^{(j)}$
Abitibi	-.001193	.000238	-.000336	-.000415	-.000419	-.000594	-.000335	-.000473
Acme G.	.003846	-.016588	-.003300	-.004162	.003846	-.016684	-.003300	-.004164
Alcan	-.001852	-.001887	-.001803	-.001996	-.001948	-.000897	-.001283	-.001422
Alta G.T.	-.000185	-.001263	-.000583	-.000759	-.000186	-.001411	-.000751	-.000835
Armore	-.000344	-.011970	-.006534	-.007585	-.000344	-.011201	-.006656	-.007020
Broul R.	.000352	-.019787	-.009739	-.010797	.000047	-.017010	-.008346	-.009340
Carrier	-.000608	-.002065	-.001272	-.001740	-.000561	-.002333	-.001371	-.001783
CD Sugars	.000133	-.001795	-.000397	-.000453	-.000044	-.002788	-.000719	-.000810
C. Hydro	-.001450	-.000823	-.000428	-.000481	-.001963	-.000577	-.000451	-.000507
C. Tires	.001299	.000333	.000882	.000636	.001223	-.001036	.000177	-.000077
Discovery	-.001560	-.033445	-.020011	-.022128	-.001556	-.033173	-.019469	-.021471
Grandroy	-.004188	-.011326	-.007896	-.009135	-.004183	-.006488	-.006061	-.004199
G.L. Powers	-.000409	-.000550	-.000134	-.000156	-.000256	-.000107	-.000119	-.000138
Hand C.	-.000430	-.013466	-.006625	-.007646	-.000430	-.012467	-.006238	-.007133
Hudson B.	.000464	-.000232	.000151	.000064	.000464	-.000622	-.000041	-.000142
Imperial	.002187	-.000477	.000951	.000843	.002327	.001300	.001464	.001707
Maritime	.00052	-.000391	-.000129	-.000177	-.000037	.000327	.000264	.000190
Rothman	.000379	-.001467	-.000106	-.000212	.000409	-.000579	.000105	-.000043
Van Ness	.000501	-.005855	-.002522	-.003460	-.000636	-.006937	-.003750	-.004667
West Mine	-.001892	-.002690	-.002295	-.002581	-.001628	-.001390	-.001675	-.001869

APPENDIX 4

List of Comparison of the Long and the Short Positions Average Transaction Length

APPENDIX 4

TABLE 4.1

Comparison of the Long and the Short Positions Average Transaction Length 1970

Filter Size	0.005			0.010			0.015			0.020		
Security	* ALP	ASP	TNT	ALP	ASP	TNT	ALP	ASP	TNT	ALP	ASP	TNT
Abitibi	2.0	2.8	96	2.0	3.0	90	2.6	3.0	80	3.5	5.0	58
Acme G.	2.0	2.0	102	2.0	2.0	102	2.2	2.0	102	2.0	2.0	100
Alcan	2.3	2.0	95	2.9	4.0	71	4.9	7.0	41	7.2	9.0	29
Alta G.T.	3.0	2.0	88	5.0	3.0	54	7.5	3.0	44	11.0	5.0	30
Armore	1.8	2.0	121	1.8	2.6	121	1,8	2.0	119	2.0	2.6	101
Broul R.	1.9	2.0	125	1.9	2.0	123	2.0	2.0	109	2.5	2.0	95
Carrier	2.0	2.8	101	2.0	3.0	93	2.6	3.0	85	2.7	3.4	89
CD Sugars	2.2	3.0	93	2.7	3.0	77	3.5	4.0	61	4.0	5.0	47
C. Tires	2.0	1.9	118	2.8	2.0	94	4.0	3.0	66	4.0	3.0	62
Discovery	1.0	2.0	122	2.1	2.0	111	2.4	2.0	99	2.3	2.0	89
Grandroy	1.8	2.0	104	1.9	2.0	102	2.0	3.0	96	2.0	3.0	96
G.L. Powers	2.4	2.0	107	3.0	2.0	79	3.8	3.0	67	5.7	8.0	35
Hand C.	2.0	2.0	115	2.0	2.0	109	2.6	2.0	99	2.8	2.0	91
Hudson B.	3.0	3.0	77	4.7	4.0	54	5.2	5.0	48	5.2	6.0	41
Imperial	2.0	2.0	113	2.5	3.0	83	3.8	3.0	64	5.1	4.0	52
Maritime	2.7	1.4	109	3.3	2.0	93	3.4	2.0	84	5.2	3.0	49
Rothman	1.9	2.0	112	2.0	2.0	102	2.9	4.0	68	3.0	4.0	62
Shaw Pipe	2.2	2.0	110	2.2	2.3	102	2.5	2.3	92	2.9	3.0	82
Van Ness	1.7	2.0	116	1.8	2.3	114	1.8	2.0	108	1.9	2.4	104
West Mine	2.7	3.0	87	2.7	3.0	87	4.3	5.0	50	4.2	5.5	50

