

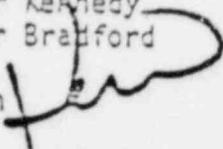


UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

November 11, 1977

PDR
2. File (mem):
Financial
Analysis

MEMORANDUM FOR: Chairman Hendrie
Commissioner Gilinsky
Commissioner Kennedy
Commissioner Bradford

FROM: Ken Pedersen 

SUBJECT: RELATION BETWEEN NUMBER OF LICENSEE EVENT REPORTS AND
BOND RATINGS

At your request, OPE has made a quick, limited study of the relation between the number of LER's coming from a particular nuclear power plant and the bond rating of its owner. The purpose of the study was to see if there is any correlation between LER's and bond ratings that might suggest possible connections between safety and financial strength.

Our primary analysis was for 1976. Additional analyses addressed the five-year period of 1972-76. In both cases we included only those plants that had received operating licenses at least a year before the beginning of the period studied (to avoid the likely masking effects of startup and shakedown). The plant-by-plant data underlying the analyses are shown at the end of this report (Tables 6 and 7). An appendix defines the bond ratings.

For perspective, we looked up the bond ratings of all companies which currently hold OL's or CP's. Table 1 shows the statistics on the current Moody bond ratings, which range from Aaa to Baa.

Findings

1. Our most important finding is that numbers of LER's per plant are scattered so widely within each bond grade, and overlap so greatly from grade to grade, as to suggest the absence of any correlation that would not be highly speculative. Figure 1 (immediately after Table 1) shows the scatter of points for 1976.

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2. Analyses of averages for 1976 and for the five-year period, shown on Tables 2, 3, and 4, must be interpreted with the extreme caution called for by Finding 1. Overall, the averages show increasing numbers of LER's as one descends in bond rating from Aa, through A, to Baa. But the trend is weak, and plants owned by the one company with an Aaa bond rating (Commonwealth Edison) averaged more LER's in 1976 than A-rated companies, and more in the five-year analysis than Baa-rated companies. The LER performance of plants whose owners are not investor-owned utility companies was close to that of Aa-rated companies' plants.
3. There was a general increase in the number of LER's per plant over the five-year period studied (as evident from Table 6). Reporting requirements and practices had become substantially more stringent during that period. I do not believe that we can read any significance into the coincidence that the 1972-76 period also happened to be a period of eroding financial condition for electric utilities, as evidenced, for example, by the fact that six of the fourteen nuclear plant owners studied had their bond ratings reduced during the period (Table 6). This belief is corroborated by Finding 4.
4. For a particular company the number of LER's does not appear to correlate at all with changes in the rating of its bonds. Table 5 lists the six companies that had bond ratings reduced and shows their relative LER performance before and after the reduction. Two of the companies dropped in LER performance after they had their bonds derated, two improved, and two remained unchanged. The changes that did take place were well within year-to-year variation ranges for companies in periods of stable bond rating. (There were no raised bond ratings for any of the companies involved during the period studied.)

cc: Jerome Nelson
Sam Chilk

Attachments:
As stated

Table 1

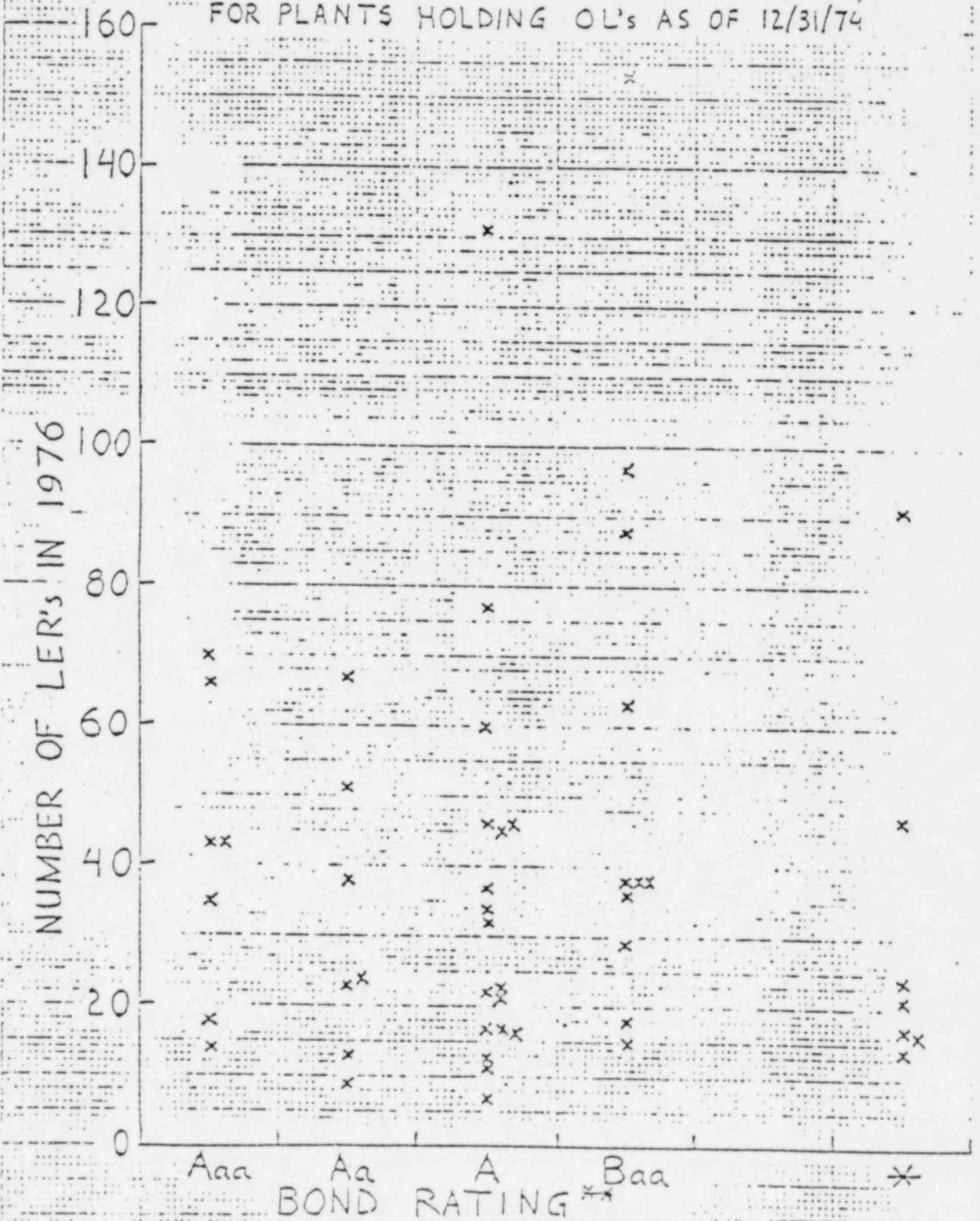
BOND RATINGS OF CURRENT HOLDERS OF OPERATING LICENSES OR
CONSTRUCTION PERMITS

<u>Bond Rating</u> (Moody, Sept. 1977)	<u>No. of</u> <u>Companies</u>	<u>No. of</u> <u>Plants</u>
Aaa	2	15
Aa	17	33
A	17	43
Baa	15	30
*	5	20

* Owner not an investor-owned utility company

FIGURE 1

LER's vs, BOND RATING (1976)
FOR PLANTS HOLDING OL's AS OF 12/31/74



Legend: *) Other than investor-owned
**) Moody 7/76

Table 2

NUMBER OF LICENSEE EVENT REPORTS VS. BOND RATING: 1976

<u>Bond Rating</u> (Moody, 7/76)	<u>No. of</u> <u>Companies</u>	<u>No. of</u> <u>Plants**</u>	<u>LER's per Plant</u> (1976 Average)	<u>Rank+</u>
Aaa	1	7	40	4
Aa	5	7	32	1
A	12	18	36	3
Baa	9	11	56	5
*	5	7	33	2

* Plants owned by entities other than investor-owned utility companies.

** Plants covered are those holding operating licenses as of December 31, 1974.

+ Lowest rank number means fewest LER's.