* ALP - Average Length of Long Position in number of days
ASP - Average Length of Short Position in number of days
TNT - Total Number of Transactions

APPENDIX 4

TABLE 4.2 (Cont'd)

Comparison of the Long and the Short Positions Average Transaction Length 1970

Filter Size	0.025			0.030			0.035			0.040		
Security	* ALP	ASP	TNT	ALP	ASP	TNT	ALP	ASP	TNT	ALP	ASP	TNT
Abitibi	4.0	6.0	46	4.7	7.0	41	6.7	8.0	31	7.0	8.0	31
Acme G.	2.2	2.0	100	2.7	3.0	84	2.9	3.0	78	3.1	3.0	72
Alcan	10.0	10.0	23	11.7	8.0	23	12.8	9.0	21	17.7	13.0	15
Alta G.	14.0	8.0	22	19.6	9.0	17	15.5	15.0	9	24.5	18.0	5
Armore	2.4	3.0	87	2.0	3.0	87	2.6	3.0	81	4.0	4.0	59
Broul R.	2.5	2.0	95	2.7	3.4	85	3.0	3.2	75	3.3	3.6	71
Carrier	3.8	4.0	61	4.0	4.0	59	5.0	4.6	51	6.0	5.0	43
CD Sugars	7.8	5.0	35	6.8	7.0	31	7.7	8.0	27	7.7	12.0	23
C. Tires	6.0	3.0	52	7.5	4.0	41	9.8	4.9	33	9.0	5.0	33
Discovery	3.5	3.2	69	3.6	4.0	63	3.9	4.0	61	4.2	6.0	47
Grandroy	2.0	4.0	73	2.7	4.0	69	2.7	4.0	67	3.0	4.0	63
G.L. Powers	11.7	14.0	19	12.8	13.0	19	9.0	14.0	18	12.8	16.0	12
Hand C.	2.7	2.8	87	3.0	3.0	67	3.7	3.5	67	4.3	4.0	55
Hudson B.	6.1	7.2	32	7.4	10.0	24	9.8	9.0	22	11.2	10.0	20
Imperial	5.9	[illegible]	40	6.5	6.0	36	9.0	9.0	28	7.6	14.0	20
Maritime	6.7	3.0	41	6.8	4.0	37	6.0	6.0	33	11.4	5.0	25
Rothman	6.9	8.0	29	8.9	8.0	25	8.9	8.0	25	9.9	9.0	23
Shaw Pipe	3.3	3.0	68	3.7	5.0	51	4.2	5.0	35	4.5	6.0	41
Van Ness	1.9	2.6	102	2.1	3.0	96	2.5	3.0	86	2.7	3.2	80
West Mine	4.0	5.0	50	6.6	6.7	36	6.8	6.6	36	7.1	10.0	28

* ALP - Average Length of Long Position in number of days
ASP - Average Length of Short Position in number of days
TNT - Total Number of Transactions

APPENDIX 4

TABLE 4.3 (Cont'd)

Comparison of the Long and the Short Positions Average Transaction Length 1970

Filter Size	0.045			0.050			0.060			0.070		
Security	* ALP	ASP	TNT	ALP	ASP	TNT	ALP	ASP	TNT	ALP	ASP	TNT
Abitibi	7.0	7.0	31	9.8	7.0	22	8.5	10.0	20	12.0	26.0	10
Acme G.	3.0	3.0	70	3.8	3.0	66	3.9	4.0	56	4.0	5.0	54
Alcan	24.0	18.0	11	21.1	21.0	11	25.0	23.0	8	34.0	28.0	5
Alta G.T.	23.0	19.0	5	23.0	19.0	5	23.0	15.0	5	50.0	16.0	3
Armore	4.5	7.0	41	4.0	7.0	41	6.0	7.0	37	6.0	12.0	27
Broul R.	4.7	4.0	50	5.0	6.0	42	5.0	6.0	42	5.0	5.0	50
Carrier	6.5	5.5	41	6.3	6.0	39	7.0	7.0	33	9.5	9.0	27
CD Sugars	10.0	17.0	16	9.0	18.0	16	17.6	26.0	10	35.0	20.0	7
C. Tires	9.0	6.0	31	8.0	9.0	27	10.9	10.8	20	14.0	10.0	18
Discovery	5.5	6.0	41	4.5	8.0	37	5.9	9.0	31	6.6	10.0	29
Grandroy	3.6	6.0	48	3.7	6.0	48	5.0	6.0	40	5.5	6.0	38
G.L. Powers	14.0	29.0	8	12.0	31.0	8	13.7	29.0	8	25.6	37.0	6
Hand C.	4.6	5.0	49	4.7	5.0	47	6.6	6.0	38	9.0	5.0	34
Hudson B.	13.5	10.0	18	19.0	17.0	12	17.0	18.0	12	22.5	20.0	10
Imperial	8.0	14.0	20	9.0	15.0	18	17.5	19.0	12	36.5	18.0	8
Maritime	9.5	9.0	19	9.0	16.0	14	14.5	15.0	12	32.6	28.0	6
Rothman	9.0	10.0	23	10.7	10.0	21	11.6	11.0	19	11.6	14.0	17
Shaw Pipe	4.5	9.0	33	5.7	10.0	27	7.0	11.0	23	9.3	13.0	19
Van Ness	3.1	3.0	74	3.2	3.0	70	3.4	4.0	62	3.5	6.0	52
West Mine	7.5	9.0	28	10.0	11.0	22	16.8	14.0	14	22.0	14.0	12

* ALP - Average Length of Long Position in number of days
ASP - Average Length of Short Position in number of days
TNT - Total Number of Transactions

APPENDIX 4

TABLE-4.4 (Cont'd)

Comparison of the Long and the Short Positions Average Transaction Length 1971

Filter Size	0.005			0.010			0.015			0.020		
Security	* ALP	ASP	TNT	ALP	ASP	TNT	ALP	ASP	TNT	ALP	ASP	TNT
Abitibi	2.0	2.0	105	1.9	2.0	105	2.1	2.0	103	3.2	4.0	67
Acme G.	2.1	2.0	113	2.1	2.0	113	2.1	2.0	113	2.2	2.0	107
Alcan	2.7	2.4	89	3.7	4.0	61	4.5	5.0	49	5.3	8.0	35
Alta G.T.	3.3	3.0	76	5.5	5.0	44	8.1	8.0	28	10.3	12.0	20
Armore	2.0	2.0	118	2.0	2.0	118	2.0	2.0	116	2.3	2.0	105
Broul R.	2.2	1.0	123	2.3	1.2	119	2.3	2.0	113	2.8	2.0	101
Carrier	2.2	2.0	114	2.4	2.0	106	2.9	2.0	96	3.0	2.4	56
CD Sugars	2.3	2.0	101	4.0	4.1	58	6.4	6.0	40	10.3	9.0	25
C. Hydro	2.8	2.0	90	4.4	3.2	59	4.7	4.0	53	7.4	6.0	35
C. Tires	2.8	2.0	102	3.2	2.0	86	4.2	3.0	68	5.5	4.0	52
Discovery	1.9	1.0	129	2.1	2.0	119	2.2	2.0	113	2.2	2.0	113
Grandroy	2.0	3.0	97	2.0	3.0	97	2.1	3.0	95	2.2	3.0	95
G.L. Powers	2.2	2.0	105	8.7	7.0	30	10.3	8.0	25	10.3	9.0	23
Hand C.	4.0	3.0	69	4.1	3.4	67	4.2	3.5	63	4.6	3.5	63
Hudson B.	3.3	2.0	82	7.0	5.0	40	8.7	6.4	38	10.7	6.0	28
Imperial	3.9	2.3	74	6.5	3.0	50	7.6	3.1	44	9.6	4.0	36
Maritime	2.7	2.0	101	4.2	2.0	70	6.8	4.0	44	8.9	7.0	29
Rothman	2.3	2.0	107	2.7	2.0	95	3.3	3.0	77	4.0	3.0	63
Van Ness	2.2	2.0	108	2.4	2.0	100	2.5	2.0	96	2.6	2.0	90
West Mine	2.0	3.0	95	2.2	3.0	91	3.3	4.0	65	3.9	6.0	49

* ALP - Average Length of Long Position in number of days
ASP - Average Length of Short Position in number of days
TNT - Total Number of Transactions

APPENDIX 4

TABLE 4.5 (Cont'd)