Table 3

NUMBER OF LICENSEE EVENT REPORTS VS. BOND RATING: 1972-76 (PRE-1971 PLANTS)

<u>Year</u>	<u>Bond Rating (Moody, July)</u>	<u>No. of Companies</u>	<u>No. of Plants **</u>	<u>LER's per Plant (Year Average)</u>	<u>Rank +</u>
1972	Aaa	1	2	12	1
	Aa	4	4	13	2
	A	8	8	13	2
	Baa	0	0	-	
	*	1	1	14	4
1973	Aaa	1	2	32	4
	Aa	4	4	13	3
	A	7	7	12	2
	Baa	1	1	49	5
	*	1	1	6	1
1974	Aaa	1	2	45	5
	Aa	4	4	18	2
	A	5	5	29	4
	Baa	3	3	28	3
	*	1	1	9	1
1975	Aaa	1	2	31	5
	Aa	2	2	10	2
	A	5	5	24	3
	Baa	5	5	24	3
	*	1	1	9	1

1976	Aaa	1	2	44	5
	Aa	2	2	11	1
	A	5	5	34	4
	Baa	5	5	20	3
	*	1	1	17	2

* Owner not an investor-owned utility company

** Plants covered are those holding operating licenses as of December 31, 1970.

+ Lowest rank number means fewest LER's.

++ Includes two companies with suspended ratings.
Both were rated A before the suspension and Baa after it.

Table 4

RANK IN NUMBER OF LER'S VS. BOND RATING
 (Lowest rank number means fewest LER's)

	<u>1976 Rank **</u>	<u>5-Year Average Rank ***</u>
Aaa	4	4.0
Aa	1	2.0
A	3	3.0
Baa	5	3.5
*	2	1.6

* Plants owned by entities other than investor-owned utility companies

** Based on plants holding operating licenses as of December 31, 1974.

*** 1972-76, based on plants holding operating licenses as of December 31, 1970.

Table 5

EFFECT OF REDUCTION OF BOND RATING ON RELATIVE NUMBER OF
LICENSEE EVENT REPORTS

<u>Company</u>	<u>Year of Reduced Bond Rating</u>	<u>No. of Grades Reduced</u>	<u>Rank +</u>		
			<u>Before Bond Rating Reduction</u>	<u>After Bond Rating Reduction</u>	<u>Improved (+) Worsened (-), or No change (0)</u>
Carolina P&L	1975	1	6, 12, 13 (10)	8, 7 (8)	+
Con. Ed.	1974	1*	12, 2 (7)	9, 1, 1 (4)	+
Consumers	1975	2	7, 9, 11 (9)	12, 12 (12)	-
Jersey Central	1973	1	14 (14)	15, 15, 14, 10 (14)	0
Northeast Nuc.	1975	1	15, 10, 7 (11)	11, 14 (13)	-
Yankee Atomic	1974	1*	9, 1 (5)	2, 8, 5 (5)	0

* Suspended rating, counted as reduction to rating accorded the following year.

+ Reflects standing among 15 plants in successive years before and after reduction of bond rating. Average rank in parentheses. Pluses and minuses are based on average. Lowest rank number means fewest LER's.

TABLE 6

BOND RATINGS AND LICENSEE EVENTS REPORTS FOR 1976

(Plants holding OL's as of 12/31/74)

<u>COMPANY</u>	<u>Bond Rating (Moody, 7/76)</u>	<u>REACTOR TYPE</u>	<u>PLANT</u>	<u>LER's for 1976</u>
ARKANSAS POWER & LIGHT CO.	Baa	PWR	ARKANSAS 1	36
BOSTON EDISON CO.	Baa	BWR	PILGRIM 1	38
CAROLINA POWER & LIGHT CO.	Baa	PWR	ROBINSON 2	18
		BWR	BRUNSWICK 2	153
COMMONWEALTH EDISON CO.	Aaa	BWR	DRESDEN 1	18
		BWR	DRESDEN 2	70
		BWR	DRESDEN 3	35
		BWR	QUAD CITIES 1	43
		BWR	QUAD CITIES 2	14
		PWR	ZION 1	66
		PWR	ZION 2	43
CONNECTICUT YANKEE ATOMIC POWER CO.	A	PWR	HADDAM NECK	22
CONSUMERS POWER CO.	Baa	BWR	BIG ROCK POINT	38
		PWR	PALISADES	38
DAIRYLAND COOPERATIVE POWER	*	BWR	LACROSSE	17
DUKE POWER COMPANY	A	PWR	OCONEE 1	37
		PWR	OCONEE 2	17
		PWR	OCONEE 3	21
FLORIDA POWER AND LIGHT CO.	A	PWR	TURKEY POINT 3	11
		PWR	TURKEY POINT 4	7
GEORGIA POWER COMPANY	Baa	BWR	HATCH 1	88