Comparison of the Long and the Short Positions Average Transaction Length 1971

Filter Size	0.025			0.030			0.035			0.040		
Security	* ALP	ASP	TNT	ALP	ASP	TNT	ALP	ASP	TNT	ALP	ASP	TNT
Abitibi	3.9	6.0	47	4.3	6.0	45	6.0	7.0	34	6.2	10.0	28
Acme G.	2.3	2.0	101	2.3	2.0	99	2.5	3.0	89	2.6	3.0	83
Alcan	6.1	12.0	27	8.3	18.0	19	10.0	23.0	15	12.0	21.0	15
Alta G.T.	12.2	12.0	18	24.0	9.0	13	41.0	21.0	7	45.1	19.0	7
Armore	2.5	2.0	99	2.7	2.2	91	2.8	2.0	89	3.1	3.0	77
Broul R.	3.1	2.0	93	3.2	2.2	91	3.2	2.1	89	4.1	2.0	73
Carrier	4.2	3.0	55	3.2	3.0	66	4.9	4.0	54	5.6	4.0	50
CD Sugars	15.5	9.0	19	16.3	12.0	17	17.2	14.0	15	14.7	17.0	15
C. Hydro	10.1	7.3	27	10.0	10.0	22	15.2	15.0	14	15.4	15.0	14
C. Tires	7.1	4.0	42	9.5	7.0	30	14.9	7.3	22	14.9	7.0	22
Discovery	2.3	2.0	109	2.4	2.0	103	2.4	2.0	103	2.4	2.0	99
Grandroy	2.2	3.0	80	2.3	4.0	76	2.4	4.0	74	2.6	4.0	72
G.L. Powers	12.3	8.0	23	12.8	12.0	18	16.0	13.0	14	20.3	14.0	12
Hand C.	4.5	3.6	63	4.7	3.4	61	5.3	4.0	51	5.5	4.0	49
Hudson B.	12.0	8.0	24	22.7	10.0	14	27.5	11.0	12	27.6	11.0	12
Imperial	12.8	4.0	28	15.9	6.0	22	20.2	6.0	17	22.6	7.0	15
Maritime	16.0	11.0	17	13.3	14.0	17	17.0	19.0	13	28.6	45.0	6
Rothman	4.8	5.0	47	6.1	6.0	39	7.6	6.0	35	9.0	8.0	29
Van Ness	2.7	3.0	88	2.8	3.1	76	3.0	4.0	68	3.4	4.0	62
West Mine	3.7	6.0	49	5.6	7.0	38	5.7	11.0	28	5.9	11.0	25

* ALP - Average Length of Long Position in number of days
ASP - Average Length of Short Position in number of days
TNT - Total Number of Transactions

APPENDIX 4

TABLE 4.6 (Cont'd)

Comparison of the Long and the Short Positions Average Transaction Length 1971

Filter Size	0.045			0.050			0.060			0.060		
Security	* ALP	ASP	TNT	ALP	ASP	TNT	ALP	ASP	TNT	ALP	ASP	TNT
Abitibi	7.8	13.0	22	10.8	18.0	16	12.3	35.0	10	14.3	9.0	9
Acme G.	2.7	3.7	79	2.8	3.0	73	2.9	3.4	73	3.9	4.2	59
Alcan	12.2	21.0	15	11.8	22.0	15	14.8	24.0	13	10.2	38.0	9
Alta G.T.	44.6	19.0	7	35.3	26.0	6	57.5	33.0	4	53.5	35.0	4
Armore	3.7	3.0	65	3.8	3.0	63	4.4	4.0	57	4.0	5.0	51
Broul R.	3.8	3.0	65	3.9	3.0	63	7.6	2.0	47	9.5	3.2	37
Carrier	7.3	5.0	38	7.1	6.0	36	8.1	9.0	26	10.9	11.0	22
CD Sugars	10.7	27.0	13	17.5	27.0	11	29.3	18.2	10	[illegible]	18.0	10
C. Hydro	14.1	18.0	14	14.8	22.0	12	16.8	28.0	10	22.0	38.0	6
C. Tires	27.2	8.0	14	27.8	7.0	14	21.8	14.0	11	10.5	17.0	11
Discovery	2.5	2.0	97	2.7	2.0	95	2.3	2.0	87	2.6	3.0	79
Grandroy	2.6	4.0	71	2.6	4.0	65	3.4	4.0	59	4.2	6.0	45
G.L. Powers	22.1	12.0	12	22.8	12.0	10	34.5	53.0	4	63.0	113.0	2
Hand C.	5.9	4.0	45	6.1	5.0	41	7.2	4.0	39	7.6	4.0	37
Hudson B.	30.2	13.0	10	38.7	17.0	8	39.3	17.0	9	40.5	15.0	9
Imperial	30.2	10.0	11	35.5	13.0	9	35.2	13.0	9	154.0	23.0	3
Maritime	38.3	35.0	6	44.0	28.0	6	53.0	28.0	4	51.0	79.0	2
Rothman	9.2	9.0	27	11.9	9.0	23	17.2	16.0	14	29.2	13.0	10
Van Ness	3.5	4.0	60	4.0	5.0	54	4.6	5.1	50	5.5	5.1	45
West Mine	7.5	13.0	21	7.8	13.0	19	9.1	14.0	19	14.3	19.0	13

* ALP - Average Length of Long Position in number of days
ASP - Average Length of Short Position in number of days
TNT - Total Number of Transactions