BOND RATINGS AND LICENSEE EVENT REPORTS FOR 1976

(Plants holding OL's as of 12/31/76)

<u>COMPANY</u>	<u>Bond Rating (Moody, 7/76)</u>	<u>REACTOR TYPE</u>	<u>PLANT</u>	<u>LER's for 1976</u>
INDIANA AND MICHIGAN ELECTRIC COMPANY	Baa	PWR	COOK 1	63
IOWA ELECTRIC LIGHT AND POWER CO.	Baa	BWR	ARNOLD	97
JERSEY CENTRAL POWER AND LIGHT CO.	Baa	BWR	OYSTER CREEK 1	29
MAINE YANKEE ATOMIC POWER COMPANY	A	PWR	MAINE YANKEE	17
METROPOLITAN EDISON COMPANY	A	PWR	THREE MILE ISLAND 1	46
NIAGARA MOHAWK POWER CORP.	A	BWR	NINE MILE POINT 1	45
NORTHEAST NUCLEAR ENERGY COMPANY (CONN. LIGHT AND POWER CO. principal owner)	A	BWR	MILLSTONE 1	60
NORTHERN STATES POWER COMPANY	Aa	BWR	MONTICELLO	23
		PWR	PRAIRIE ISLAND 1	67
		PWR	PRAIRIE ISLAND 2	24
OMAHA PUBLIC POWER DISTRICT	*	PWR	FT. CALHOUN	47
PACIFIC GAS AND ELECTRIC CO.	Aa	BWR	HUMBOLDT BAY	9
PHILADELPHIA ELECTRIC COMPANY	A	BWR	PEACH BOTTOM 2	131
		BWR	PEACH BOTTOM 3	77
POWER AUTHORITY OF THE STATE OF N.Y.	*	BWR	FITZPATRICK	91
PUBLIC SERVICE COMPANY OF COLORADO	Aa	HTGR	FT. ST. VRAIN	51

BOND RATINGS AND LICENSEE EVENTS REPORTS FOR 1976

(Plants holding OL's as of 12/31/74)

<u>COMPANY</u>	<u>Bond Rating</u> <u>(Moody, 7/76)</u>	<u>REACTOR TYPE</u>	<u>PLANT</u>	<u>LER's for 1976</u>
ROCHESTER GAS AND ELECTRIC CORP.	A	PWR	R.E. GINNA	32
SACRAMENTO MUNICIPAL UTILITIES DISTRICT	*	PWR	RANCHO SECO	21
SOUTHERN CALIFORNIA EDISON	Aa	PWR	SAN ONOFRE 1	13
TENNESSEE VALLEY AUTHORITY	*	BWR	BROWNS FERRY 1	24
		BWR	BROWNS FERRY 2	14
		BWR	BROWNS FERRY 3	16
VERMONT YANKEE NUCLEAR POWER CORP.	A	BWR	VERMONT YANKEE	46
VIRGINIA ELECTRIC AND POWER COMPANY	A	PWR	SURRY 1	34
		PWR	SURRY 2	23
WISCONSIN-MICHIGAN POWER COMPANY	A	PWR	POINT BEACH 1	13
		PWR	POINT BEACH 2	16
WISCONSIN PUBLIC SERVICE COMPANY	Aa	PWR	KEWANEE	38
YANKEE ATOMIC POWER COMPANY (Central Vermont Public Service co. principal owner)	Baa	PWR	YANKEE ROWE	15

* Not an investor-owned utility company.

Table 7

BOND RATINGS AND LICENSEE EVENTS REPORTS -- 1972-1976

(Plants holding OL's as of 12/31/70)

COMPANY	1972	Bond Rating (Moody, July)				REACTOR TYPE	PLANT	1972	No. of LER's				
		73	74	75	76				73	74	75	76	
CARLINA POWER AND LIGHT CO.	A	A	A	Baa	Baa	PWR	ROBINSON 2	9	20	50	19	18	
COMMONWEALTH EDISON COMPANY	Aaa	Aaa	Aaa	Aaa	Aaa	BWR	DRESDEN 1	2	21	26	17	18	
						BWR	DRESDEN 2	21	42	63	45	70	
CONSOLIDATED EDISON COMPANY	A	A	(S)	Baa	Baa	PWR	INDIAN POINT 1	20	6	27	2	1	
CONNECTICUT YANKEE ATOMIC POWER COMPANY	A	A	A	A	A	PWR	HADDAM NECK	6	13	15	7	22	
CONSUMERS POWER COMPANY	Aa	Aa	Aa	Baa	Baa	BWR	BIG ROCK POINT	10	19	36	39	38	
DAIRYLAND COOPERATIVE POWER	*	*	*	*	*	BWR	LACROSSE	14	6	9	9	17	
JERSEY CENTRAL POWER AND LIGHT COMPANY	A	Baa	Baa	Baa	Baa	BWR	OYSTER CREEK 1	30	49	68	42	29	
NIAGARA MOHAWK POWER CORP.	A	A	A	A	A	BWR	NINE MILE POINT 1	12	17	18	41	45	
NORTHEAST NUCLEAR ENERGY CO.	Aa	Aa	Aa	A	A	BWR	MILLSTONE 1	31	18	20	29	60	
PACIFIC GAS AND ELECTRIC CO.	Aa	Aa	Aa	Aa	Aa	BWR	HUMBOLDT BAY	7	8	14	8	9	
ROCHESTER GAS AND ELECTRIC CO.	A	A	A	A	A	PWR	R.E. GIHNA	13	14	25	25	32	
SOUTHERN CALIFORNIA EDISON CO.	Aa	Aa	Aa	Aa	Aa	PWR	SAN ONOFRE 1	5	8	2	11	13	

BOND RATINGS AND LICENSEE EVENTS REPORTS -- 1972-1976

(Plants holding OL's as of 12/31/70)

<u>COMPANY</u>	<u>1972</u>	<u>Bond Rating</u> (Moody, July)				<u>REACTOR TYPE</u>	<u>PLANT</u>	<u>1972</u>	<u>No. of LER's</u>			
		<u>73</u>	<u>74</u>	<u>75</u>	<u>76</u>				<u>73</u>	<u>74</u>	<u>75</u>	<u>76</u>
WISCONSIN-MICHIGAN POWER CO.	A	A	A	A	A	PWR	POINT BEACH 1	7	12	37	17	13
YANKEE ATOMIC POWER CO.	A	A	(S)	Baa	Baa	PWR	YANKEE ROWE	13	4	7	19	15

* Owner not an investor-owned utility company

(s) Rating suspended

MOODY'S BOND RECORD

Explanation and How to Correctly Use Ratings, Including Conventions, Symbols, and Industrial Revenue Bonds For Rating Key and Explanation of Moody's Municipal Bond Ratings, and Table of Conventions

Interpretation: Moody's Bond Record covers over 10,000 issues and situations of which approximately 37% comprising the first section, are listed in detail according to user at a point the essential facts relating to market value and statistical background.

Title of Bond: Name of corporation, together with coupon and date of issue or maturity are given. Where title is printed in bold face type such company was convertible debt securities outstanding. Listed issues are preceded by identifying symbols in the case of municipal securities, ratings are applicable to all general obligated bonds of the issuer unless stated otherwise.

Interest Dates: Interest dates and date of the month of maturity given. Unannounced dates are marked with an asterisk.

Default: In cases of interest or principal default, the date together with appropriate symbol is usually shown in interest column.

Call Price: The call price as of the date of this publication is given in all cases, and will be adjusted in the correct call price which may change hereafter. Symbols after call price indicate price is subject to change.

Moody's Rating: A description and explanation of Moody's ratings will be found on the bottom of column 1 of this page.

Registered Bonds: Bonds issued only in fully registered form are indicated with the letter "R".

Questioned Quotations: Quotations shown are as follows:
Lowest Limit: Quotations for listed prices represent actual sale prices as far as possible to the end of the month preceding date of publication. Where no recent transaction is reported, the latest bid or asked price is given.
Unlisted Issues: Quotations shown represent the approximate spread between bid and asked prices for latest available daily preceding date of publication. Where no price was available, the average of such times is given. Where asked prices are available, the average of them is given.
Final Limit: Where such maturity is not omitted separately, the quotation always indicates maturity in the "Maturity" column and so quoted are indicated with a star in the "Current Price" column.
 Quotations are obtained from sources which are believed reliable but they are not guarantees. In the case of unlisted issues, quotations are for purposes to be a guide in firm bids or offers and do not necessarily represent actual transactions.

Yield to Maturity: The yield to maturity is shown on all bonds paying regular interest. Where this price is not available, the yield is computed on the bid price for valuation purposes.

1977 Price Range: The high and low sale for all listed issues is given as near as possible to the end of the month. The range for unlisted issues represents high and low bid prices, based on reliable quotation records.

1948-76 Price Range: The high and low sale price for all listed issues have been taken from records for that period. In the case of unlisted bonds the high and low bid prices are used. For bonds issued since 1948, the range covers only the period since issuance.

Amount Outstanding: Amount outstanding shown in detail, deducting bonds prepaid or redeemed and may be treated as amount actually held.

Sinking Fund Provisions: Where the bond indenture contains a sinking fund provision, it has been indicated by the word "SINK" in this column. If no sinking fund is provided the word "NO" is shown. In other cases where "SINK" meaning alternate is shown, the indenture has a provision for payment which under certain conditions may be used to retire bonds.

Legal Status: Bonds listed for ratings banks are designated by numerals 1 N. Y. 2 Ill. 3 Conn. 4 N. M.

Federal Tax Status: The following symbols are used to show Federal Tax Status:
 1 Company pays normal Federal Income Tax not exceeding 15%. Where the company has agreed to pay the tax to a smaller amount than 15%, the figure shown indicates the rate assumed.
 M Federal Income Tax not paid or refunded. This symbol is used both in the case of bonds which contain no provision for payment or refund of Federal taxes and in the case of bonds issued or assumed on or after January 1, 1913, with the tax payment in later years, company is not required to withhold any Federal taxes when bonds are sold by citizens or residents of the United States.
 F International issue. Federal Income Tax neither paid nor refunded.

Current Assets and Current Liabilities: Current assets and current liabilities are shown as of the date of the latest balance sheet available.

Times Charge Covered: This item indicates the coverage of all interest charges, debt coupons, and expense and in certain cases rent for lease of plant is included. The coverage is shown for each dividend as a whole, regardless of maturity. The information is available for times charge covered is shown in most cases where the information is available except that coverage and assumed obligations are in cases for reference to item on assuming or assuming coverage. Where possible, coverage is computed after deducting Federal Income Tax.

General Information and Remarks: In many items, notable international governmental bonds, listed developments are noted in view of statistical data published on corporate items.

MOODY'S BOND RATINGS

Purpose: The system of rating securities was originated by John Moody in 1909.

The purpose of Moody's Ratings is to provide the investor with a simple system of conclusion by which the relative investment qualities of bonds may be rated.

Rating Symbols: Grades of investment quality are indicated by rating symbols, each symbol representing a group in which the quality characteristics are broadly the same. There are nine symbols as shown below, from that used in domestic debt investment (Aaa) to highest investment quality (A).

Aaa Aa A Caa Baa B Caa Caa C
 The explanation of municipal rating symbols is particular in A1 and Baa1 groups see page 124.

Absence of Rating: Where no rating has been assigned or where a rating has been assigned and withdrawn, it may be for reasons unrelated with the quality of the issue.

Should no rating be assigned, the reason may be one of the following:

1. An application for rating was not received or accepted.
2. The issue or issuer belongs to a group of securities or companies that are not rated as a matter of policy; e.g., the securities of real estate and investment trust operations.
3. There is a lack of material data pertaining to the issue or issuer.
4. The issue, not previously rated, in which case the rating is not published in Moody's publications.

Suspension or withdrawal may occur if new and material information arises, the extent of which proves unsatisfactory, or if there is no longer available adequate up-to-date data to permit a re-rating to be assigned; if a bond is called for redemption, or for other reasons.

Changes in Rating: The quality of most bonds is not fixed and may over a period of time, but tends to underpin changes. For this reason changes in ratings occur so as to reflect these variations in the investment position of individual bonds.

A change in rating may thus occur at any time in the case of an issue, but usually, such rating changes occur after the issue has been issued. Some rating changes may occur before the issue is issued, but this is rare. A rating change and fully reflect the quality of the bond or that the issuer, because of their very nature, changes are to be expected more frequently among bonds of lower ratings than among bonds of higher ratings. It is therefore the user of bond ratings should keep close and constant watch on all ratings—both high and low ratings—thereby to be able to detect promptly any signs of change in investment status which may occur.

Limitations to Uses of Rated Bonds carrying the same rating are not intended to be of arbitrarily equal quality. In a given rating, there are some differences in the investment quality of the bond or that the issuer, because of their very nature, changes are to be expected more frequently among bonds of lower ratings than among bonds of higher ratings. It is therefore the user of bond ratings should keep close and constant watch on all ratings—both high and low ratings—thereby to be able to detect promptly any signs of change in investment status which may occur.

As ratings are assigned exclusively for the purpose of grading issues according to their investment qualities, they should not be used as a guide in determining the direction of future trends of market prices. Market price movements in bonds are influenced not only by the quality of individual issues but also by changes in money rates and conditions of economic trends as well as by the price of maturity, etc. During the term of the bond quality bond may have wide price movements, while its investment status remains unchanged.

The matter of market price has no bearing whatsoever on the general situation of ratings which are apt to be continued as recommendations. The matter of market price has no bearing whatsoever on the general situation of ratings which are apt to be continued as recommendations. The matter of market price has no bearing whatsoever on the general situation of ratings which are apt to be continued as recommendations.

Since ratings involve judgments about the future, on the one hand, and since they are used by investors as a means of determining the value of the issue or issuer, rather than solely as a guide to the value of the present, therefore, investors using the ratings should be expected to form a judgment of the future of the issuer, rather than solely as a guide to the value of the present. Therefore, investors using the ratings should be expected to form a judgment of the future of the issuer, rather than solely as a guide to the value of the present.

Though ratings may be used by the banking authorities in general, they are not meant to be used in conjunction with the definition and classification of bonds in Moody's Manual. Reference should be made to Moody's Manual for information regarding the issuer, Moody's Ratings are not meant to be used in conjunction with the definition and classification of bonds in Moody's Manual.

Moody's Ratings represent the mature opinion of Moody's Investment Service, Inc. as to the relative investment quality of bonds as of the date they were issued. They are not intended to be used in conjunction with the definition and classification of bonds in Moody's Manual. Reference should be made to Moody's Manual for information regarding the issuer, Moody's Ratings are not meant to be used in conjunction with the definition and classification of bonds in Moody's Manual.

KEY TO MOODY'S CORPORATE RATINGS

Aaa
 Bonds which are rated Aaa are judged to be of the best quality. They carry the highest degree of investment risk and are generally considered as "full price" interest investments. They are generally considered as exceptionally stable issues and principal is secured. While the various protective provisions are likely to be strong, such matters as conversion, etc., are most unlikely to impair the fundamentally strong position of such issues.

Aa
 Bonds which are rated Aa are judged to be of high quality by all standards. They carry with the Aaa group they comprise what are known as high grade issues. They are rated lower than the Aaa group because of certain features of protection may not be as large as in Aaa securities. Fluctuations of protective provisions may be of greater magnitude in these cases than in other securities which make the long term risk somewhat more than in Aaa securities.

A
 Bonds which are rated A comprise many favorable investment situations and are in the opinion of the Moody Investment Service, Inc. of high quality. They are rated lower than the Aaa group because of certain features of protection may not be as large as in Aaa securities. Fluctuations of protective provisions may be of greater magnitude in these cases than in other securities which make the long term risk somewhat more than in Aaa securities.

Baa

Bonds which are rated Baa are considered as medium grade obligations, i.e. they are neither highly protected nor poorly secured. Interest payments and principal security appear adequate for the present but certain protective elements may be lacking or may be characteristically unreliable over any great length of time. Such bonds lack outstanding investment characteristics and in fact have speculative characteristics as well.

Ba

Bonds which are rated Ba are judged to have speculative elements; their future cannot be considered as well assured. Often the protection of interest and principal payments may be very moderate and thereby not well safeguarded during both good and bad times over the future. Uncertainty of position characterizes bonds in this class.

B

Bonds which are rated B generally lack characteristics of the desirable investment. Assurance of interest and principal payments or of maintenance of other terms of the contract over any long period of time may be small.

Caa

Bonds which are rated Caa are of poor standing. Such issues may be in default or there may be present elements of danger with respect to principal or interest.

Ca

Bonds which are rated Ca represent obligations which are speculative in a high degree. Such issues are often in default or have other marked shortcomings.

C

Bonds which are rated C are the lowest rated class of bonds and issues so rated can be regarded as having extremely poor prospects of ever attaining any real investment standing.